

METROPOLITAN COAL LONGWALLS 305-307

BUILT FEATURES MANAGEMENT PLAN



METROPOLITAN COAL

LONGWALLS 305-307

BUILT FEATURES MANAGEMENT PLAN

ME-TSE-MNP-0091

TELSTRA

Revision Status Register

Section/Page/ Annexure	Revision Number	Amendment/Addition	Distribution	DPIE Approval Date
All	LW305-307 BFMP_TELSTRA-R01-A	Original	Telstra, DRG and DPIE	16 March 2020
All	LW305-307 BFMP_TELSTRA-R01-B	Updated to reflect 50 m extension of Longwall 307	DPIE	

June 2021

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1 INTRODUCTION

Metropolitan Coal is a wholly owned subsidiary of Peabody Energy Australia Pty Ltd (Peabody). Metropolitan Coal was granted approval for the Metropolitan Coal Project (the Project) under section 75J of the New South Wales (NSW) *Environmental Planning and Assessment Act, 1979* (EP&A Act) on 22 June 2009. A copy of the Project Approval is available on the Peabody website (<http://www.peabodyenergy.com>).

The Project comprises the continuation, upgrade and extension of underground coal mining operations (Longwalls 20-27 and Longwalls 301-317) and surface facilities at Metropolitan Coal. The underground mining longwall layout is shown on Figure 1. Longwalls 305-307 are situated to the west of Longwalls 301-304, and define the next mining sub-domains within the Project underground mining area (Figures 1 to 3).

1.1 PURPOSE AND SCOPE

In accordance with Condition 6(f), Schedule 3 of the Project Approval, this Built Features Management Plan – Telstra (BFMP-TELSTRA) has been developed to manage the potential consequences of longwall extraction on the Telstra assets.

The relationship of this BFMP-TELSTRA to the Metropolitan Coal Environmental Management Structure is shown on Figure 4.

This BFMP-TELSTRA includes post-mining monitoring and management of Telstra assets subject to the previously approved Metropolitan Coal Longwall 304 Extraction Plan.

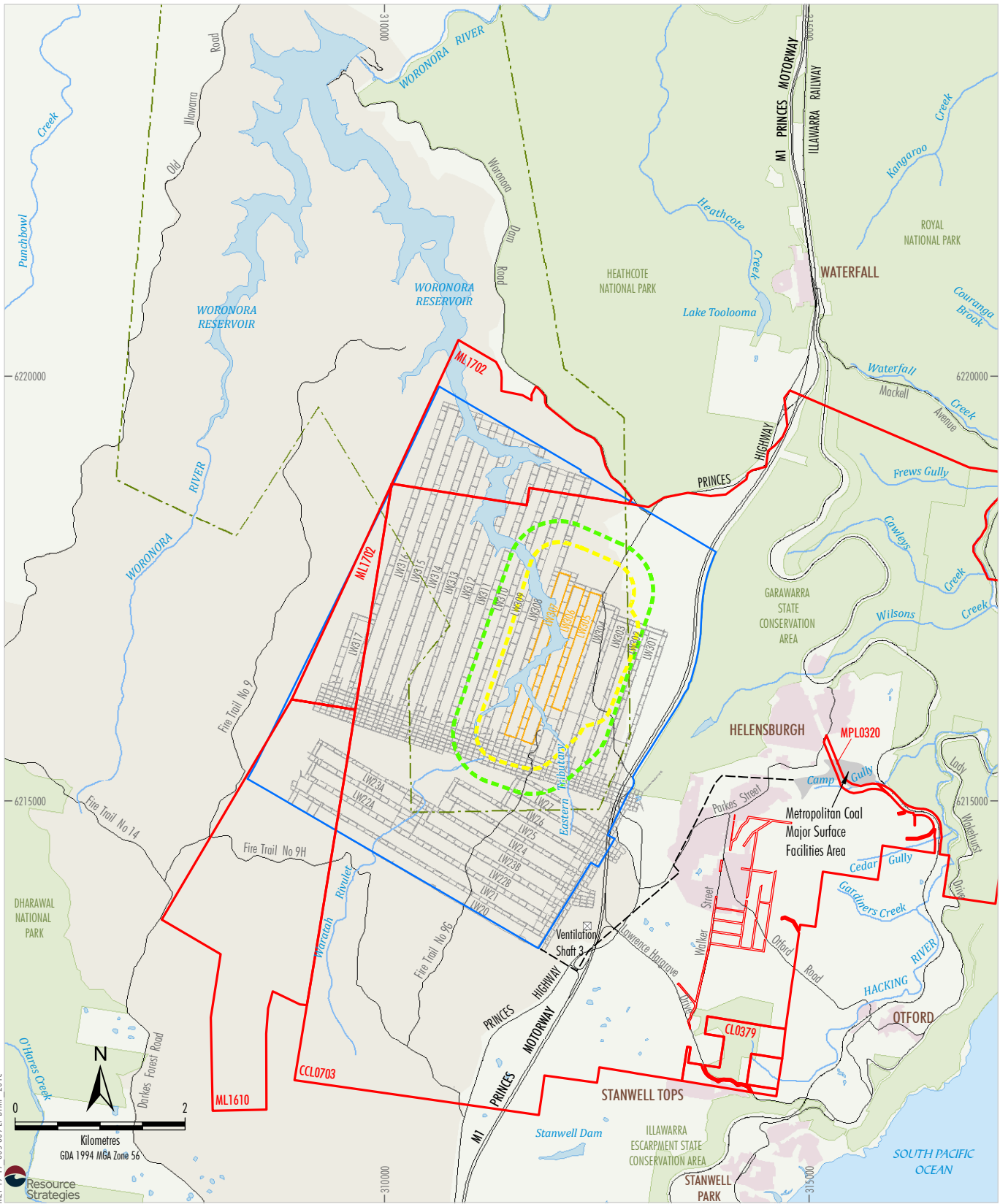
In accordance with Condition 6 of Schedule 3, the suitably qualified and experienced experts that have prepared this BFMP-TELSTRA, namely representatives from Mine Subsidence Engineering Consultants (MSEC) and Metropolitan Coal were endorsed by the Secretary of the Department of Planning and Environment (DP&E) (now the NSW Department of Planning, Industry and Environment [DPIE]). This BFMP-TELSTRA has been prepared in consultation with Telstra including consideration of prior consultation during the development of the previously approved Built Features Management Plans.

1.2 STRUCTURE OF THE BFMP-TELSTRA

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

- Section 2: Describes the review and update of the BFMP-TELSTRA.
- Section 3: Outlines the statutory requirements applicable to the BFMP-TELSTRA.
- Section 4: Provides a revised assessment of the potential subsidence impacts and environmental consequences for Longwalls 305-307, including the results of a risk assessment.
- Section 5: Details the performance measures and indicators that will be used to assess the Project.
- Section 6: Provides the detailed baseline data.
- Section 7: Describes the monitoring program.
- Section 8: Describes the management measures that will be implemented.
- 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.

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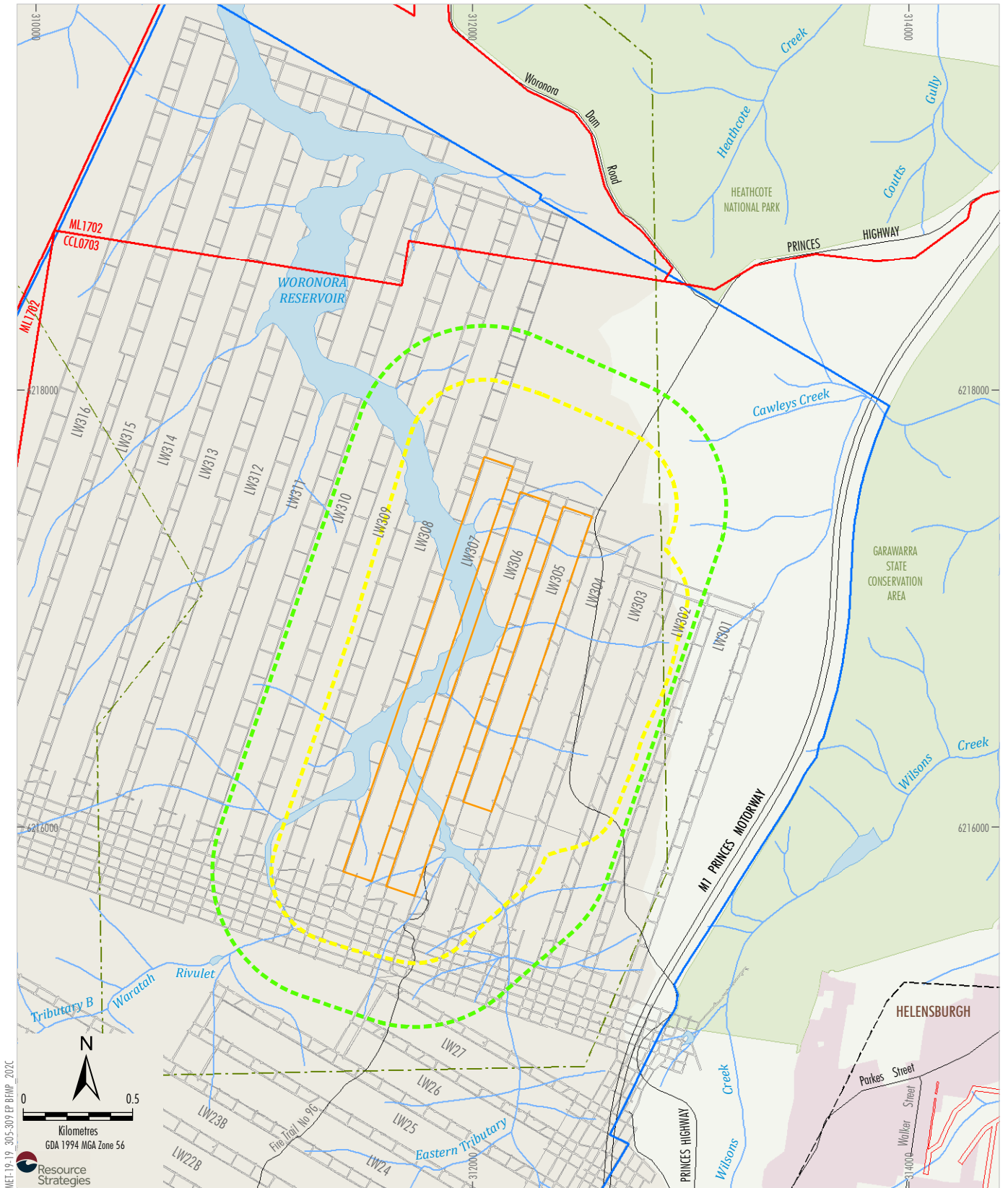


- LEGEND**
- Mining Lease Boundary
 - Woronora Special Area
 - Railway
 - Project Underground Mining Area
Longwalls 20-27 and 301-317
 - Longwalls 305-307 Secondary Extraction
 - Longwalls 305-307 35° Angle of Draw and/or
Predicted 20 mm Subsidence Contour
 - 600 m from Longwalls 305-307
Secondary Extraction
 - Woronora Notification Area
 - Existing Underground Access Drive (Main Drift)

Source: Land and Property Information (2015); Department of Industry (2015); Metropolitan Coal (2019); MSEC (2019)

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Longwalls 305-307 and
Project Underground Mining Area

Figure 1



ME1-19-305-307 EP BFMP 2020
Resource Strategies

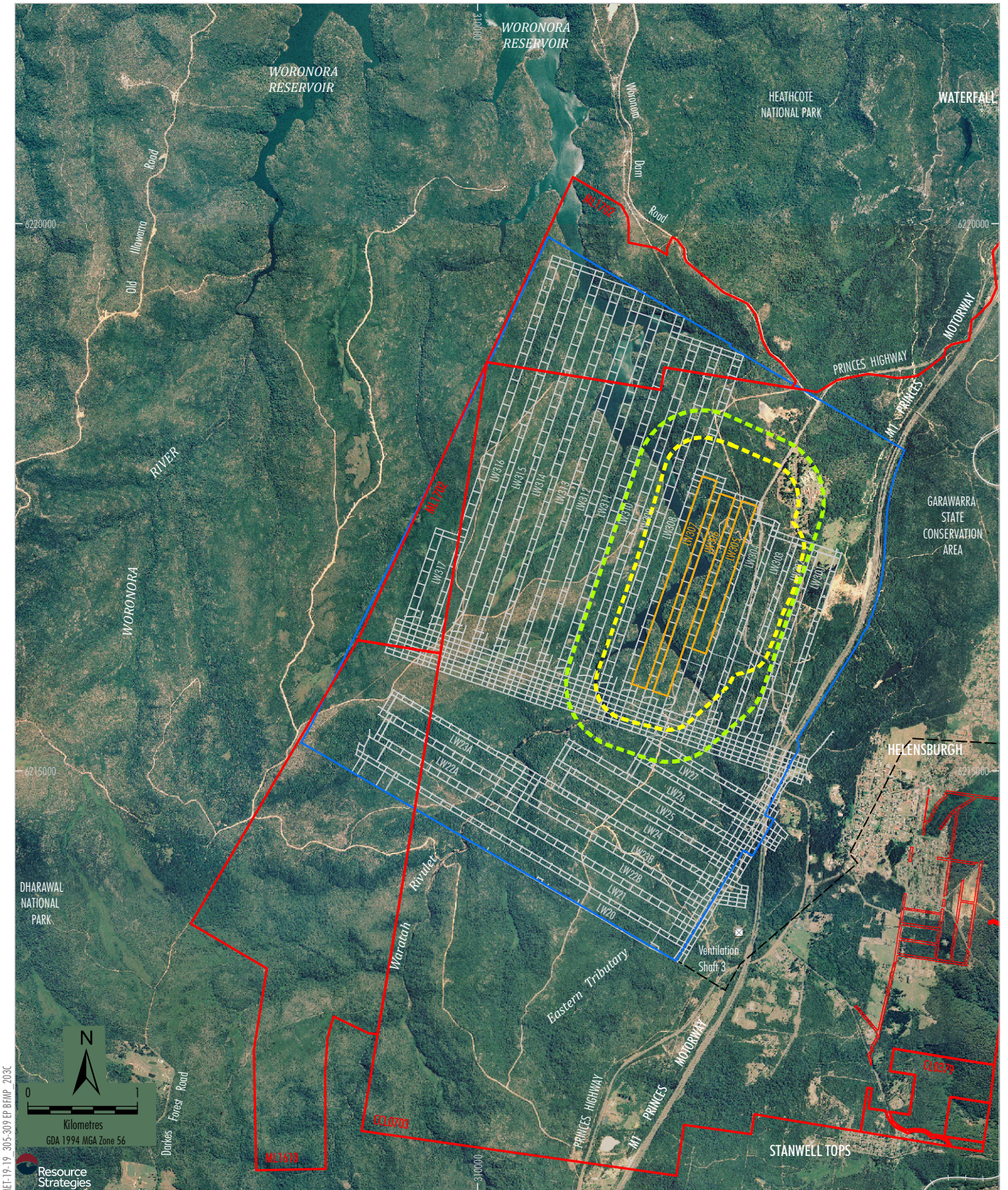
LEGEND

- Mining Lease Boundary
- Woronora Special Area
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Longwalls 20-27 and 301-317
- Longwalls 305-307 Secondary Extraction
- Longwalls 305-307 35° Angle of Draw and/or
Predicted 20 mm Subsidence Contour
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- Woronora Notification Area
- Existing Underground Access Drive (Main Drift)

Source: Land and Property Information (2015); Department of Industry (2015);
Metropolitan Coal (2019); MSEC (2019)

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Longwalls 305-307 Layout

Figure 2



- LEGEND
- Mining Lease Boundary
 - Railway
 - Project Underground Mining Area
Longwalls 20-27 and 301-317
 - Longwalls 305-307 Secondary Extraction
 - Longwalls 305-307 35° Angle of Draw and/or
Predicted 20 mm Subsidence Contour
 - 600 m from Longwalls 305-307
Secondary Extraction
 - Existing Underground Access Drive (Main Drift)

Source: Land and Property Information (2015); Date of Aerial Photography 1998;
Department of Industry (2015); Metropolitan Coal (2019); MSEC (2019)

Peabody
METROPOLITAN COAL
Longwalls 305-307 and
Project Underground Mining Area-
Aerial Photograph

Figure 3

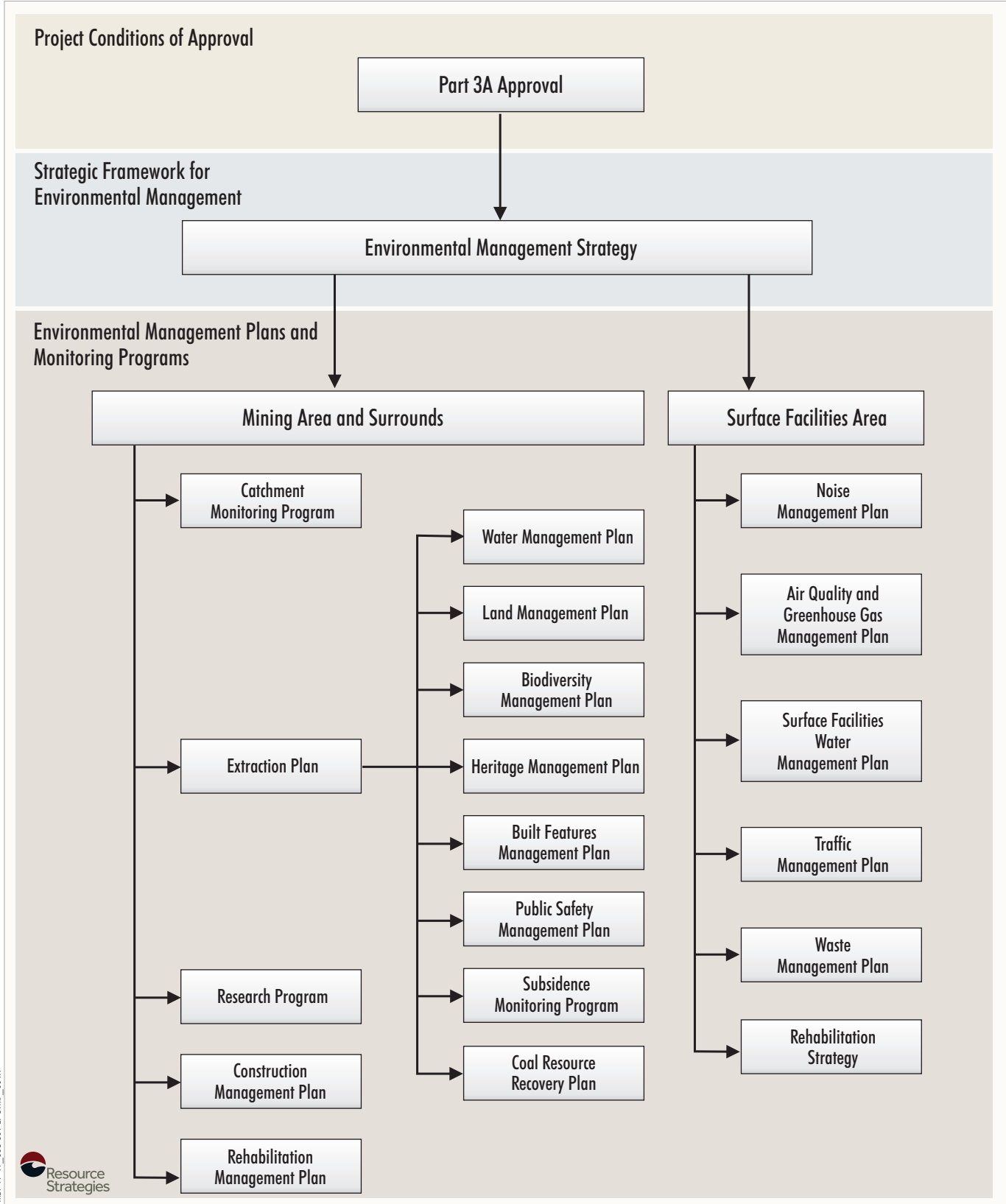


Figure 4

- Section 11: Describes the program to collect sufficient baseline data for future Extraction Plans.
- Section 12: Describes the annual review and improvement of environmental performance.
- Section 13: Outlines the management and reporting of incidents.
- Section 14: Outlines the management and reporting of complaints.
- Section 15: Outlines the management and reporting of non-compliances with statutory requirements.
- Section 16: Lists the references cited in this BFMP-TELSTRA.

2 BFMP-TELSTRA REVIEW AND UPDATE

In accordance with Condition 4, Schedule 7 of the Project Approval, this BFMP-TELSTRA will be reviewed within three months of the submission of:

- an audit under Condition 8, Schedule 7;
- an incident report under Condition 6, Schedule 7;
- an annual review under Condition 3, Schedule 7; and

if necessary, revised to the satisfaction of the Director-General (now Secretary) of the DPIE, to ensure the plan is updated on a regular basis and to incorporate any recommended measures to improve environmental performance.

This BFMP-TELSTRA will also be reviewed within three months of approval of any Project modification and if necessary, revised to the satisfaction of the DPIE.

The revision status of this plan is indicated on the title page of each copy of the BFMP-TELSTRA. The distribution register for controlled copies of the BFMP-TELSTRA is described in Section 2.1.

Revisions to any documents listed within this BFMP-TELSTRA will not necessarily constitute a revision of this document.

2.1 DISTRIBUTION REGISTER

In accordance with Condition 10, Schedule 7 'Access to Information', Metropolitan Coal will make the BFMP-TELSTRA publicly available on the Peabody website. A hard copy of the BFMP-TELSTRA will also be maintained at the Metropolitan Coal site.

Metropolitan Coal recognises that various regulators have different distribution requirements, both in relation to whom documents should be sent and in what format. An Environmental Management Plan and Monitoring Program Distribution Register has been established in consultation with the relevant agencies and infrastructure owners that indicates:

- to whom the Metropolitan Coal plans and programs, such as the BFMP-TELSTRA, will be distributed;
- the format (i.e. electronic or hard copy) of distribution; and
- the format of revision notification.

Metropolitan Coal will make the Distribution Register publicly available on the Peabody website.

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Metropolitan Coal will be responsible for maintaining the Distribution Register and for ensuring that the notification of revisions is sent by email or post as appropriate.

In addition, Metropolitan Coal employees with local computer network access will be able to view the controlled electronic version of this BFMP-TELSTRA on the Metropolitan Coal local area network. Metropolitan Coal will not be responsible for maintaining uncontrolled copies beyond ensuring the most recent version is maintained on the Metropolitan Coal computer system and Peabody website.

3 STATUTORY REQUIREMENTS

Metropolitan Coal’s statutory obligations are contained in:

- (i) the conditions of the Project Approval;
- (ii) relevant licences and permits, including conditions attached to mining leases; and
- (iii) other relevant legislation.

These are described below.

3.1 EP&A ACT APPROVAL

Condition 6(f) of Schedule 3 of the Project Approval requires the preparation of a BFMP as a component of Extraction Plan(s) for second workings. Project Approval Condition 6(f), Schedule 3 states:

SECOND WORKINGS

Extraction Plan

6. *The Proponent shall prepare and implement an Extraction Plan for all second workings in the mining area to the satisfaction of the Director-General. This plan must:*

...

(f) *include a:*

...

- *Built Features Management Plan, which has been prepared in consultation with the owner of the relevant feature, to manage the potential environmental consequences of the Extraction Plan on any built features;*

In addition, Condition 2, Schedule 7 and Condition 7, Schedule 3 of the Project Approval outline management plan requirements that are applicable to the preparation of the BFMP-TELSTRA. Table 1 indicates where each component of the conditions is addressed within this BFMP-TELSTRA.

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**Table 1
Management Plan Requirements**

Project Approval Condition	BFMP-TELSTRA Section
<p>Condition 2 of Schedule 7</p> <p>2. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:</p> <p>a) detailed baseline data;</p> <p>b) a description of:</p> <ul style="list-style-type: none"> • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; • 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; <p>c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;</p> <p>d) a program to monitor and report on the:</p> <ul style="list-style-type: none"> • impacts and environmental performance of the project; • effectiveness of any management measures (see c above); <p>e) a contingency plan to manage any unpredicted impacts and their consequences;</p> <p>f) a program to investigate and implement ways to improve the environmental performance of the project over time;</p> <p>g) a protocol for managing and reporting any:</p> <ul style="list-style-type: none"> • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and <p>h) a protocol for periodic review of the plan.</p>	<p align="center">Section 6</p> <p align="center">Section 3</p> <p align="center">Section 5</p> <p align="center">Section 5</p> <p align="center">Sections 7, 8, 9 and 10</p> <p align="center">Sections 7, 8 and 12</p> <p align="center">Section 9 and Appendix 4</p> <p align="center">Sections 7 and 12</p> <p align="center">Section 13</p> <p align="center">Section 14</p> <p align="center">Section 15</p> <p align="center">Section 9 and Appendix 4</p> <p align="center">Section 2</p>
<p>Condition 7 of Schedule 3</p> <p>7. In addition to the standard requirements for management plans (see condition 2 of schedule 7), the Proponent shall ensure that the management plans required under condition 6(f) above include:</p> <p>a) a program to collect sufficient baseline data for future Extraction Plans;</p> <p>b) a revised assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this approval;</p> <p>c) a detailed description of the measures that would be implemented to remediate predicted impacts; and</p> <p>d) a contingency plan that expressly provides for adaptive management.</p>	<p align="center">Section 11</p> <p align="center">Section 4</p> <p align="center">Section 8</p> <p align="center">Section 9 and Appendix 4</p>

3.2 LICENCES, PERMITS AND LEASES

In addition to the Project Approval, all activities at or in association with Metropolitan Coal will be undertaken in accordance with the following licences, permits and leases which have been issued or are pending issue:

- The conditions of mining leases issued by the NSW Division of Resources and Geoscience (DRG) (now the Resources Regulator), under the NSW Mining Act, 1992 (e.g. Consolidated Coal Lease [CCL] 703, Mining Lease [ML] 1610, ML 1702, Coal Lease [CL] 379 and Mining Purpose Lease [MPL] 320).
- The *Metropolitan Coal Mining Operations Plan 1 October 2012 to 30 September 2019* approved by the DRG.
- The conditions of Environment Protection Licence (EPL) No. 767 issued by the NSW Environment Protection Authority (EPA) under the NSW Protection of the Environment Operations Act, 1997. Revision of the EPL will be required prior to the commencement of Metropolitan Coal activities that differ from those currently licensed.
- The prescribed conditions of specific surface access leases within CCL 703 for the installation of surface facilities as required.
- Water Access Licences (WALs) issued by the NSW Department of Industry – Water (now the DPIE –Water) under the NSW *Water Management Act, 2000*, including WAL 36475 under the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011* and WAL 25410 under the *Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011*.
- Mining and workplace health and safety related approvals granted by the NSW Resources Regulator and WorkCover NSW.
- Supplementary approvals obtained from WaterNSW for surface activities within the Woronora Special Area (e.g. fire road maintenance activities).

3.3 OTHER LEGISLATION

Metropolitan Coal will conduct the Project consistent with the Project Approval and any other legislation that is applicable to an approved Part 3A Project under the EP&A Act.

The following Acts may be applicable to the conduct of the Project (Helensburgh Coal Pty Ltd [HCPL], 2008)¹:

- *Biodiversity Conservation Act, 2016*;
- *Biosecurity Act, 2015*;
- *Contaminated Land Management Act, 1997*;
- *Crown Land Management Act, 2016*;
- *Dams Safety Act, 2015*;
- *Dangerous Goods (Road and Rail Transport) Act, 2008*;
- *Energy and Utilities Administration Act, 1987*;
- *Fisheries Management Act, 1994*;

¹ The list of potentially applicable Acts has been updated to reflect changes to the Acts that were in force at the time of submission of the Metropolitan Coal Project Environmental Assessment (Project EA) (HCPL, 2008).

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- *Mining Act, 1992;*
- *Protection of the Environment Operations Act, 1997;*
- *Rail Safety (Adoption of National Law) Act, 2012;*
- *Roads Act, 1993;*
- *Water Act, 1912;*
- *Water Management Act, 2000;*
- *Water NSW Act, 2014;*
- *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 REVISED ASSESSMENT OF POTENTIAL ENVIRONMENTAL CONSEQUENCES

4.1 EXTRACTION LAYOUT

Longwalls 305-307 and the area of land within 600 metres (m) of Longwalls 305-307 secondary extraction are shown on Figures 2 and 3. Longwall extraction occurs from north to south. The Longwall 305 layout includes a 138 m panel width (void), a 45 m tailgate pillar width and a 70 m maingate pillar width. The layout of Longwalls 306 and 307 includes 138 m panel widths (void) and 70 m pillar widths (solid).

The provisional extraction schedule for Longwalls 305-307 is provided in Table 2.

Table 2
Provisional Extraction Schedule

Longwall	Estimated Start Date	Estimated Duration	Estimated Completion Date
Longwall 305	April 2020	8 Months	November 2020
Longwall 306	June 2021	11 Months	April 2022
Longwall 307	May 2022	8 Months	December 2022

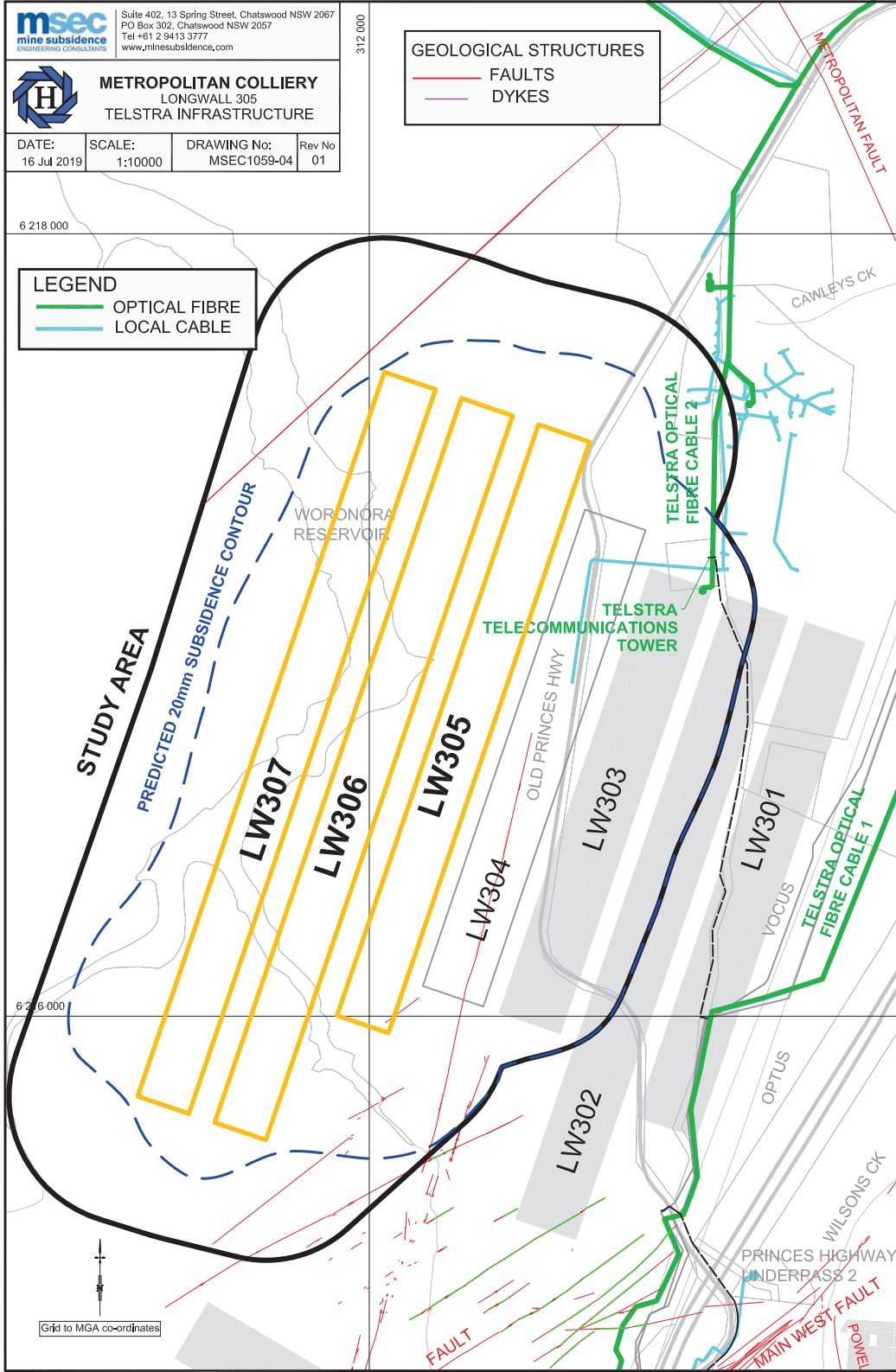
The future Extraction Plans will consider the cumulative subsidence effects, subsidence impacts and/or environmental consequences. Note that the total cumulative predicted subsidence effects, subsidence impacts and/or environmental consequences at the completion of the Project are considered in the Metropolitan Coal Project Environmental Assessment (Project EA) (HCPL, 2008) and the Preferred Project Report (HCPL, 2009).

4.1.1 Telstra Assets

Figure 5 illustrates the Telstra assets in relation to Longwalls 305-307 extraction. The assets include (Appendix 1):

- Telecommunications Tower and Compound (including equipment hut, security fencing and optical fibre cable entries which terminate at the mobile telephone tower);
- Major Interstate Trunk Cable F KNST 2005 ENGA-HBGH 80f Sydney-Melbourne No.3 optical fibre cable (labelled as Cable 1);

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ME1-19_19_305-309 EP BRWP_0028

Source: MSEC (2019)

Figure 5

- Customer Access Network (CAN) Cable F ENGA 3001 6f Engadine-Garrawarra-Mobile Phone Tower optical fibre cable (labelled as Cable 2);
- Customer Access Network (CAN) Cable F ENGA 3005 12f Engadine-Garrawarra-RIM and Garrawarra Hospital customer cable (labelled as Cable 2);
- copper telecommunications cables supplying customer services throughout Garrawarra Hospital and residential area (including buried and aerial copper cables); and
- associated pits, conduits and poles supporting the above cable network.

4.2 REVISED SUBSIDENCE AND IMPACT PREDICTIONS

4.2.1 Revised Subsidence Predictions

Subsidence predictions for Longwalls 20-44 in relation to the Telstra assets was conducted by MSEC (2008) as part of the Metropolitan Coal Project EA. MSEC (2008) includes a table summarising the incremental systematic subsidence parameters for the extraction of each longwall from Longwalls 20-44. These include:

- maximum predicted incremental subsidence (vertical movement);
- maximum predicted incremental tilt along alignment;
- maximum predicted incremental tilt across alignment;
- maximum predicted incremental tensile strain; and
- maximum predicted incremental compressive strain.

Revised subsidence and impact predictions for the extraction of Longwalls 305-307 on Telstra assets were conducted by MSEC and reported in MSEC (2019) (Appendix 2). In relation to subsidence predictions, MSEC (2019) make the following conclusions:

- The Telstra copper telecommunications cables are located above the northern end of Longwall 304. It is unlikely that these copper cables would experience adverse impacts as a result of Longwalls 305-307.
- Telstra optical fibre Cable 1 is located outside the Study Area and is approximately 760 m to the east of Longwall 305 at its nearest point. At this distance, Cable 1 is not expected to experience measurable conventional vertical subsidence, tilts or curvatures due to the extraction of Longwalls 305-307. The cable could experience low level far-field horizontal movement. The far-field horizontal movements are expected to be similar to those observed for previous longwall mining in the Southern Coalfield, which tend to be bodily movements towards the extracted goaf area and are accompanied by very low levels of strain. It is unlikely that Cable 1 would experience adverse impacts as a result of Longwall 305-307.
- Telstra optical fibre Cable 2 is located in the north-east of the Study Area and extends north from the commencing end of Longwall 303. Cable 2 is approximately 320 m from Longwall 305. The predicted total subsidence within the Study Area boundary increases by 50 mm following the extraction of Longwall 305, while the predicted tilt and curvatures do not change as a result of Longwalls 305-307. The optical fibre cable is unlikely to experience adverse impacts as a result of conventional subsidence movements. The likelihood of non-conventional subsidence movements due to Longwalls 305-307 is considered to be very low.

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- The telecommunications tower and compound are located within the Study Area, approximately 400 m to the east of Longwall 305. The predicted tilt and curvatures after the extraction of Longwall 304 do not change for the extraction of Longwalls 305-307, therefore the tower and compound are unlikely to experience measurable increases in tilt and curvature due to conventional movements resulting from the extraction of Longwalls 305-307. Non-conventional subsidence movements were not observed during the extraction of Longwalls 301-303. Based on these results the likelihood of non-conventional movements occurring as a result of Longwalls 305-307 is considered to be very low.

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

4.2.2 Risk Assessment

In accordance with the *Guidelines for the Preparation of Extraction Plans* (DP&E and DRE, 2015) a risk assessment meeting was held on 11 August 2016 for Longwalls 301-303. Attendees at the risk assessment meeting included representatives from Metropolitan Coal, Telstra (Comms Network Solutions Pty Ltd), MSEC, Resource Strategies and Axys Consulting (risk assessment facilitator). The investigation and analysis methods used during the risk assessment included:

- preliminary identification of Telstra assets;
- review of the revised subsidence predictions and potential impacts on Telstra assets (including consideration of past experience in the Southern Coalfield); and
- development of a preliminary monitoring plan.

A number of risk control measures and procedures were identified during the risk assessment which considered the extraction of coal beneath the Telstra assets.

The proposed risk control measures and procedures were incorporated into the Longwalls 301-303 BFMP -Telstra and the program and status of implementation is summarised in Table 3.

The risk control measures and procedures identified during the risk assessment for Longwalls 301-303 were reviewed in consultation with Telstra and continued for the extraction of Longwall 304.

A risk review was held 30 August 2019 for Longwalls 305-307, attendees at the risk assessment meeting included representatives from Metropolitan Coal, Telstra (Comms Network Solutions Pty Ltd) and MSEC. Given the distance of longwall extraction from the optical fibre cables a number of risk control measures and monitoring procedures were considered, including reducing the frequency of monitoring after confirmation that no significant subsidence movements or impacts were being observed.

5 PERFORMANCE MEASURES AND INDICATORS

The Project Approval requires Metropolitan Coal not to exceed the subsidence impact performance measures outlined in Table 1 of Condition 1, Schedule 3. The subsidence impact performance measure specified in Table 1 of Condition 1, Schedule 3 in relation to built features is:

Safe, serviceable and repairable, unless the owner and the MSB agree otherwise in writing.

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The performance indicators proposed to ensure that the above performance measure is achieved include:

- negligible transmission loss in fibre optic cables from mine subsidence impacts;
- the structural integrity of the cable line and associated facilities is maintained;
- the structural integrity of the telecommunications tower and compound is maintained; and
- the serviceability of the access roads/tracks is maintained.

Section 7 of this BFMP-TELSTRA describes the monitoring that will be conducted to assess the Project against the above performance measure. Section 9 of this BFMP-TELSTRA provides a Contingency Plan in the event the performance measure is exceeded.

6 BASELINE DATA

An audit of the physical location of the Optic Fibre Cables was conducted within the Study Area to confirm that physical access is available. Survey information was provided to Telstra.

The telecommunications tower and compound are shown on Plates 1 and 2.



Plates 1 & 2 – Telecommunications Tower and Compound (Source: MSEC, 2016)

An audit and site inspection of the Telstra assets including inspection of the cable lines and entries to the hut and condition of the cable was conducted.

6.1 STATE OF ASSET BEFORE MINING

In consultation with Telstra (and similar to the approach adopted for other optical fibre cables), Metropolitan Coal assessed and determined the state of the Telstra optical fibre cables before mining of Longwall 301.

For example, the state of nearby IOF cables was previously assessed before mining commenced in Longwall 20. The amplifier outputs and fibre loss between nominated end points O2WF Waterfall CEV and O2WM Wollongong CEV were measured. Measurement points O2WF and O2WM were located on the SM2 IOF at either end of the planned mining area.

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Table 4 below shows the loss measured between O2WF and O2WM from amplifier to amplifier.

Table 4
Measured Loss in O2WF Waterfall – O2WM Wollongong SM-2 IOF Section

Location	Tx Level (dBm)	Rx Level (dBm)	Loss (dBm)
O2WF 1B	14.3	-	-
O2WM 1A	-	-3.8	18.1
O2WM 2B	14.0	-	-
O2WF 2A	-	-3.8	17.8

dBm = decibel-milliwatt.

6.2 KEY CONTACT LIST

The list of key contacts for Peabody and Telstra the development and implementation of this BFMP are provided in Table 5.

Table 5
List of Key Contacts

Company	Position	Name
Peabody (Metropolitan Coal)	Technical Services Manager Jon Degotardi	Metropolitan Coal Control Room 24hr 02 4294 7333
Telstra	Project Specialist Network Integrity Mark Schneider	Telstra 24hr Contact 13 22 00
Telstra	Network Integrity Damian Bonser	
Telstra (Contractor)	Consultant Engineer to Telstra Network Integrity Colin Dove	

7 MONITORING

A program is monitoring the impacts of Longwalls 305-307 on the Telstra assets.

Where relevant, inspections of subsidence impacts will include photographic record of the impacts for comparison with baseline photographic records.

Telstra or their delegates will conduct the various visual inspections. Metropolitan Coal will be notified of the timing of inspections and accompany Telstra or delegates if considered necessary. All personnel will complete necessary inductions or orientation relevant to the tasks required.

Table 6 summarises the BFMP-TELSTRA monitoring components.

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The frequency of monitoring will be reviewed either:

- in accordance with the Annual Review outlined in Section 12; or
- if triggered as a component of the Contingency Plan as outlined in Section 9 of this BFMP-TELSTRA.

**Table 6
BFMP-TELSTRA Monitoring Program Overview**

Program	Aspect	Method	How	Why	Timing	Frequency
Baseline	Optical Fibre	Survey	Adjacent subsidence lines - points at approximately 20 m spacing	Establish base conditions	Prior to Longwall 301 extraction	Complete
		Visual Inspection	Photography of cable pits			
		Remote Fibre Monitoring System (RFMS)	Optical Time Domain Reflectometer (OTDR) monitoring data	Establish signal integrity		
	Access roads/tracks (to optical fibre)	Visual inspection (including notes on general condition of access roads/tracks)		Establish base condition	Prior to Longwall 301 extraction	Complete
	Telecommunication s Towers (and compounds)	Survey	Adjacent optic / water subsidence line points at approximately 20 m spacing	Establish base conditions – to track general land movement*	Prior to Longwall 301 extraction	Complete
			Survey marks at Tower	Establish base conditions – to track 3D movement*	Prior to Longwall 302 extraction	Complete
		Condition photography (including infrastructure, services and cables)		Establish base condition	Prior to Longwall 302 extraction	Complete
		Access roads/tracks (to towers and compound)	Visual inspection (including notes on general condition of access roads/tracks)		Establish base condition	Prior to Longwall 302 extraction

Table 6 (Continued)
BFMP-TELSTRA Monitoring Program Overview

Program	Aspect	Method	How	Why	Timing	Frequency
During Mining	Optical Fibre	Survey (subsidence, tilt, strain)	GPS survey of optic / water subsidence line points at approximately 20 m spacing	Determine subsidence, tilt, tensile strain, compressive strain	On commencement of LW305	Monthly for LW305
					Within 3 months of completion of LW305, 306 and 307	Once per longwall
		RFMS	Automated alarm. Initial loss level set at ± 1.0 dB	Monitor fibre signal integrity (loss signal)	LW305	LW305 specifically at start, mid and end of extraction.
					LW306 & LW307	As per Telstra network frequency
	Visual inspection	Cable pits inspection for any evidence of movement	Signs of conduit movement, and degree of freedom of cable in conduit	If necessitated by RFMS results	By exception	
	Communication Tower (and compounds)	Survey (subsidence, tilt, strain)	GPS survey of tower monitoring prisms	Monitor subsidence effects during mining	On commencement of 305	Weekly for first 400m, until movement stabilises
					Within 3 months of completion of LW305, 306 and 307	Once per longwall
		Survey - Tilt Meter	Warning alarm set at 1 degree Sensitivity increment 0.1 degrees	Monitor tower tilt	Real-time monitoring during extraction of LW305, 306 and 307	Continuous
		Visual inspection (for evidence of subsidence effects on compounds – movement of building / cables entering compounds)	Monitor structural integrity of compounds	During RFMS survey	LW305 at start and mid-point	
	Access roads/tracks	Visual inspection (including notes on general condition of access roads/tracks)	Monitor for surface cracks, buckling and general safety	At the completion of each longwall	Once per longwall	
As per Longwall 305-307 LMP						
Post Mining	Optical Fibre	RFMS	Record any changes to OTDR monitoring data	Determine level of impact of mining (if any)	Within 3 months of the completion of Longwall 307	Once
	Communication Towers (and compounds)	Condition Inspection (including infrastructure, services and cables)		Determine level of impact of mining (if any)	Within 3 months of the completion of Longwall 307	Once
	Access roads/tracks	Visual inspection (including notes on general condition of access roads/tracks)		Determine level of impact of mining (if any)	Within 3 months of the completion of Longwall 307	Once

7.1 SUBSIDENCE PARAMETERS

Subsidence parameters (i.e. subsidence, tilt, tensile strain, compressive strain, absolute horizontal translation, and differential leg movement) associated with mining will be measured in accordance with the Longwall 305-307 Subsidence Monitoring Program (Figure 6).

In summary, surveys are 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) is measured along subsidence lines that have been positioned across the general landscape.

Monitoring of subsidence parameters specific to the Telstra assets include the survey lines along the Optic / Water Line and the M1 Princes Motorway. These surveys monitor the general movement about the longwalls and allow evaluation of the likely ground movements about the cable lines (by comparison between measured and predicted movements). Monitoring of subsidence parameters also occurs at the telecommunication tower.

7.2 SUBSIDENCE IMPACTS

7.2.1 Fibre Optic Cables

Visual inspections will be conducted of the cable lines in accordance with the Telstra inspection system if triggered by a transmission fault detected by the Telstra monitoring system (Appendix 3).

Specific details that will be noted and/or photographed include:

- the date of the inspection;
- the location of longwall extraction (i.e. the longwall chainage);
- assessment against the performance indicators and performance measure;
- whether any actions are required (e.g. initiation of the Contingency Plan, incident notification, implementation of appropriate safety controls, review of public safety, etc.); and
- any other relevant information.

The information will be recorded in the Built Features Management Plan - Subsidence Impact Register (Appendix 3) and reported in accordance with the Project Approval conditions.

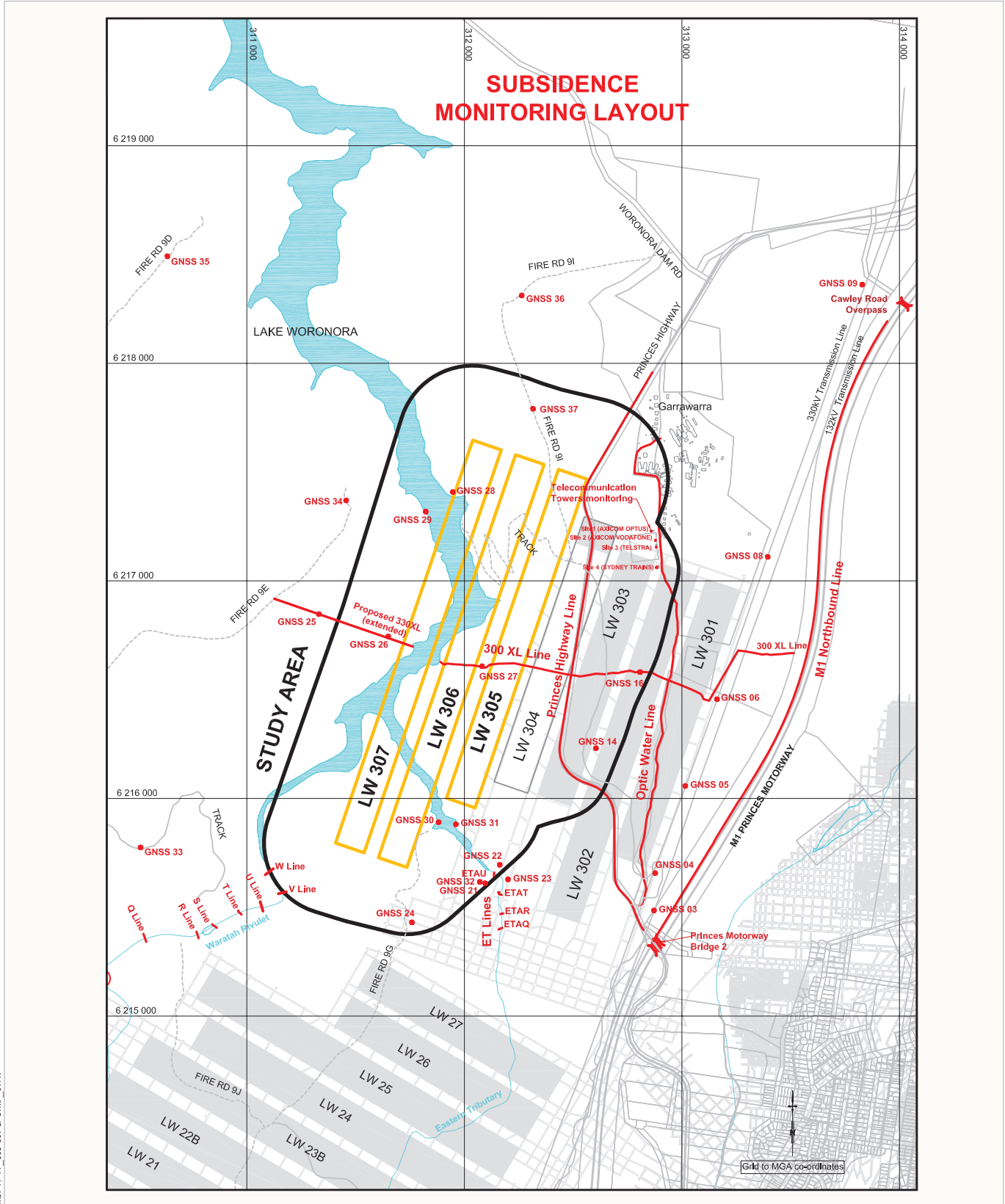
7.2.2 Copper Telecommunication Cables

Visual inspections will be conducted as required in accordance with the Telstra Management Plan Agreement (2019) for the area.

7.2.3 Telecommunications Tower and Compound

Visual inspections will be conducted as required in accordance with the Telstra Management Plan Agreement (2019) for the area.

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Source: MSEC (2019)

Figure 6

7.2.4 Access Roads/Tracks

Visual observations of access roads/tracks will occur as part of routine works and inspections within 600 m of Longwall 305-307 secondary extraction as described in the Metropolitan Coal Longwall 305-307 Land Management Plan (Longwall 305-307 LMP).

Specific details that will be noted and/or photographed that are relevant to the Telstra access roads/tracks include:

- the location, approximate dimensions (length, width and depth), and orientation of surface tension cracks;
- the location of the surface tension crack in relation to access road/track to the Telstra asset;
- whether any actions are required (e.g. implementation of management measures as outlined in the Longwall 305-307 LMP, initiation of the Contingency Plan as outlined in the Longwall 305-307 LMP, incident notification, implementation of appropriate safety controls, review of public safety, etc.); and
- any other relevant information.

The date of the observation, details of the observer and the location of longwall extraction will also be documented.

The information obtained will be recorded in the Longwall 305-307 LMP - Subsidence Impact Register and reported in accordance with the Project Approval conditions.

The information obtained will be used to assess the potential environmental consequences of the subsidence impact (described in the Longwall 305-307 LMP) and to identify required management measures. Management measures are discussed in the Longwall 305-307 LMP.

In the event the subsidence impacts are deemed to present a safety hazard (i.e. regardless of the nature or extent of the subsidence impact), actions will be implemented in accordance with the Metropolitan Coal Longwall 305-307 Public Safety Management Plan.

7.3 ENVIRONMENTAL CONSEQUENCES

Metropolitan Coal and Telstra will compare the results of the subsidence impact monitoring against the built features performance measure and indicators. In the event the observed subsidence impacts exceed the performance measure or indicators, Metropolitan Coal and Telstra will assess the consequences of the exceedance in accordance with the Contingency Plan described in Section 9.

8 MANAGEMENT MEASURES

A number of potential management measures in relation to cable lines are considered to be applicable. These are described in the Telstra Management Plan Agreement (Appendix 1).

Follow-up inspections will be conducted to assess the effectiveness of the management measures implemented and the requirement for any additional management measures.

Management measures will be reported in the Annual Review (Section 12).

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9 CONTINGENCY PLAN

In the event the subsidence impacts observed exceed the performance measure or indicators detailed in Section 5 of this BFMP-TELSTRA, Metropolitan Coal will implement the following Contingency Plan (Appendix 4):

- The observation will be reported to the Technical Services Manager within 24 hours.
- With the exception of access roads/tracks, the observation will be recorded in the Built Features Management Plan - Subsidence Impact Register (Appendix 3) consistent with the monitoring program described in Section 7 of this BFMP-TELSTRA.
- If relating to an access road/track, the observation will be recorded in the Metropolitan Coal LW 305-307 Land Management Plan – Subsidence Impact Register.
- Metropolitan Coal will report any exceedance of the performance measure or indicators to the DPIE and Telstra as soon as practicable after Metropolitan Coal becomes aware of the exceedance.
- Metropolitan Coal will assess public safety and where appropriate implement safety measures in accordance with the Metropolitan Coal Longwalls 305-307 Public Safety Management Plan.
- Metropolitan Coal will conduct an investigation to evaluate the potential contributing factors. The investigation will:
 - include the re-survey of relevant subsidence monitoring lines;
 - compare and critically analyse measured versus predicted subsidence parameters;
 - review measured subsidence parameters against the observed impact; and
 - review the subsidence monitoring program and update the program where appropriate.
- The course of action with respect to the identified impact(s), in consultation with specialists and relevant agencies, will include:
 - a program to review the effectiveness of the contingency measures; and
 - consideration of adaptive management.

Contingency measures are provided in Section 9.1.

- Metropolitan Coal will submit the proposed course of action to the DPIE for approval.
- Metropolitan Coal will implement the approved course of action to the satisfaction of the DPIE.

In accordance with Condition 6, Schedule 6 of the Project Approval, Metropolitan Coal will provide a suitable offset to compensate for the impact to the satisfaction of the Secretary of DPIE if either the contingency measures implemented by Metropolitan Coal have failed to remediate the impact or the Secretary determines that it is not reasonable or feasible to remediate the impact.

Metropolitan Coal will comply with the NSW *Coal Mine Subsidence Compensation Act, 2017* in the event that property damages occur as a result of mining Longwalls 305-307.

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).

Contingency measures are provided in the Telstra Management Plan Agreement (Appendix 1) and are summarised in Table 6. The decision trees for the contingency measures are shown in Appendix 4.

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It is understood that there may be opportunities to deploy temporary broadcast/receiving tower as per special event infrastructure that could be used as a contingency. If required, Metropolitan Coal would consult with Telstra to obtain contact details and timeframes for mobilisation.

**Table 6
Contingency Measures**

Asset	Contingency Measures / Description	
Phone Tower (Pole Type)	Stabilisation	<ul style="list-style-type: none"> Installation of tower supports such as guy wires in response to tilt.
	Rebuilding	<ul style="list-style-type: none"> Construction of new tower and foundations.
	Contingency	<ul style="list-style-type: none"> Deployment of temporary broadcast/receiving tower as per special event infrastructure (temporary mobile tower systems available).
	Redundancy	<ul style="list-style-type: none"> Telstra has three alternate phone towers nearby (two at Helensburgh and one at Waterfall).
Main Fibre 120 Core	Stabilisation	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Certain bandwidth is redeployed to other cores within this cable and/or to other two (2) Telstra interconnectors between Sydney / Melbourne.
	Rebuilding	<ul style="list-style-type: none"> Fibre heat treatment to soften compression point on core and return affected cores to operation.
	Redundancy	<ul style="list-style-type: none"> Telstra has cable at this location plus 2 additional cables further west in NSW as alternate connectors between NSW and Victoria. The cable at this location has 120 cores (each core is independent for data communication). <i>[NB: alternative potentially undermined concurrently at Douglas Park].</i>
Spur Line Tower Fibre 12 Core	Stabilisation	<ul style="list-style-type: none"> Technician travels to tower and undertakes localised monitoring to identify location of issue. Soil removed at location to allow fibre to flex.
	Emergency	<ul style="list-style-type: none"> Spare cores available in cable. Bypass affected cores to re-establish functionality.
	Rebuilding	<ul style="list-style-type: none"> Fibre heat treatment to soften compression point and return affected cores to operation.
	Redundancy	<ul style="list-style-type: none"> Phone tower operation requires 2 cores; fibre supplying tower has 12 cores, 10 spare.
Copper Cable	Emergency	<ul style="list-style-type: none"> Failure in local phone cables at Garrawarra Centre Complex rectified by repairs. If extended duration outage then temporary mobile phone connection to be provided to Garrawarra Centre Complex commercial user by Telstra.
	Redundancy	<ul style="list-style-type: none"> Mobile phone coverage to replace landlines, all commercial carriers have towers located at Garrawarra Centre Complex.

10 TARP – MANAGEMENT TOOL

The framework for the various components of the BFMP-TELSTRA are summarised in the BFMP-TELSTRA TARPs shown in Tables 7, 8, 9 and 10.

The BFMP-TELSTRA TARPs illustrate 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.

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Table 7
Trigger Action Response Plan – Optical Fibre Major Interstate Trunk Cable: F KNST 2005 ENGA-HBGH 80f “Cable 1”

Performance Measure	Performance Indicator	Monitoring Site(s)	Parameters	Frequency/ Sample Size	Analysis Methodology	Error Types	Baseline	Significance Levels/ Triggers	Action/Response	
Safe, serviceable and repairable	Negligible transmission loss in fibre optic cables from mine subsidence impacts	Remote fibre monitoring system (RFMS).	OTDR Signal loss.	Continuous, and specifically for LW305 at start, mid and end points of extraction to confirm negligible change to transmission properties of fibres	Automated alarm set at 1.0 dB		Pre-mining data prior to commencement of LW 301.	Level 1	Signal loss <= 1.0 dB	Continue monitoring.
								Level 2	N/A	<i>No Level 2 signal loss threshold set</i>
								Level 3	Signal loss > 1.0 dB	<p>Telstra</p> <p>Inform Metropolitan Coal of anomalous signal degradation from continuous monitoring. Physically audit cable pits in area.</p> <p>In conjunction with Metropolitan Coal identify signal loss location; expose cable to investigate if tension/compression being imposed on cable.</p> <p>Relieve cable tension or compression by adjusting the trench geometry, the outer conduit, the fill material or by heat treatment of cable.</p> <p>Metropolitan</p> <p>Increase frequency of subsidence line surveys to weekly in affected area.</p> <p>In conjunction with Telstra identify degradation location and work with Telstra to resolve.</p> <p>Review the subsidence monitoring program and update the program where appropriate.</p> <p>Provide report on issue to both Telstra and DPIE.</p>
								Level 4	Signal fault detected	<p>Implement Contingency Plan as per BFMP Section 9.</p> <p>Telstra</p> <p>Telstra to enact emergency transmission cutover of affected fibres at exchange and transmit on alternate fibres in bundle and/or on alternate routes.</p> <p>Expose the affected section of cable and determine appropriate course of action for cable restoration being straightening/ heat treatment or full joint to joint replacement depending on severity of physical cable fault.</p> <p>Complete restoration works.</p> <p>Work in conjunction with Metropolitan Coal to investigate root cause of incident and determine appropriate future control measures.</p> <p>Metropolitan</p> <p>General Manager to be involved in all decision making processes.</p> <p>Assess public safety implications and where appropriate implement safety measures in accordance with Metropolitan Coal Longwall 305-307 Public Safety Management Plan.</p> <p>Report exceedance of the performance measure or indicators to the DPIE as soon as practicable.</p> <p>Update the 'Built Features Management Plan – Subsidence Impact Register'.</p>

Table 8
Trigger Action Response Plan – Optical Fibre Customer Access Network Cables: F ENGA 3001 6f & F ENGA3005 12f “Cable 2”

Performance Measure	Performance Indicator	Monitoring Site(s)	Parameters	Frequency/ Sample Size	Analysis Methodology	Error Types	Baseline	Significance Levels/ Triggers	Action/Response	
Safe, serviceable and repairable	Negligible transmission loss in fibre optic cables from mine subsidence impacts Subsidence parameters.	Remote fibre monitoring system (RFMS). Optic / Water subsidence survey line	OTDR Signal loss. Subsidence, Strain.	Continuous Monthly on commencement of LW305 until completion At completion of LW305, 306 and 307	Automated alarm set at 1.0 dB Evaluation of the general ground movements about the site by comparison between measured and predicted movements.	Subsidence measurement accuracy.	Monitoring data prior to LW305 extraction	Level 1	Signal loss <1.0 dB At end of LW307 Subsidence < 350 mm Tensile strain <0.9 mm/m Compressive strain < 1.6 mm/m (i.e. measured subsidence parameters generally in accordance with predicted).	Continue monitoring.
								Level 2	Subsidence effects up to 15% greater than predicted. e.g. Subsidence between 350 and 405 mm.	<p>Metropolitan</p> <p>Report subsidence anomaly. Immediately resurvey subsidence line to confirm results. Engage subsidence expert to assess results. Confirm results are consistent with other subsidence lines. Compare and critically analyse measured versus predicted subsidence. Inform and provide report to Telstra of subsidence results. Collaboratively share information with Telstra to monitor situation.</p> <p>Telstra</p> <p>Assess information provided by Metropolitan Coal. If mining within 400 m, increase frequency of OTDR assessments to weekly for signs of signal loss.</p>
								Level 3	Signal loss > 1.0 dB Subsidence effects > 15% predicted. E.g. Subsidence > 405 mm	<p>Metropolitan</p> <p>Increase frequency of subsidence line surveys to weekly in affected area. In conjunction with Telstra identify degradation location and work with Telstra to resolve. Review the subsidence monitoring program and update the program where appropriate. Provide report on issue to both Telstra and DPIE.</p> <p>Telstra</p> <p>Inform Metropolitan Coal of anomalous signal degradation from continuous monitoring. Physically audit cable pits in area. In conjunction with Metropolitan Coal identify signal loss location; expose cable to investigate if tension/compression being imposed on cable. Relieve cable tension or compression by adjusting the trench geometry, the outer conduit, the fill material or by heat treatment of cable. Make determination if necessary to leave trench open for remainder of longwall extraction to avoid further stress build-up.</p>

Table 8 (Continued)
Trigger Action Response Plan – Optical Fibre Customer Access Network Cables: F ENGA 3001 6f & F ENGA3005 12f

Performance Measure	Performance Indicator	Monitoring Site(s)	Parameters	Frequency/ Sample Size	Analysis Methodology	Error Types	Baseline	Significance Levels/ Triggers	Action/Response
								Level 4 Signal fault detected	<p>Metropolitan Implement Contingency Plan as per BFMP Section 9. General Manager to be involved in all decision making processes. Assess public safety implications and where appropriate implement safety measures in accordance with Metropolitan Coal Longwalls 305-307 Public Safety Management Plan. Report exceedance of the performance measure or indicators to the DPIE as soon as practicable. Update the 'Built Features Management Plan – Subsidence Impact Register'.</p> <p>Telstra Telstra to enact emergency transmission cutover of affected fibres at exchange and transmit on alternate fibres in bundle and/or on alternate routes. Expose the affected section of cable and determine appropriate course of action for cable restoration being straightening/ heat treatment or full joint to joint replacement depending on severity of physical cable fault. Complete restoration works. Work in conjunction with Metropolitan Coal to investigate root cause of incident and determine appropriate future control measures.</p>
	The serviceability of the access roads and tracks are maintained.	Access roads and tracks in the vicinity of the Telstra assets.	Cracking about access road/tracks.	After LW 305, 307 & 307	Visual Inspection. Visual observations of access roads/tracks will also be conducted by Metropolitan Coal as part of routine works and inspections within 600 m of Longwalls 305-307 secondary extraction as described in the Metropolitan Coal Longwall 305-307 Land Management Plan.		Pre-mining audit conducted prior to commencement of LW 301.	Level 1 Minor cracking. Level 2 Moderate cracking (i.e. cracking that requires implementation of management measures). Level 3 Greater than moderate cracking.	<p>Continue monitoring. Consider whether any actions are required (e.g. implementation of management measures as outlined in the Longwalls 305-307 LMP, initiation of the Contingency Plan as outlined in the Longwalls 305-307 LMP, incident notification, implementation of appropriate safety controls, review of public safety, etc.).</p> <p>Implement management measures as outlined in the Longwalls 305-307 LMP.</p> <p>Implement contingency measures as outlined in the Longwalls 305-307 LMP.</p>

Table 9
Trigger Action Response Plan – Customer Access Network Copper Cables

Performance Measure	Performance Indicator	Monitoring Site(s)	Parameters	Frequency/ Sample Size	Analysis Methodology	Error Types	Baseline	Significance Levels/ Triggers		Action/Response
Safe, serviceable and repairable	The structural integrity of the copper cable and associated infrastructure is maintained. Subsidence parameters.	Optic / Water subsidence survey line	Subsidence, Strain.	Within 3 months after completion of each longwall. After LW 305, 306 and 307	Evaluation of the general ground movements about the site by comparison between measured and predicted movements.	Subsidence measurement accuracy.	Pre-mining audit conducted prior to commencement of LW 301.	Level 1	At end of LW305,306,307 Subsidence < 525 mm Tensile strain < 0.9 mm/m Compressive strain < 1.6 mm/m (i.e. measured subsidence parameters generally in accordance with predicted).	Continue monitoring.
								Level 2	Negligible signs of impact to copper cables. Subsidence effects up to 15% greater than predicted. e.g. Subsidence between 525 and 600 mm.	Metropolitan Report subsidence anomaly. Immediately resurvey subsidence line to confirm results. Engage subsidence expert to assess results. Confirm results are consistent with other subsidence lines. Compare and critically analyse measured versus predicted subsidence. Inform and provide report to Telstra of subsidence results. Collaboratively share information with Telstra to monitor situation. Telstra Assess information provided by Metropolitan Coal.
								Level 3	Subsidence effects > 15% predicted. E.g. Subsidence > 600 mm Anomalous service condition detected. Complaint (verified).	Metropolitan Increase frequency of subsidence line surveys to weekly in affected area. In conjunction with Telstra identify degradation location and work with Telstra to resolve. Review the subsidence monitoring program and update the program where appropriate. Provide report on issue to both Telstra and DPIE. Telstra Inform Metropolitan Coal of anomalous signal degradation from complaint (verified). Physically audit cable pits in area. In conjunction with Metropolitan Coal identify signal loss location; expose cable to investigate if tension/compression being imposed on cable. Test and repair copper cable.
								Level 4	Fault detected	Metropolitan Implement Contingency Plan as per BFMP Section 9. General Manager to be involved in all decision-making processes. Assess public safety implications and where appropriate implement safety measures in accordance with Metropolitan Coal Longwalls 305-307 Public Safety Management Plan. Report exceedance of the performance measure or indicators to the DPIE as soon as practicable. Update the 'Built Features Management Plan – Subsidence Impact Register'. Telstra Telstra to divert to other pairs within the copper cable bundle. Expose the affected section of cable and determine appropriate course of action for cable restoration depending on severity of physical cable fault. If Garrawarra services impacted, switch to mobile phones during period of cable repair. Complete restoration works. Work in conjunction with Metropolitan Coal to investigate root cause of incident and determine appropriate future control measures.

Table 10
Trigger Action Response Plan – Telecommunication Tower and Compound

Performance Measure	Performance Indicator	Monitoring Site(s)	Parameters	Frequency/ Sample Size	Analysis Methodology	Error Types	Baseline	Significance Levels/ Triggers		Action/Response
Safe, serviceable and repairable	The safety serviceability of the communication tower and building compound is maintained.	Physical inspection of the communication tower and buildings.	Direct signs of impact.	Within 3 months after completion of each longwall.	Visual inspection during RFMS monitoring LW305 at start, mid and completion of LW305.	Subsidence measurement accuracy.	Pre-mining audit conducted prior to commencement of LW 305.	Level 1	Negligible signs of impact to tower and buildings. At end of LW307 Subsidence < 225 mm Tensile strain < 0.9 mm/m Compressive strain < 1.6 mm/m Tilt < 2.0 mm/m (0.11 deg) (i.e. measured subsidence parameters generally in accordance with predicted).	Continue monitoring.
								Level 2	Negligible signs of impact to tower and buildings. Tilt between 0.11 and 1 degree. (or between 2.0mm/m and 17.4mm/m), i.e. above prediction but below Telstra criteria of 1 degree. Subsidence effects up to 15% greater than predicted. e.g. Subsidence between 225 and 258 mm.	Implement actions in accordance with the Telstra Management Plan Agreement (Appendix 1). Metropolitan Report subsidence anomaly. Immediately resurvey subsidence line to confirm results. Engage subsidence expert to assess results. Confirm results are consistent with other subsidence monitoring. Compare and critically analyse measured versus predicted subsidence. Inform and provide report to Telstra of subsidence results. Collaboratively share information with Telstra to monitor situation.
								Level 3	Indication of subsidence impact to tower or buildings. Tilt > 1.0 deg. (>17.4mm/m) Subsidence effects > 15% predicted. E.g. Subsidence > 258 mm Anomalous service condition detected. Complaint (verified).	Metropolitan Increase frequency of subsidence surveys to weekly. Work in conjunction with Telstra to resolve. Review the subsidence monitoring program and update the program where appropriate. Provide report on issue to both Telstra and DPIE. Telstra In conjunction with Metropolitan Coal install temporary guy wires for tower in response to tilt. Make determination if necessary to realign antenna on tower.
								Level 4	Fault occurs with tower or compound rendering facility unserviceable	Implement Contingency Plan as per BFMP Section 9. Metropolitan General Manager to be involved in all decision making processes. Assess public safety implications and where appropriate implement safety measures in accordance with Metropolitan Coal Longwalls 305-307 Public Safety Management Plan. Report exceedance of the performance measure or indicators to the DPIE as soon as practicable. Update the 'Built Features Management Plan – Subsidence Impact Register'. Telstra Telstra to enact automatic partial redundancy and use alternate phone towers nearby to share load. Determine appropriate course of action for restoration of service (e.g. deploy temporary tower as per special event infrastructure) and rebuilding (e.g. construct new tower and foundations). Complete restoration/rebuilding works. Work in conjunction with Metropolitan Coal to investigate root cause of incident and determine appropriate future control measures.

11 FUTURE EXTRACTION PLANS

In accordance with Condition 7 of Schedule 3, Metropolitan Coal will collect baseline data for the next Extraction Plan (i.e. Longwalls 308 on). The collection of baseline data will be consistent with the baseline data collected for Longwalls 301-307. Specifically, baseline data obtained will include pre-mining inspection of the telecommunications lines, tower and/or compound.

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 BFMP-TELSTRA will inform the appropriate type and frequency of monitoring of the assets relevant to the next Extraction Plan.

12 ANNUAL REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

In accordance with Condition 3, Schedule 7 of the Project Approval, Metropolitan Coal will conduct an Annual Review of the environmental performance of the Project by the end of March each year.

The Annual Review will:

- describe the works carried out in the past year, and the works proposed to be carried out over the next year;
- include a comprehensive review of the monitoring results and complaints records of the Project over the past 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, Preferred Project Report and Extraction Plan;
- 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.

As described in Section 2, this BFMP-TELSTRA will be reviewed within three months of the submission of an Annual Review, and revised where appropriate.

13 INCIDENTS

An incident is defined 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 the Project Approval.

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The reporting of incidents will be conducted in accordance with Condition 6, Schedule 7 of the Project Approval. Metropolitan Coal will notify the Secretary of DPIE and any other relevant agencies of any incident associated with the Project as soon as practicable after Metropolitan Coal becomes aware of the incident. Within seven days of the date of the incident, Metropolitan Coal will provide the Secretary of DPIE and any relevant agencies with a detailed report on the incident.

Telstra will be notified within 24 hours of any access limitations or restrictions.

14 COMPLAINTS

A protocol for the managing and reporting of complaints has been developed as a component of Metropolitan Coal’s Environmental Management Strategy and is described below.

The Environment & Community Superintendent is responsible for maintaining a system for recording complaints.

Metropolitan Coal will maintain public signage advertising the telephone number on which environmental complaints can be made. The Environment & Community Superintendent is responsible for ensuring that the currency and effectiveness of the service is maintained. Notifications of complaints received are to be provided as quickly as practicable to the Environment & Community Superintendent.

Complaints and enquiries do not have to be received via the telephone line and may be received in any other form. Any complaint or enquiry relating to environmental management or performance is to be relayed to the Environment & Community Superintendent as soon as practicable. All employees are responsible for ensuring the prompt relaying of complaints. All complaints will be recorded in a complaints register.

For each complaint, the following information will be recorded in the complaints register:

- date and time of complaint;
- method by which the complaint was made;
- personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- nature of the complaint;
- the action(s) taken by Metropolitan Coal in relation to the complaint, including any follow-up contact with the complainant; and
- if no action was taken by Metropolitan Coal, the reason why no action was taken.

The Environment & Community Superintendent is responsible for ensuring that all complaints are appropriately investigated, actioned and that information is fed back to the complainant, unless requested to the contrary.

In accordance with Condition 10, Schedule 7 of the Project Approval, the complaints register will be made publicly available on the website and updated on a monthly basis. A summary of complaints received and actions taken will be presented to the Community Consultative Committee as part of the operational performance review.

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15 NON-COMPLIANCE WITH STATUTORY REQUIREMENTS

A protocol for the managing and reporting of non-compliances with statutory requirements has been developed as a component of Metropolitan Coal'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 Metropolitan Coal, and will be developed through promotion of Metropolitan Coal ownership under the direction of the General Manager.

The Technical Services Manager and/or Environment & Community Superintendent 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 13, Metropolitan Coal will notify the Secretary of the DPIE and any other relevant agencies of any incident associated with Metropolitan Coal as soon as practicable after Metropolitan Coal becomes aware of the incident. Within seven days of the date of the incident, Metropolitan Coal will provide the Secretary of the DPIE and any relevant agencies with a detailed report on the incident.

A review of Metropolitan Coal's compliance with all conditions of the Project Approval, 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 Peabody website.

Additionally, in accordance with Condition 8, Schedule 7 of the Project Approval, an independent environmental audit was undertaken by the end of December 2011, and is undertaken a minimum of once 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 Peabody website. The independent audit will be undertaken by an appropriately qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary of the DPIE.

16 REFERENCES

Department of Planning & Environment and Division of Resources and Energy (2014) *Guidelines for the Preparation of Extraction Plans*. Draft.

Helensburgh Coal Pty Ltd [HCPL] (2008) *Metropolitan Coal Project Environmental Assessment*.

Helensburgh Coal Pty Ltd [HCPL] (2009) *Metropolitan Coal Project Preferred Project Report*.

Mine Subsidence Engineering Consultants (2008) *Subsidence Assessment Report on the Prediction of Subsidence Parameters and the Assessment of Mine Subsidence Impacts on Natural Features and Surface Infrastructure Resulting from the Proposed Extraction of Longwalls 20 to 44 at Metropolitan Colliery in Support of a Part 3A Application*.

Mine Subsidence Engineering Consultants (2019) *Metropolitan Colliery – Proposed Longwalls 305 to 307 - Subsidence Predictions and Impact Assessments for the Telstra Infrastructure*.

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APPENDIX 1

TELSTRA MANAGEMENT PLAN AGREEMENT (2019)

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APPENDIX 2

MSEC (2019) METROPOLITAN COLLIERY – PROPOSED LONGWALLS 305 TO 307 -
SUBSIDENCE PREDICTIONS AND IMPACT ASSESSMENTS FOR THE TELSTRA
INFRASTRUCTURE

Metropolitan Coal – LW305-307 Built Features Management Plan – Telstra		
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24th July 2019

Jon Degotardi
Peabody Energy Australia
Metropolitan Colliery
PO Box 402
Helensburgh NSW 2508

Ref: MSEC1059-04

Dear Jon,

RE: Metropolitan Colliery – Proposed Longwalls 305 to 307 - Subsidence Predictions and Impact Assessments for the Telstra Infrastructure

This letter report summarises the predicted subsidence movements and the assessed subsidence impacts for the Telstra infrastructure resulting from the extraction of the proposed Longwalls 305 to 307 at Metropolitan Colliery.

The locations of the Telstra infrastructure and the proposed and existing longwalls are shown in the attached Drawing No. MSEC1059-04.

A Study Area is also shown in Drawing No. MSEC1059-04 and is based on the outer limits of a 35° angle of draw line from Longwalls 305 to 307 and the predicted 20mm subsidence contour for Longwalls 305 to 307. There are two optical fibre cables shown in Drawing No. MSEC1059-04. Telstra optical fibre Cable 1 is located outside the eastern boundary of the Study Area and extends to the north and south in a similar orientation to Longwalls 305 to 307. Cable 1 is over 760 m from Longwall 305. Telstra optical fibre Cable 2 is located in the north east of the Study Area and extends north from the commencing end of Longwall 303. Cable 2 is 320 m from Longwall 305. Copper telecommunications cables owned by Telstra are also located above Longwall 304 and to the north of Longwalls 302 and 303 and these cables service the Garrawarra Complex.

A telecommunications tower and compound are located within the Study Area, to the east of Longwall 305. The tower is located approximately 400 m to the east of Longwall 305. Photographs of this installation are provided in Figure 1.



Figure 1 Telecommunications Tower and Compound

Predictions of Conventional Subsidence Parameters

The following provides summaries of the maximum predicted conventional movements for the Telstra infrastructure following the extraction of LW304 and after the extraction of LW305 to 307. It is possible that localised and elevated movements could develop as the result of non-conventional ground movements due to geological structures or valley closure effects. Discussions on the potential for non-conventional movements are provided in this letter report.

The optical fibre cable located to the south and east of the Study Area is referred to as *Cable 1* and the optical fibre cable located in the north-eastern part of the Study Area is referred to as *Cable 2* in this letter report.

Cable 1 is located outside the Study Area and is approximately 760 m to the east of Longwall 305 at its nearest point. At this distance, Cable 1 is not expected to experience measurable conventional vertical subsidence, tilts or curvatures due to the extraction of Longwalls 305 to 307. The cable could experience low level far-field horizontal movement. The far-field horizontal movements are expected to be similar to those observed for previous longwall mining in the Southern Coalfield, which tend to be bodily movements towards the extracted goaf area and are accompanied by very low levels of strain. It is unlikely that Cable 1 would experience adverse impacts as a result of Longwall 305 to 307.

The predicted profiles of total conventional subsidence, tilt and curvature along the alignment of Telstra optical fibre Cable 2, following the extraction of Longwall 304 and after extraction of Longwall 305 to 307, are shown in the attached Fig. A.01. The predicted incremental profiles for the cable, due to the extraction of Longwall 305 to 307, are shown as dashed black lines. The solid blue lines represent the total or accumulated movements after the completion of each longwall. The range of predicted curvatures in any direction at any time during or after the extraction of the longwalls is shown by the grey shading.

Summaries of the maximum predicted values of total subsidence, tilt and curvature for Cable 2, following the extraction of Longwall 304 and after extraction of Longwall 305 to 307, are provided in Table 1. The curvature values are the maxima anywhere along the cable at any time during or after the extraction of the longwalls.

Table 1 Maximum Predicted Total Subsidence, Tilt and Curvature for the Telstra Optical Fibre Cable 2 after the Extraction of Longwalls 303 and 304

Longwall	Maximum Predicted Total Subsidence (mm)	Maximum Predicted Total Tilt (mm/m)	Maximum Predicted Total Hogging Curvature (km ⁻¹)	Maximum Predicted Total Sagging Curvature (km ⁻¹)
After LW304	300	2.5	0.02	< 0.01
After LW305	350	2.5	0.02	< 0.01
After LW306	350	2.5	0.02	< 0.01
After LW307	350	2.5	0.02	< 0.01

It can be seen from Table 1 that the predicted total subsidence within the Study Area Boundary increases by 50 mm following the extraction of Longwall 305. The maximum predicted total tilt and curvatures do not increase as a result of the extraction of Longwalls 305 to 307.

The copper telecommunications cables are located above the northern end of Longwall 304. A summary of the maximum predicted values of total subsidence, tilt and curvature for these copper cables, following the extraction of Longwall 303 and after extraction of Longwall 304, is provided in Table 2.

Table 2 Maximum Predicted Total Subsidence, Tilt and Curvature for the Telstra Copper Cables after the Extraction of Longwalls 304 to 307

Longwall	Maximum Predicted Total Subsidence (mm)	Maximum Predicted Total Tilt (mm/m)	Maximum Predicted Total Hogging Curvature (km ⁻¹)	Maximum Predicted Total Sagging Curvature (km ⁻¹)
After LW304	400	3.5	0.03	0.03
After LW305	525	4.0	0.03	0.03
After LW306	525	4.0	0.03	0.03
After LW307	550	4.0	0.03	0.03

The maximum predicted conventional tilt for the copper cables is 4.0 mm/m (i.e. 0.4 %, or 1 in 250). The maximum predicted conventional curvatures are 0.03 km⁻¹ hogging and sagging, which equate to minimum radii of curvature of 33 kilometres.

The telecommunications tower and compound are located within the Study Area but not directly above the proposed Longwalls 305 to 307. A summary of the maximum predicted values of total subsidence, tilt and curvature for this installation, following the extraction of Longwall 304 and after extraction of Longwalls 305 to 307, is provided in Table 3.

Table 3 Maximum Predicted Total Subsidence, Tilt and Curvature for the Telecommunications Tower and Compound after the Extraction of Longwalls 304 to 307

Longwall	Maximum Predicted Total Subsidence (mm)	Maximum Predicted Total Tilt (mm/m)	Maximum Predicted Total Hogging Curvature (km ⁻¹)	Maximum Predicted Total Sagging Curvature (km ⁻¹)
After LW304	175	2.0	0.02	< 0.01
After LW305	225	2.0	0.02	< 0.01
After LW306	225	2.0	0.02	< 0.01
After LW307	225	2.0	0.02	< 0.01

The maximum predicted conventional tilt for the telecommunications tower and compound is 2.0 mm/m (i.e. 0.2 %, or 1 in 500). The maximum predicted conventional curvatures are 0.02 km⁻¹ hogging and < 0.01 km⁻¹ sagging, which equate to minimum radii of curvature of 50 kilometres and greater than 100 kilometres, respectively.

Predicted Strains

The prediction of strain is more difficult than the predictions of subsidence and tilt. The reason for this is that strain is affected by many factors, including ground curvature and horizontal movement, as well as local variations in the near surface geology, the locations of pre-existing natural joints at bedrock and the depth of bedrock. Survey tolerance can also represent a substantial portion of the measured strain, in cases where the strains are of a low order of magnitude. The profiles of observed strain, therefore, can be irregular even when the profiles of observed subsidence, tilt and curvature are relatively smooth.

In previous MSEC subsidence reports, predictions of conventional strain were provided based on the best estimate of the average relationship between curvature and strain. Similar relationships have been proposed by other authors. The reliability of the strain predictions was highlighted in these reports, where it was stated that measured strains can vary considerably from the predicted conventional values.

Adopting a linear relationship between curvature and strain provides a reasonable prediction for the conventional tensile and compressive strains. In the Southern Coalfield, it has been found that a factor of 15 provides a reasonable relationship between the predicted maximum curvatures and the predicted maximum conventional strains. The locations that are predicted to experience hogging or convex curvature are expected to be net tensile strain zones and locations that are predicted to experience sagging or concave curvature are expected to be net compressive strain zones.

At a point however, there can be considerable variation from the linear relationship, resulting from non-conventional movements or from the normal scatters which are observed in strain profiles. When expressed as a percentage, observed strains can be many times greater than the predicted conventional strain for low magnitudes of curvature. We have therefore provided a statistical approach to account for the variability, instead of just providing a single predicted conventional strain.

The range of predicted strains for the Telstra infrastructure has been determined using the monitoring data from Metropolitan Colliery and other nearby collieries. The data used in the analysis of observed strains included those resulting from both conventional and non-conventional anomalous movements, but did not include those resulting from valley related movements. The strains resulting from damaged or disturbed survey marks have also been excluded.

The Telstra infrastructure is partially located above the proposed Longwall 304 and Longwall 303.

A histogram of the maximum tensile and compressive strains measured in survey bays located above previously extracted longwalls in the Southern Coalfield is provided in Figure 2. The probability distribution functions, based on a fitted *Generalised Pareto Distribution (GPD)*, have also been shown in this figure.

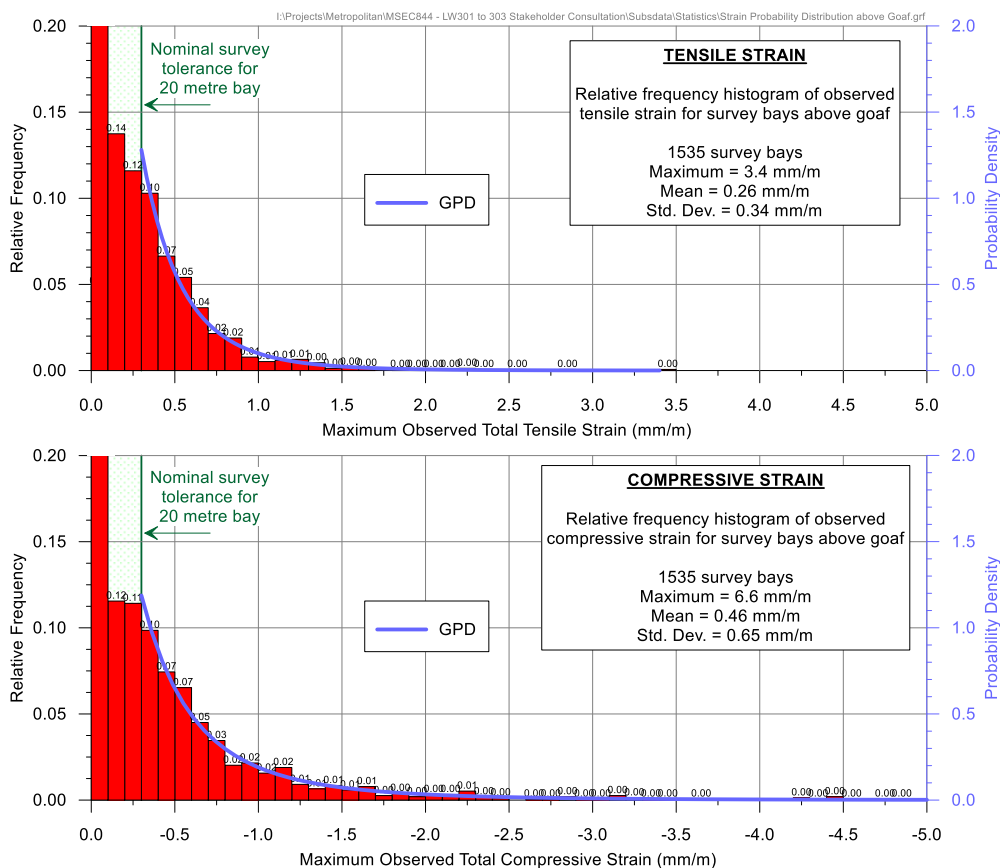


Figure 2 Distributions of the Measured Maximum Tensile and Compressive Strains during the Extraction of Previous Longwalls in the Southern Coalfield Above Goaf

Confidence intervals have been determined from the empirical strain data using the fitted GPDs. In the cases where survey bays were measured multiple times during a longwall extraction, the maximum tensile strain and the maximum compressive strain were used in the analysis (i.e. single tensile strain and single compressive strain measurement per survey bay).

A summary of the probabilities of exceedance for tensile and compressive strains for survey bays located above goaf, based on the fitted GPDs, is provided in Table 4.

Table 4 Probabilities of Exceedance for Strain for Survey Bays Located above Goaf

	Strain (mm/m)	Probability of Exceedance
Compression	-8.0	1 in 1,300
	-6.0	1 in 570
	-4.0	1 in 185
	-2.0	1 in 35
	-1.0	1 in 9
	-0.5	1 in 3
	-0.3	1 in 2
Tension	+0.3	1 in 3
	+0.5	1 in 6
	+1.0	1 in 30
	+2.0	1 in 300
	+3.0	1 in 1,800

The 95 % confidence intervals for the maximum total strains that the individual survey bays above goaf experienced at any time during mining are 0.9 mm/m tensile and 1.6 mm/m compressive. The 99 % confidence intervals for the maximum total strains that the individual survey bays above goaf experienced at any time during mining are 1.5 mm/m tensile and 3.2 mm/m compressive. The likelihood of significant ground strain developing at the infrastructure located above solid coal would reduce from these values with increasing distance from the longwalls. The predicted strains for assessments of features located above solid coal and within 100 of longwall panels are 0.5 mm/m tensile and 0.4 mm/m compressive based on the 95% confidence level.

Potential for Non-Conventional Movements

Non-conventional movements can develop due to the presence of geological structures or valley related effects. In some cases, non-conventional movements can develop with no known cause and these are often referred to as 'anomalous' movements.

The locations of the known geological structures at seam level and the major streams are shown in Drawing No. MSEC1059-04. There are no mapped faults located within the Study Area that extend beneath the Telstra infrastructure. It is possible that the infrastructure located above the longwalls could experience localised and elevated strains due to unknown geological structures (i.e. anomalies). Non-conventional or anomalous movements have not been identified during the extraction of Longwalls 301 to 303. The range of strains provided in the previous section include those resulting from irregular anomalous movements.

The optical fibre cables do not cross any major streams within the Study Area. These cables, therefore, are not expected to experience any measurable valley closure effects.

Impact Assessments for the Optical Fibre Cables

The optical fibre Cable 2 within the Study Area is conservatively assumed to be direct buried and will not be impacted by the tilts resulting from the extraction of Longwalls 305 to 307. The cable is likely to experience minor vertical subsidence and horizontal movements resulting from the extraction of Longwalls 305 to 307. The predicted tilt and curvatures at the cables do not change as a result of the extraction of Longwalls 305 to 307. The optical fibre cables are unlikely to experience adverse impacts as a result of conventional subsidence movements.

The tensile strains in the optical fibre cables can be higher, however, where the cables connect to the support structures, which may act as anchor points, preventing any differential movements that may have been allowed to occur within the ground. Tree roots have also been known to anchor cables to the ground. The extent to which the anchor points affect the ability of the cable to tolerate the mine subsidence movements depends on the cable size, type, age, installation method and ground conditions.

In addition to this, optical fibre cables contain additional fibre lengths over the sheath lengths, where the individual fibres are loosely contained within tubes. Compression of the sheaths can transfer to the loose tubes and fibres

and result in 'micro-bending' of the fibres constrained within the tubes, leading to higher attenuation of the transmitted signal. If the maximum predicted compressive strains were to be fully transferred into the optical fibre cables, they could be of sufficient magnitude to result in the reduction in capacities of the cables or transmission loss.

Localised and elevated curvatures could develop along the optical fibre cables due to non-conventional movements resulting from near surface geological structures (i.e. anomalies). It is possible that these non-conventional movements could be sufficient to result in the attenuation of signal.

Comprehensive monitoring of subsidence movements has been undertaken during the extraction of LW301 to 303 with magnitudes of observed differential movements consistent with predictions and no observed anomalous movements encountered. It is therefore considered unlikely that non-conventional movements would be observed at the Telstra optical fibre cable during the extraction of LW305 to 307.

Strains transferred into the Telstra optical fibre cables can be monitored using Optical Time Domain Reflectometry (OTDR). The ground movements can also be monitored using traditional survey lines and visual inspections. These monitoring methods can be used to identify the development of irregular ground movements. If non-conventional movements or signal attenuation are detected during active subsidence, then the cable can be relieved by locally exposing and then reburying the affected section of cable.

It is recommended that monitoring and management strategies developed for the extraction of Longwalls 301 to 303 are revised and continued, in consultation with Telstra, to manage the optical fibre cables for potential non-conventional ground movements. Given the increasing distance of the longwall extraction from the optical fibre cables, it is considered that monitoring developed for the extraction of Longwalls 301 to 304 could be relaxed for the extraction of future longwalls from LW305 onwards. Consideration could be given to reducing the frequency of ground survey monitoring to monthly during the extraction of Longwall 305 then to end of panel survey for Longwalls 306 and 307 after confirmation that no significant subsidence movements or impacts were observed during Longwall 305.

Impact Assessments for the Copper Telecommunications Cables

The copper telecommunications cables within the Study Area include both buried and aerial cables. The buried cables can be affected by curvatures and ground strains and the aerial cables can be affected by the changes in cable catenaries. Copper telecommunications cables are flexible and it has been found that these types of cables can typically tolerate strains up to 20 mm/m without adverse impacts.

Extensive experience of mining beneath copper telecommunications cables in the NSW Coalfields, where the observed strains were similar or greater than those predicted for the longwalls, indicates that incidences of impacts is very low and generally of a minor nature. Some remedial measures have been required, which include adjustments to cable catenaries, pole tilts and consumer cables which connect between the poles and building structures. The incidence of these impacts, however, was very low.

It is unlikely that the copper telecommunications cables would experience adverse impacts as a result of the extraction of Longwalls 305 to 307.

Impact Assessments for the Telecommunications Tower

The telecommunications tower and compound are located to the east of Longwall 305. The maximum predicted tilt for this installation is 2.0 mm/m (i.e. 0.2 %, or 1 in 500). The maximum predicted conventional curvatures are 0.02 km⁻¹ hogging and < 0.01 km⁻¹ sagging, which equate to minimum radii of curvature of 50 kilometres and greater than 100 kilometres, respectively. The predicted tilt and curvatures after the extraction of Longwall 304 do not change for the extraction of Longwalls 305 to 307, therefore the tower and compound are unlikely to experience measurable increases in tilt and curvature due conventional movements resulting from the extraction of Longwalls 305 to 307.

Tilt of the telecommunications tower was monitored during the extraction of Longwalls 301 to 303 with a maximum observed tilt of 1.2 mm/m and a tilt of 0.7 mm/m at the completion of Longwall 303, which were consistent with predictions. Observed ground strain was generally within the limits of survey accuracy of ±0.5mm/m. Non-conventional subsidence movements were not observed during the extraction of Longwalls 301 to 303. Based on these results the likelihood of non-conventional movements occurring as a result of the extraction of Longwalls 305 to 307 is considered to be very low.

It is recommended that monitoring and management strategies developed for the extraction of Longwalls 301 to 303 are revised and continued, in consultation with Telstra, to manage the tower and compound for potential non-conventional ground movements. Given the increasing distance of the longwall extraction from the optical fibre cables, it is considered that monitoring developed for the extraction of Longwalls 301 to 304 could be relaxed for the extraction of future longwalls from LW305 onwards. Consideration could be given to reducing the frequency of ground survey monitoring to monthly during the extraction of Longwall 305 then to end of panel survey for Longwalls 306 and 307 after confirmation that no significant subsidence movements or impacts were observed during Longwall 305.

Summary

The Telstra copper telecommunications cables are located above the northern end of Longwall 304. It is unlikely that these copper cables would experience adverse impacts as a result of Longwall 304.

The Telstra optical fibre cables are located to the south and east of the Study Area (Cable 1) and in the north-eastern part of the Study Area (Cable 2) but not directly above the proposed Longwalls 305 to 307. A telecommunications tower and compound are located to the east of Longwall 305 and to the north of Longwall 303.

It is possible that the Telstra infrastructure could experience localised and elevated strains due to the presence of geological structures (known or unknown). Non-conventional subsidence movements have not been observed during the extraction of Longwalls 301 to 303 and the likelihood of non-conventional subsidence movements at the Telstra infrastructure cables due to Longwalls 305 to 307 is considered to be very low.

Based on monitoring data observed during Longwalls 301 to 303 and the increased distance to the optical fibre cables and telecommunications tower and compound, a revision of the monitoring and management strategies is recommended in consultation with Telstra with a view to reducing the frequency of monitoring. It is expected that the potential impacts on the Telstra infrastructure can be managed with the implementation of the appropriate monitoring and management strategies.

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

Yours sincerely



Peter DeBono

Attachments:

Drawing No. MSEC1059-04 – Longwalls 305 to 307 – Telstra Infrastructure

Fig. A.1 Predicted Profiles of Conventional Subsidence, Tilt and Curvature for the Telstra Optical Fibre Cable (2) after LW304 to 307



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METROPOLITAN COLLIERY
LONGWALL 305
TELSTRA INFRASTRUCTURE

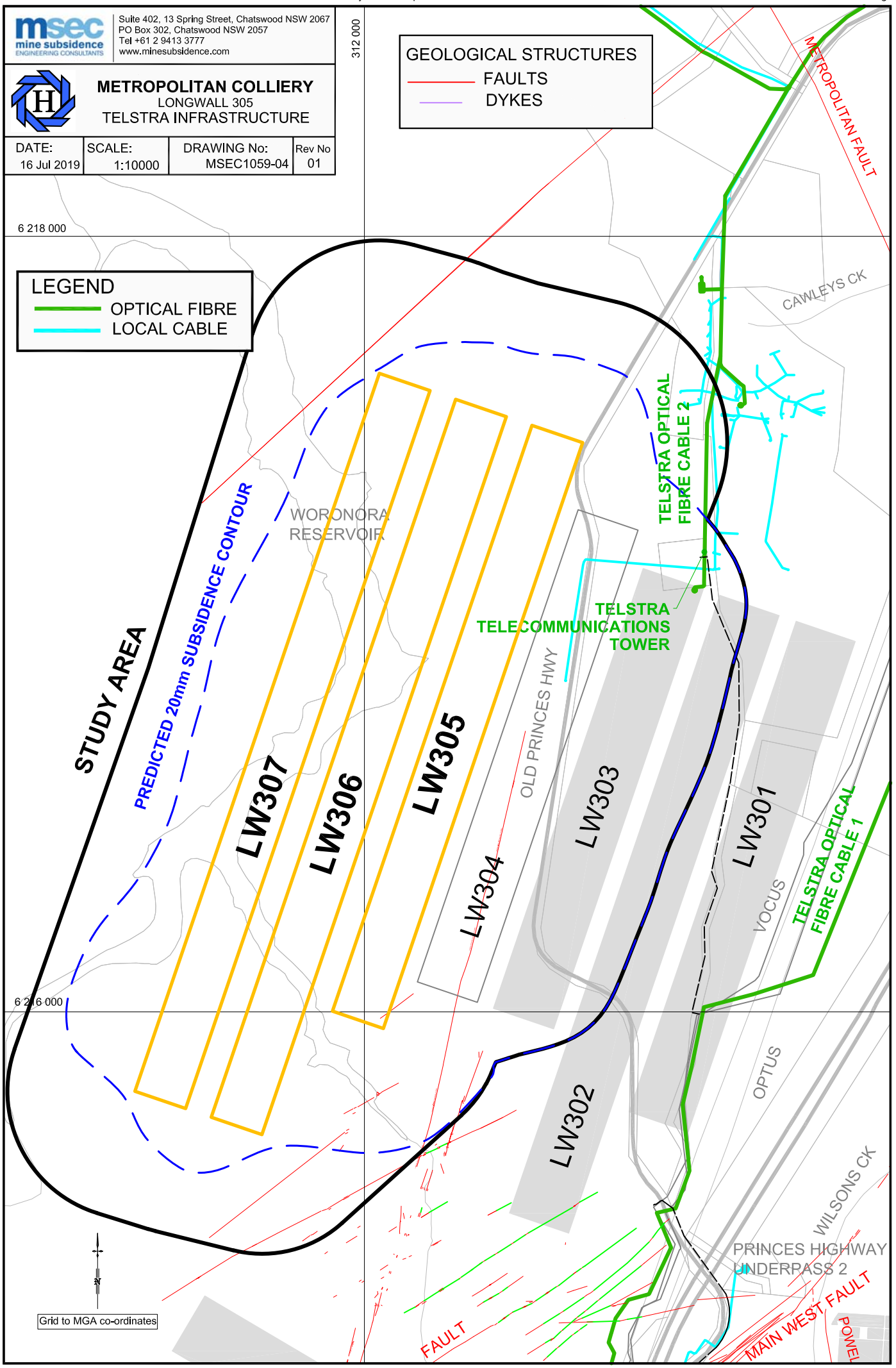
DATE: 16 Jul 2019	SCALE: 1:10000	DRAWING No: MSEC1059-04	Rev No 01
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GEOLOGICAL STRUCTURES

- FAULTS
- DYKES

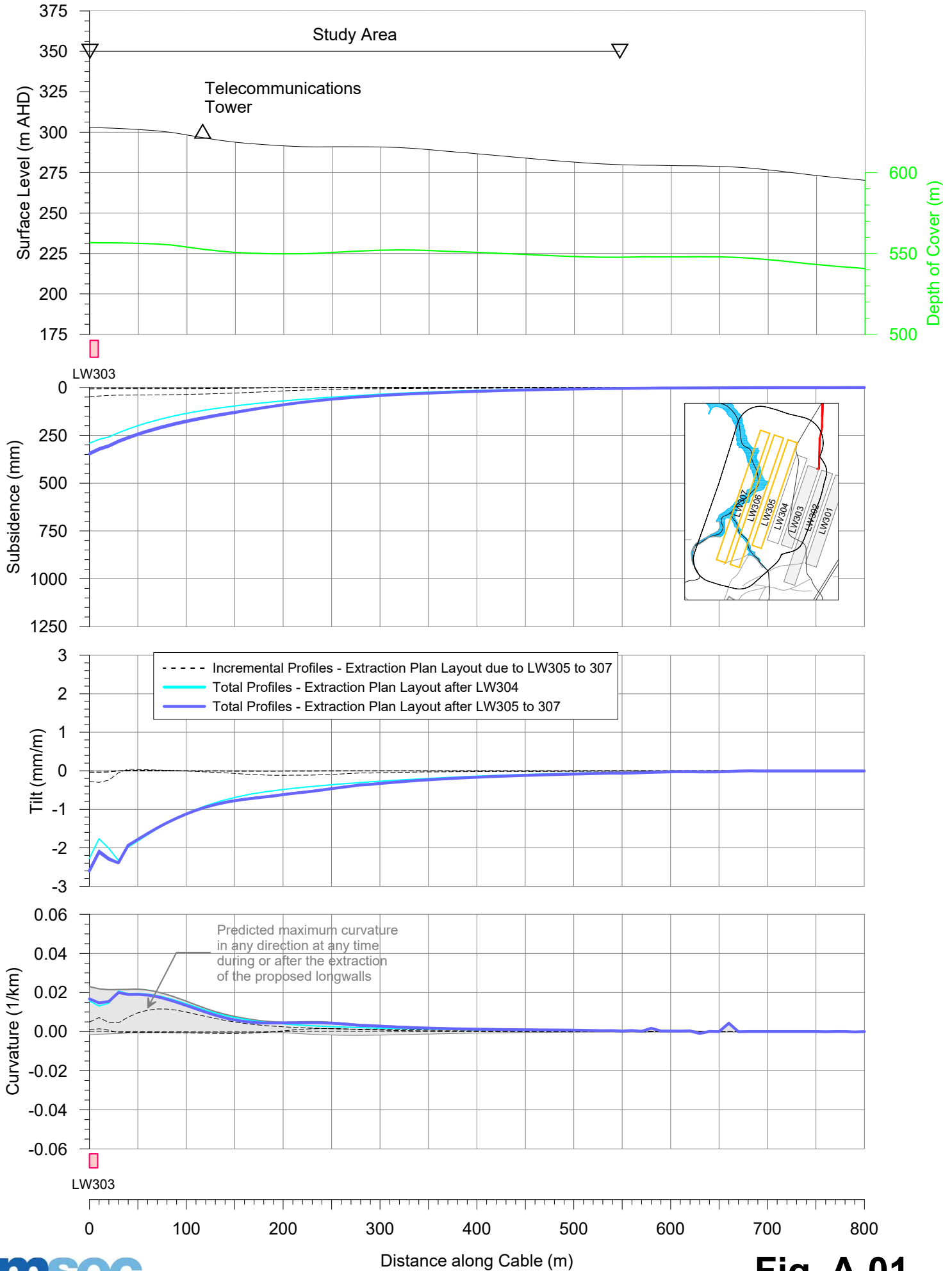
LEGEND

- OPTICAL FIBRE
- LOCAL CABLE



Grid to MGA co-ordinates

Predicted Profiles of Conventional Subsidence, Tilt and Curvature along the Telstra Optical Fibre Cable due to LW305 to 307



APPENDIX 3

BUILT FEATURES MANAGEMENT PLAN – SUBSIDENCE IMPACT REGISTER

Metropolitan Coal – LW305-307 Built Features Management Plan – Telstra		
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**Built Feature Management Plan – Subsidence Impact Register
Assessment Form**

Date:

Observer (Name and position):

Register Number (i.e. Number 1, 2, etc.):

Longwall Number and Chainage:

Location of Observed Impact:
(Examples: location of cable line, include GPS co-ordinates and a sketch)

Description of Observed Impact:
(Examples: nature and extent of impact - cracks in road etc any relevant information, attach photographs)

Person Notified: Manager - Technical Services

Description of Photographs:

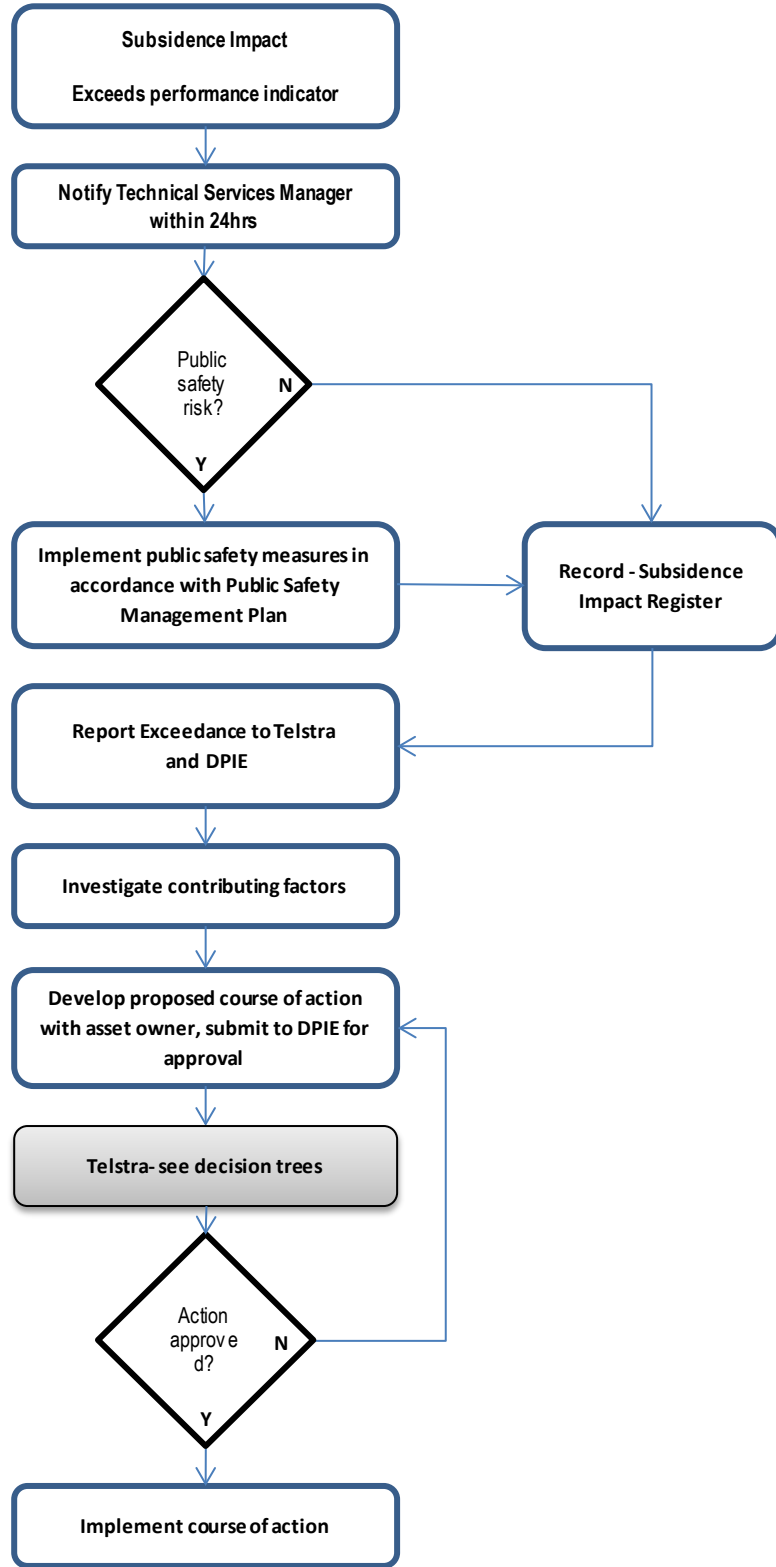
Actions Required:	Contingency Plan Initiated	<input type="checkbox"/>	
	Incident Notification	<input type="checkbox"/>	
	Safety		Measures/Public
	Management Plan Requirements	<input type="checkbox"/>	Safety

Management or Contingency Measures Implemented:

Effectiveness of Management or Contingency Measures:

APPENDIX 4

CONTINGENCY PLAN PROCEDURE AND DECISION TREE



Metropolitan Coal – LW305-307 Built Features Management Plan – Telstra		
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