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BUILT FEATURES MANAGEMENT PLAN – TAHMOOR SOUTH DOMAIN – LONGWALLS SOUTH 1A – SOUTH 7A

Tahmoor Coal



Document Control

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MSEC1192-11	Roads and associated infrastructure	C
MSEC1192-12	Water infrastructure	C
MSEC1192-13	Sewer infrastructure	C
MSEC1192-14	Gas infrastructure	C
MSEC1192-15	Electrical infrastructure	C
MSEC1192-16	Telecommunications infrastructure	C
MSEC1192-17	Archaeological and heritage sites	C
MSEC1192-18	Building structures and dams	C
MSEC1192-19	Public amenities and commercial establishments	C
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1 Introduction

1.1 Background

Tahmoor Coal Pty Ltd (Tahmoor Coal) owns and operates the Tahmoor Mine, an existing underground coal mine located approximately 80 kilometres (km) south-west of Sydney in the Southern Coalfields of New South Wales (NSW). Tahmoor Mine surface facilities are situated between the towns of Tahmoor and Bargo within the Wollondilly Local Government Area (LGA). The mine has previously extracted longwalls to the north and west of the surface facilities and has been operating continuously since 1979 when coal was first mined using bord and pillar mining methods, followed by longwall mining methods since 1987.

The location of Tahmoor Mine in the regional context is shown in **Figure 1.**

Tahmoor Mine produces a primary hard coking coal product and a secondary higher ash coking coal product that are used predominantly for coke manufacture for steel production. Extracted coal is processed on site at the coal handling and preparation plant (CHPP) and coal clearance facilities prior to transportation via rail to Port Kembla and Newcastle for Australian domestic and export customers.

An Environmental Impact Statement (EIS) was exhibited in early 2019 to gain approval for the Tahmoor South Coal Project, which involves use of the existing surface infrastructure and the expansion of underground longwall mining to the south of the existing workings (referred to as the Tahmoor South Domain). Tahmoor Coal subsequently revised the proposed mine design and submitted amended development applications on two occasions (in February and August 2020). In April 2021, Tahmoor Coal received Development Application Approval (SSD 8445) for the extraction of up to 4 Mtpa of ROM coal, with a total of up to around 35 Mt of ROM coal proposed to be extracted over a 10-year period.

The Tahmoor South Domain is located south of the Bargo River and east of Remembrance Driveway and the township of Bargo. Longwall mining would be used to extract coal from the Bulli coal seam within the bounds of Consolidated Coal Lease (CCL) 716 and CCL 747. Thirteen longwalls are proposed in this domain which are divided into a series of seven northern (A series) and six southern (B series) longwalls. The A series, Longwalls South 1A to South 7A (LW S1A-S7A), are the focus of the current Extraction Plan.

The location of LW S1A-S7A and associated Study Area are illustrated in **Figure 2.**

1.2 Purpose

This Built Features Management Plan (BFMP) has been prepared to support an Extraction Plan for the secondary extraction of coal from LW S1A-S7A. The BFMP is required to be included with the Extraction Plan in accordance with Development Consent (SDD 8445) (the Consent) Condition C8.

The Built Features Management Plan has been prepared to manage potential subsidence impacts of the proposed LW S1A-S7A on built features. The purpose of this management plan is to provide a framework for Tahmoor Coal personnel to ensure that built features remain safe, serviceable and fully repairable before, during and after the extraction of LW S1A-S7A.

1.3 Scope

The Study Area applicable to this management plan consists of a combination of the predicted 20 millimetre (mm) Total Subsidence Contour and the 35° Angle of Draw Line as shown in **Figure 2**. The Study Area also includes built features that could experience far-field or valley-related movements and could be sensitive to such movements.

1.4 Preparation of this Management Plan

This BFMP has been prepared by Mine Subsidence Engineering Consultants (MSEC) on behalf of Tahmoor Coal. Daryl Kay (Subsidence Specialist) has been endorsed by the Department of Planning, Industry and Environment (DPIE, previously the Department of Planning and Environment (DPE), now NSW Department of Planning, Housing and Infrastructure (DPHI)) as a suitably qualified subsidence engineer to prepare this management plan.

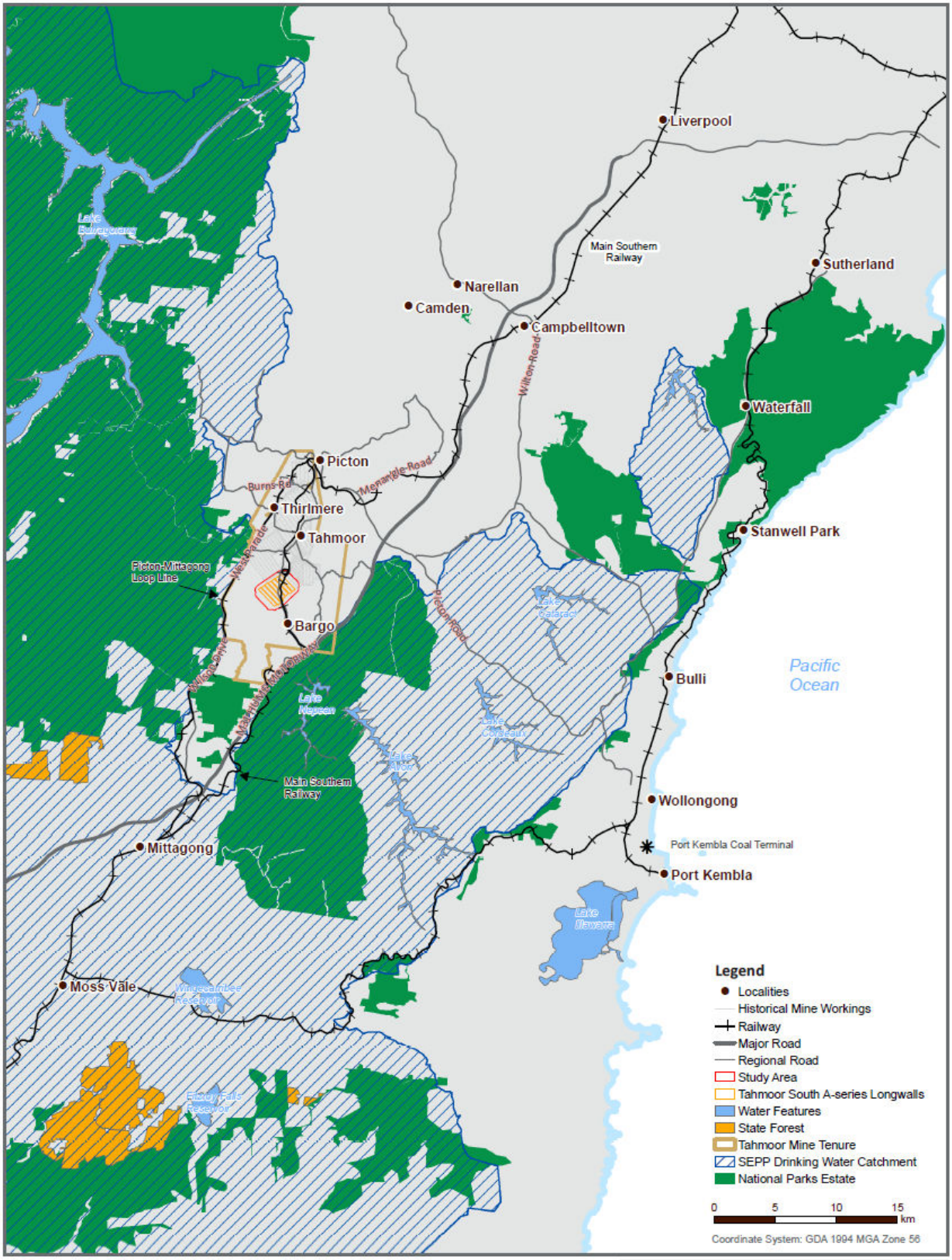
1.5 Plan and Structure

This management plan:

- Addresses specific requirements set by Development Consent SSD 8445, EIS Commitments, Leases, Licences, and regulatory requirements (refer to **Section 2**);
- Addresses comments received during stakeholder consultation (refer to **Section 0**);
- Outlines the management strategies for potential subsidence-related impacts to built features (refer to **Section 3**);
- Outlines the strategies for implementation, reporting, and review of this document (refer to **Section 7**);
- Provides document information (refer to **Section 8**); and
- Provides Trigger Action Response Plans (TARPs) to be implemented to manage and protect built features within the Study Area (refer to **Section 6**).

This management plan has been prepared based on the contents of the following technical reports:

- LW S1A-S7A Water Management Plan (TAH-HSEC-00361);
- LW S1A-S7A Land Management Plan (TAH-HSEC-00362);
- LW S1A-S7A Heritage Management Plan (TAH-HSEC-00364);
- LW S1A-S6A Subsidence Predictions and Impact Assessments Report (MSEC, 2022); and
- Tahmoor Coal – Modification 3 – Longwall South 7A Subsidence Predictions and Impact Assessments Report (MSEC, 2024).



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REGIONAL CONTEXT

Tahmoor South Domain Longwalls S1A to S7A

Tahmoor Coal

Data Sources:
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Date: 10/04/2025

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Figure 1 Regional Context

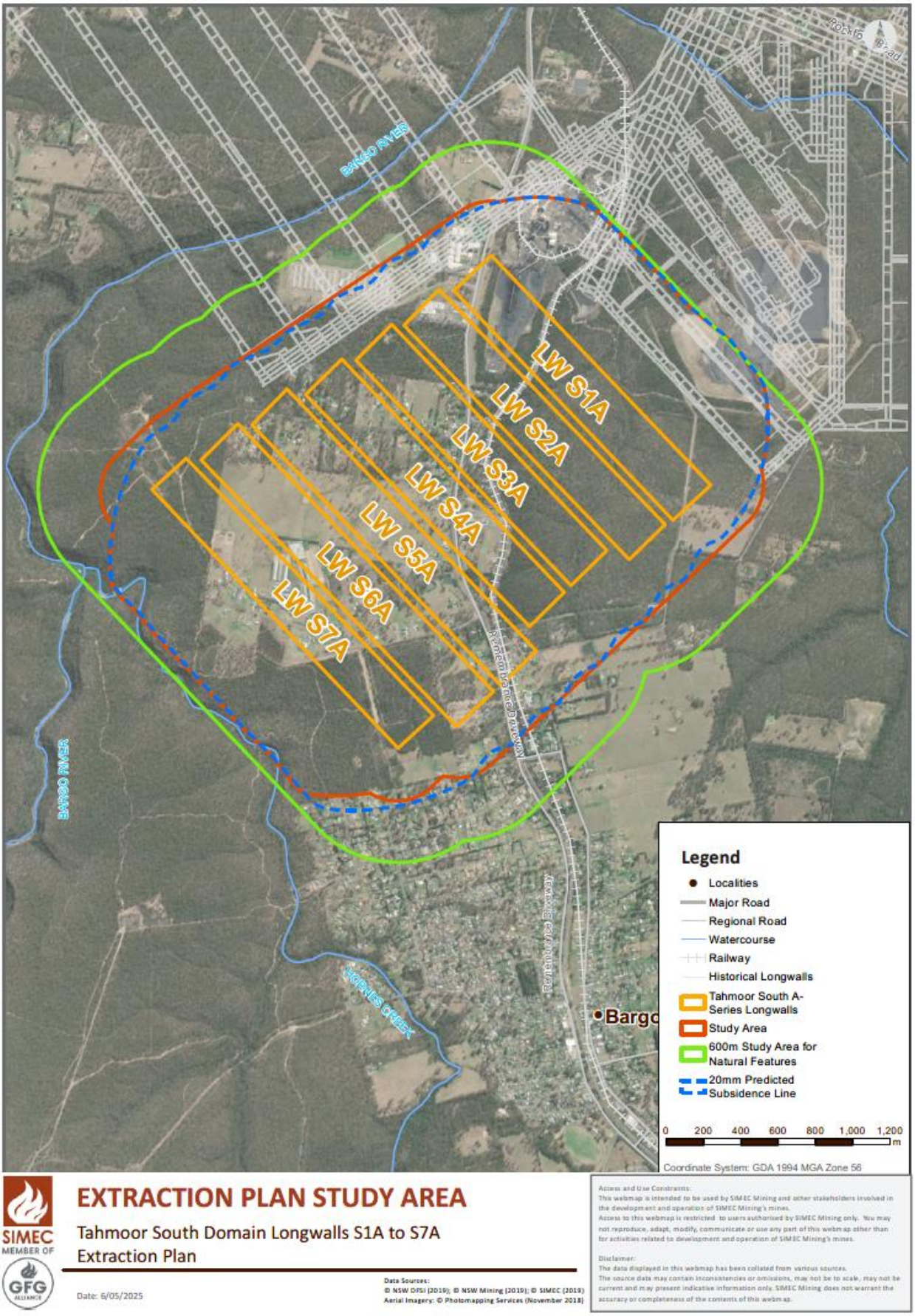

Figure 2 Extraction Plan Study Area

2 Regulatory Requirements

2.1 Project Approval

2.1.1 Development Consent Conditions

2.1.1.1 Extraction Plan Requirements

Tahmoor Coal's operations are conducted in accordance with applicable Commonwealth and State environmental, planning, mining safety, and natural resource legislation. A register of relevant environmental legislative and regulatory requirements is maintained by Tahmoor Coal in a compliance database.

LW S1A-S7A will be extracted in the Tahmoor South mining area under Development Consent SSD 8445, as discussed further in Section 3.2.1 of the Extraction Plan Main Document. SSD 8445 provides the conditional planning approval framework for mining activities in the Tahmoor South Domain to be addressed within an Extraction Plan and supporting management plans. Conditions relevant to this management plan from SSD 8445 are detailed in **Table 1.**

SSD 8445 has been modified on three occasions relating to:

- Modification 1 - Extension of time to commission the Tahmoor Coal Water Treatment Plant, approved on 19 July 2022; and
- Modification 2 - Underground brine disposal and transfer of mine water, approved on 13 June 2023.
- Modification 3 - Inclusion of an additional longwall panel (Longwall South 7A (LW S7A)) to the existing approved mine plan, approved on 26 May 2025.

Approval (EPBC 2017/8084) was also granted in 2021 by the then Department of Agriculture, Water and the Environment (DAWE) (now Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW)) for the Tahmoor South Project under sections 130(1) and 133(1) of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act).

LW S3A was shortened by 104 m, as approved by DPHI on 27 March 2024, LWS4A has been shortened by 104 m as approved by DPHI on 11 November 2024. Modifications to these longwalls are discussed in a separate document and further discussions in this document have been omitted.

Table 1 Key Conditions from SSD 8445 regarding Built Features

<table>
<tr><th>Condition Reference</th><th>Condition Requirement</th><th>Where Addressed</th></tr>
<tr><td>C5</td><td>
Performance Measures - Built Features
The Applicant must ensure that the development meets the performance measures in Table 8.
Table 8: Subsidence impact performance measures – built features
<table>
<tr><th>Feature</th><th>Performance Measures</th></tr>
<tr><td colspan="2">Public Infrastructure</td></tr>
<tr><td>Key public infrastructure:
• Main Southern Railway
• Remembrance Drive
• M31 Motorway
• Moomba to Sydney Gas Pipeline
• Gorodok Ethane Pipeline
• Bargo Waste Management Centre</td><td>- Always safe and serviceable
- Damage that does not affect safety or serviceability must be fully repairable, and must be fully investigated and repaired at the cost of the Applicant</td></tr>
<tr><td>• All other public infrastructure including roads, culverts, bridges, viaducts, water supply pipelines, sewerage mains, gas pipelines, electrical and telecommunication infrastructure and survey control marks</td><td>- Always safe
- Serviceability should be maintained wherever practicable
- Loss of serviceability must be fully compensated
- Damage must be fully repairable, and must be fully investigated and repaired or else replaced or fully compensated at the cost of the Applicant</td></tr>
<tr><td colspan="2">Other Built Features</td></tr>
<tr><td>• Public amenities including schools, churches and community centres
• Industrial, commercial and business premises
• Bargo Cemetery
• Wirrimbirra Sanctuary
• Privately-owned residences
• Other privately-owned built features and improvements, including petrol stations, sheds, garages, farm dams, tanks, swimming pools, tennis courts, roads, tracks and fences</td><td>- Always safe
- Serviceability should be maintained wherever practicable
- Loss of serviceability must be fully compensated
- Damage must be fully repairable, and must be fully investigated and repaired or else replaced or fully compensated at the cost of the Applicant</td></tr>
<tr><td colspan="2">Public Safety</td></tr>
<tr><td>- Public safety</td><td>- Negligible additional risk</td></tr>
</table>
Notes for Table 8 (C5)
Notes:
• These performance measures apply to all mining taking place after the date of this consent.
• The Applicant is required to define more detailed performance measures in the Built Features Management Plans or Public Safety Management Plan (see condition CB).
• Requirements regarding safety or serviceability do not prevent preventative or mitigatory actions being taken prior to or during mining.
• Requirements under this condition may be met by measures undertaken in accordance with the Coal Mine Subsidence Compensation Act 2017 and Coal Mine Subsidence Compensation Amendment Act 2024.
</td><td>
Section 3
Subsidence Management Plans for built features
It is noted that the Wirrimbirra Sanctuary is now referred to as the Australian Wildlife Sanctuary.
It is also noted that the Bargo Waste Management Centre, M31 Motorway, Moomba to Sydney Gas Pipeline, and the Gorodok Ethane Pipelines are not located within the Study Area of this Extraction Plan.
</td></tr>
</table>

Condition Reference	Condition Requirement	Where Addressed
C6	**Performance Measures - Built Features** Any dispute between the Applicant and the owner of any built feature over the interpretation, application or implementation of the performance measures in Table 8 is to be settled by the Planning Secretary, following consultation with the Resources Regulator. Any decision by the Planning Secretary shall be final.	Noted.
C8	**Extraction Plan** The Applicant must prepare an Extraction Plan for all second workings on the site of the development to the satisfaction of the Planning Secretary. Each Extraction Plan must:	Noted. This management plan is part of the LW S1A-S7A Extraction Plan.
C8(e)	provide revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed mining covered by the Extraction Plan, incorporating any relevant information obtained since this consent;	Subsidence Predictions and Impact Assessments Report (MSEC, 2022 and MSEC, 2024).
C8(f)	describe in detail the performance indicators to be implemented to ensure compliance with the performance measures in Table 7 and Table 8, and manage or remediate any impacts and/or environmental consequences to meet the rehabilitation objectives in condition B56;	**Section 3** and Subsidence Management Plans for built features
	• describe the ongoing conventional and non-conventional subsidence monitoring program;	
	• provide data to assist with the management of risks associated with conventional and non-conventional subsidence;	
	• validate the conventional and non-conventional subsidence predictions;	
	• analyse the relationship between the predicted and resulting conventional and non-conventional subsidence effects and predicted and resulting impacts under the plan and any ensuing environmental consequences; and	
	• inform the adaptive management process;	
C8(g)(ii)	Built Features Management Plan which has been prepared in consultation with the Resources Regulator, to manage the potential subsidence impacts of the proposed underground workings on built features, and which:	This management plan. **Section 2.4**
	• has also been prepared in consultation with: - the owners of potentially affected features; - the Technical Committee required under condition C14; - the EPA in relation to the Bargo Waste Management Centre; and - the NSW Department regulating the Pipelines Act 1967 in relation to the licensed gas pipelines;	**Section 2.4** Subsidence Management Plans for built features
	• addresses in appropriate detail all items of key public infrastructure (with particular consideration of public roads and rail lines, including any associated bridges and culverts, gas pipelines and waste facilities), other public infrastructure and all classes of other built features;	**Section 4** Subsidence Management Plans for built features
	• recommends appropriate pre-mining mitigation measures to reduce subsidence impacts;	**Section 6.2** Subsidence Management Plans for built features
	• recommends appropriate remedial measures and includes commitments to mitigate, repair, replace or compensate predicted impacts on potentially affected built features in a timely manner; and	**Section 6.3** Subsidence Management Plans for built features

Condition Reference	Condition Requirement	Where Addressed
	• 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 an alternative standard agreed with the infrastructure owner), and provides for annual auditing of compliance and effectiveness during extraction which may impact the infrastructure;	**Section 2.2.2** Subsidence Management Plans for built features The Risk Management Framework utilised for risk assessment is the risk management process outlined in AS/NZS ISO 31000.
C8(g)(viii)	Trigger Action Response Plans addressing all features in Table 7 and Table 8, which contain:	**Section 6.3** Subsidence Management Plans for built features
	• appropriate triggers to warn of increased risk of exceedance of any performance measure;	
	• specific actions to respond to high risk of exceedance of any performance measure to ensure that the measure is not exceeded;	
	• an assessment of remediation measures that may be required if exceedances occur and the capacity to implement the measures; and	
	• adaptive management where monitoring indicates that there has been an exceedance of any performance measures in Table 7 and/or Table 8, or where any such exceedance appears likely; and	**Section 6.5**
C8(g)(ix)	Contingency Plan that expressly provides for:	**Section 6.4** Subsidence Management Plans for built features
	• adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Table 7 and/or Table 8, or where any such exceedance appears likely;	**Section 6.5**
	• an assessment of remediation measures that may be required if exceedances occur and the capacity to implement those measures;	**Section 6.2, Section 6.5**
C8(i)	include a program to collect sufficient baseline data for future Extraction Plans.	**Section 5.3**
E4	**Adaptive Management** The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and performance measures in this consent. Any exceedance of these criteria or performance measures constitutes a breach of this consent and may be subject to offset or other provisions as specified in this consent and/or penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria or performance measures has occurred, the Applicant must, at the earliest opportunity: (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; (c) within 14 days of the exceedance occurring (or other timeframe agreed by the Planning Secretary), submit a report to the Planning Secretary describing these remediation options and any preferred remediation measures or other course of action; and (d) implement reasonable remediation measures as directed by the Planning Secretary.	**Section 6.5** Subsidence Management Plans for built features

2.1.1.2 Management Plan Requirements

Condition E5 of the Consent outlines the general requirements for all management plans. **Table 2** outlines the requirements under this condition and identifies where these requirements have been addressed.

Table 2 Management Plan Requirements

Condition Reference	Condition Requirement	Where Addressed
E5	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	Noted.
(a)	a summary of relevant background or baseline data;	**Section 3, Section 4**
(b)	details of:	NA
(b)(i)	the relevant statutory requirements (including any relevant approval, licence or lease conditions);	**Sections 2.1, 2.2** and **2.3**
(b)(ii)	any relevant limits or performance measures and criteria; and	**Section 5.1**
(b)(iii)	the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	**Section 5.1, Section 6.3** Subsidence Management Plans for built features
(c)	any relevant commitments or recommendations identified in the document/s listed in condition A2(c);	**Section 2.1.2**
(d)	a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	**Section 6**
(e)	a program to monitor and report on the:	NA
(e)(i)	impacts and environmental performance of the development; and	**Section 4**
(e)(ii)	effectiveness of the management measures set out pursuant to condition E5(d);	**Section 6.2**
(f)	a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	**Section 6.4** Subsidence Management Plans for built features
(g)	a program to investigate and implement ways to improve the environmental performance of the development over time;	**Section 6.5**
(h)	a protocol for managing and reporting any:	NA
(h)(i)	incident, non-compliance or exceedance of any impact assessment criterion or performance criterion;	**Section 7**
(h)(ii)	complaint; or	**Section 7**
(h)(iii)	failure to comply with other statutory requirements;	**Section 7**
(i)	public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and	**Section 7**
(j)	a protocol for periodic review of the plan.	**Section 7**

2.1.2 EIS Commitments

Condition A2(g) of the Consent states that the development may only be carried out generally in accordance with the EIS. The relevant EIS documents include:

- Tahmoor South Project Environmental Impact Statement, Volumes 1 and 7, dated January 2019;
- Tahmoor South Project Amendment Report, including Appendices A to R and response to submissions, dated February 2020;
- Tahmoor South Project Second Amendment Report, Appendices A to O and response to submissions, dated August 2020; and

- Additional information responses dated 14 September 2020 (including Appendices A to L), 23 October 2020 and 4 November 2020.

EIS commitments relevant to this management plan are outlined in **Table 3**. These EIS commitments do not include commitments that are covered by the SSD 8445 Conditions of Consent.

Table 3 EIS Commitments

EIS Reference	Commitment	Where Addressed
HH-3	**Non-Aboriginal Heritage** Potential impact: Impacts to items of non-Aboriginal Cultural Heritage Significance as a result of longwall mining and mining-induced subsidence. Management and mitigation measures: Develop a site-specific Heritage Property Subsidence Management Plan for Wirrimbirra Sanctuary prior to commencement of mining, including a detailed site inspection. The outcomes of the assessment would be provided in an additional Statement of Heritage Impact in consultation with the National Trust and NSW Heritage Council, or its delegate.	Heritage Management Plan Australian Wildlife Sanctuary Management Plan Picton Weir Management Plan

2.1.3 Extraction Plan Guideline

This management plan has been updated in accordance with the DPE Extraction Plan Guideline (DPE, 2022), as detailed in **Table 4**.

Table 4 Extraction Plan Guideline Requirements for Key Sub-Plans

Extraction Plan Guideline Content Requirements for Key Sub-Plans	Where Addressed
A short overview of relevant landscape features, heritage sites, environmental values, built features or other values to be managed under the sub-plan.	**Section 1**
Setting out the consent's performance measures directly relevant to the features or values to be managed under the sub-plan.	**Section 2.1.1**
Setting out clear objectives to ensure the delivery of the performance measures and all other relevant statutory requirements.	**Section 2, Section 3,** Subsidence Management Plans for built features
Setting out performance indicators to ensure compliance with the performance measures and statutory requirements.	**Section 5.1**, Subsidence Management Plans for built features
A description of the relevant features or values to be managed under the sub-plan and their significance.	**Section 3**, Subsidence Management Plans for built features
A description of all currently predicted subsidence impacts and environmental consequences relevant to the features and values to be managed under the sub-plan.	**Section 3**, Subsidence Management Plans for built features
A description of all measures planned to remediate these impacts and/or consequences, including any measures proposed to ensure that impacts and/or consequences comply with performance measures and/or the mining company's commitment.s	**Section 3**, Subsidence Management Plans for built features
A description of the baseline monitoring network and baseline monitoring results, including pre-subsidence photographic surveys of key landscape features and key heritage sites that may be subject to significant subsidence impacts (such as significant watercourses, swamps and Aboriginal heritage sites).	**Section 3**, Subsidence Management Plans for built features
A description of the proposed environmental monitoring of subsidence impacts and environmental consequences.	**Section 3**, Subsidence Monitoring Plan, and Subsidence Management Plans for built features

Extraction Plan Guideline Content Requirements for Key Sub-Plans	Where Addressed
A description of proposed monitoring of remediation measures.	**Section 3**, Subsidence Management Plans for built features
A description of adaptive management.	**Section 6.5**, Subsidence Management Plans for built features
Listing responsibilities for implementation of the plan.	**Section 7**, Subsidence Management Plans for built features
An attached Trigger, Action, Response Plan	Subsidence Management Plans for built features

2.2 Relevant Legislation and Policies

2.2.1 Work, Health and Safety Legislation

All persons conducting a business or undertaking (PCBUs), including mine operators and contractors, have a primary duty of care to ensure the health and safety of workers they engage, or whose work activities they influence or direct. The responsibilities are legislated in the *Work Health and Safety Act 2011* and the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and associated Regulations (collectively referred to as the 'WHS laws').

The *Work Health and Safety (Mines and Petroleum Sites) Regulation 2022* commenced on 1 September 2022 and contains specific regulations in relation to mine subsidence.

As outlined in the Guide by the NSW Department of Trade & Investment Mine Safety:

"a PCBU must manage risks to health and safety associated with mining operations at the mine by:

- *complying with any specific requirements under the WHS laws;*
- *identifying reasonably foreseeable hazards that could give rise to health and safety risks;*
- *ensuring that a competent person assesses the risk;*
- *eliminating risks to health and safety so far as is reasonably practicable;*
- *minimising risks so far as is reasonably practicable by applying the hierarchy of control measures, any risks that are not reasonably practical to eliminate;*
- *maintaining control measures; and*
- *reviewing control measures.*

The mine operator's responsibilities include developing and implementing a safety management system that is used as the primary means of ensuring, so far as is reasonably practicable:

- *the health and safety of workers at the mine; and;*
- *that the health and safety of other people is not put at risk from the mine or work carried out as part of mining operations."*

Detailed guidelines have also been released by the Department of Regional NSW, Resources Regulator (DPE, 2017).

The risk management process has been carried out in accordance with guidelines published by DPE (DPE, 2017). The following main steps of subsidence risk management have been and will be undertaken, in accordance with the guidelines:

- Identification and understanding of subsidence hazards;

- Assessment of risks of subsidence;
- Development and selection of risk control measures;
- Implementation and maintenance of risk control measures; and
- Continual improvement and change management.

Each of the above steps have been or will be conducted together with the following processes:

- Consultation, co-operation and co-ordination; and
- Monitoring and review.

The Subsidence Management Plans for built features document the risk control measures that are planned to manage risks to health and safety associated with the mining of LW S1A-S7A directly beneath or adjacent to built features in accordance with the WHS laws.

2.2.2 Risk Management Process

Effectively controlling risks at Tahmoor Mine requires Tahmoor Coal to follow a risk management process, which involves the four steps:

- Identify hazards – find out what could cause harm;
- Assess risks if necessary – understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening;
- Control risks – eliminate the risk or, if this is not possible, minimise the risk through risk control measures; and
- Review – review control measures to ensure they are working as planned.

The framework utilised for the risk assessment is the risk management process outlined within AS/NZS ISO 31000.

Tahmoor Coal has developed and acted in accordance with a risk management process to manage potential hazards due to mine subsidence on built features. The risk management strategy has been reviewed and updated based on experiences gained during the mining of Longwalls 22 to 32, West 1 to West 4 (LW W1-W4) and South 1A to South 3A (LW S1A-S3A) and includes the following process:

- Regular consultation with owners and operators of built features before, during and after mining;
- Site-specific investigations;
- Implementation of mitigation measures following engineering inspections and assessments;
- Surveys and inspections during mining within the active subsidence area:
- Detailed visual inspections of built features;
- Ground surveys; and
- Specific ground surveys and visual inspections, where recommended by an engineer based on the inspections and assessments.

A flowchart illustrating the Subsidence Impact Management Process prior to, during and after mine subsidence movements is shown in **Figure 3**.

2.2.3 SA NSW Claims Process

This BFMP acknowledges the Subsidence Advisory NSW (SA NSW) claims process. If a surface improvement is damaged by subsidence as a result of coal mining in NSW, the owner may be eligible to claim compensation under the *Coal Mine Subsidence Compensation Act 2017 and Coal Mine Subsidence Compensation Amendment Act 2024*. Subsidence Advisory NSW manages all claims for subsidence

damage and claims can be lodged through Subsidence Advisory's online portal. Subsidence Advisory NSW staff will arrange for the damage to be assessed by an independent specialist assessor. If the damage is attributable to mine subsidence, a scope will be prepared and compensation will be determined. For further details please refer to the NSW Government site for 'Claiming for mine subsidence damage' at *www.nsw.gov.au/subsidence-advisory/claims*.

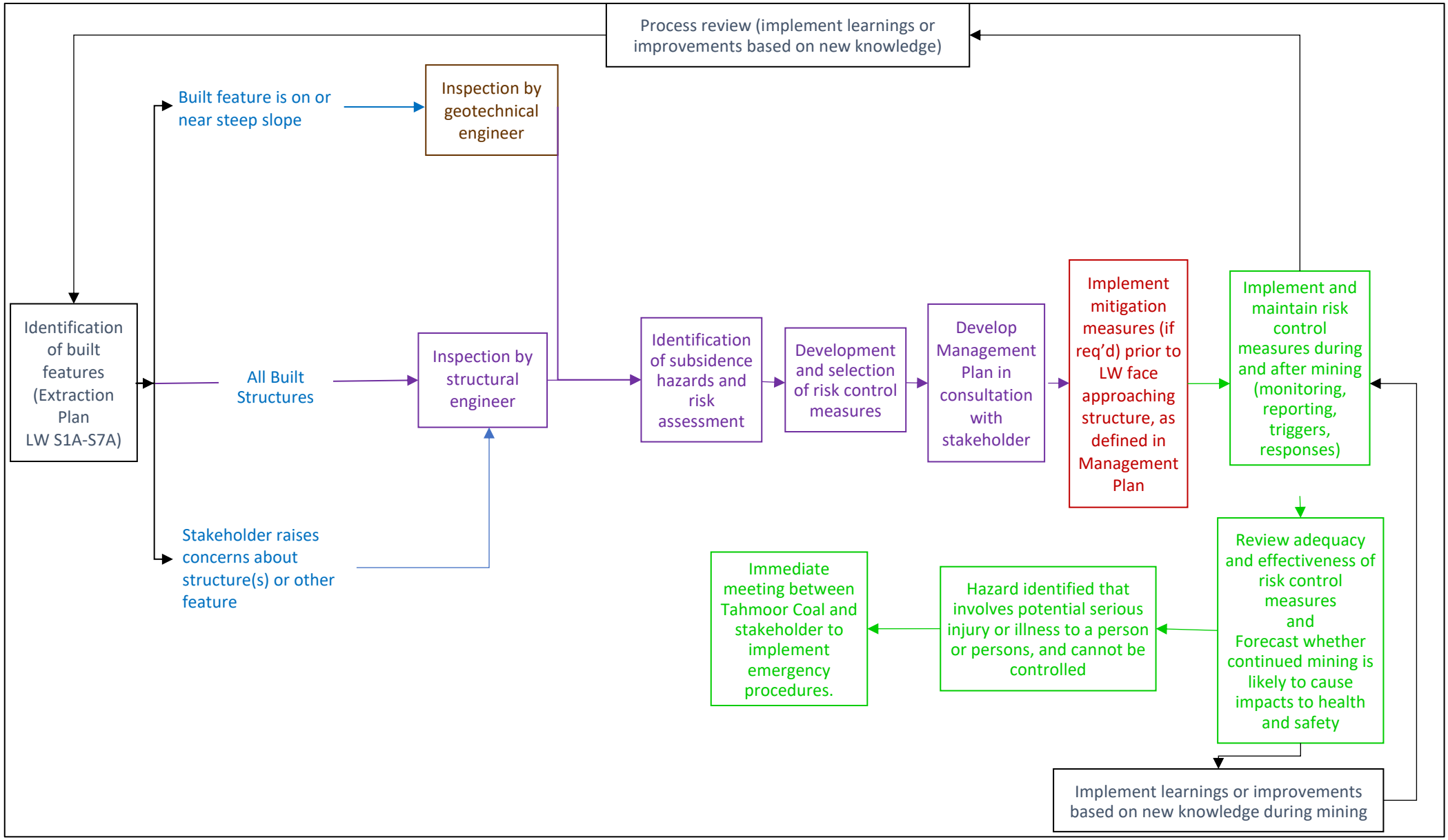

Figure 3 Flowchart for Subsidence Impact Management Process

2.3 Other Leases and Licences

All development consents, leases, licences, and other relevant approvals are stored in the Cority Compliance Management database, which is administered by both site and Liberty GFG Corporate. A summary of the relevant mining leases is provided in **Table 5.** A summary of other approvals and licences is provided in **Table 6**.

Table 5 Mining Lease

Lease	Title	Granted	Expires
CCL 716	Original Tahmoor Leases	15/06/1990 (Instrument of Renewal 16/8/2023)	13/03/2042
CCL 747	Bargo Mining Lease	23/05/1990 (Instrument of Renewal 21/11/2005)	06/11/2046 (renewal determination issued 16 May 2025 and effective 7 November 2025)
ML 1308	Small Western Lease to west of CCL 716	2/03/1993 (Instrument of Renewal 24/6/2014)	2/03/2035
ML 1376	Tahmoor North Lease	28/08/1995 (Instrument of Renewal 28/3/2023)	28/08/2043
ML 1539	Tahmoor North Extensions Lease	16/06/2003	16/06/2035
ML 1642	Pit-top and REA surface Mining Lease	27/08/2010 (Instrument of Renewal 17/10/2022)	27/08/2031

Table 6 Environmental Approvals and Licences

Approval Title / Description	Date Granted	Expiry Date
Environmental Protection Licence 1389	01/05/1994, latest variation 28/06/2024	No Expiry
WAL25777	27/10/2014	No Expiry
SWC871469 (Leased)	11/07/2025	01/07/2026
SWC868868 (Leased)	01/07/2024	30/06/2025*
WAL43631	08/03/2021	No Expiry
WAL43655	09/03/2021	No Expiry
WAL43656	1/8/2022	No Expiry
WAL43657	09/03/2021	No Expiry
WAL43659	09/03/2021	No Expiry
WAL45204	07/08/2024	No Expiry
XSTR200005 Dangerous Goods Licence	02/02/2017	02/02/2027
5061521 Radiation Management Licence	29/10/2025	29/10/2026

*Lease in process of renewal for FY2026

2.4 Stakeholder Consultation

2.4.1 Consultation to Date

The Department of Regional NSW – Resources Regulator (Resources Regulator) have been consulted during the preparation of the Extraction Plan and the BFMP. In addition, references to this BFMP were also made by Transport for NSW (TfNSW) and the Wollondilly Shire Council (WSC). The feedback provided by these stakeholders is summarised within **Table 7** below. A summary of all consultation undertaken for this extraction plan is provided in Section 2.1.2 of the Extraction Plan Main Document, and a copy of the incoming correspondence is also provided in Appendix C of the Extraction Plan Main Document.

It is noted that this consultation table does not include consultation completed during and after the Extraction Plan review stage post submission to DPE (now DPHI).

Table 7 Consultation to Date

Consulted Stakeholder	Consultation Conducted	Outcomes of Consultation
Resources Regulator	A letter introducing the Extraction Plan for LW S1A-S6A was sent on 22 December 2021. Tahmoor Coal provided a figure of the Extraction Plan Study Area, and an overview of the longwalls. A response was received on 23 December 2021 from Resources Regulator requesting a subsidence monitoring plan for the proposed longwalls.	Tahmoor Coal provided the Subsidence Monitoring Plan to the Resources Regulator on 14 May 2022. Tahmoor Coal recognised that Far Field assets would form part of the monitoring plan.
Transport for NSW (TfNSW)	A letter introducing the Extraction Plan for LW S1A-S6A was sent on 22 December 2021. Tahmoor Coal provided a figure of the Extraction Plan Study Area, and an overview of the longwalls. A response was received on 8 March 2022 from TfNSW (Southern Region) requesting a map showing the proposed longwalls in relation to Picton Road, Hume Highway and Victoria Bridge.	MSEC provided the requested map on 9 March 2022.
	Further comments may be provided when the LW S1A-S6A Built Features Management Plan is made available as these works may impact Remembrance Driveway and the nearby school zone associated with Wollondilly Anglican College.	Noted.
Wollondilly Shire Council (WSC)	A letter introducing the Extraction Plan for LW S1A-S6A was sent on 22 December 2021. Tahmoor Coal provided a figure of the Extraction Plan Study Area, and an overview of the longwalls. A response from Council's Assets and Transport Team was received on 21 January 2022.	Noted.
	Council would expect in this regard that the Extraction Plan involve a detailed consultation program as well as identification to the greatest accuracy possible likely subsidence-related impacts to dwellings over the full duration of a particular longwall.	A Social Impact Management Plan has been prepared which includes a detailed community engagement plan. A Built Features Management Plan has been prepared covering the predicted subsidence-related impacts and risk management to dwellings located over LW S1A-S7A.

As discussed in **Table 1**, the Bargo Waste Management Centre, M31 Motorway, Moomba to Sydney Gas Pipeline, and the Gorodok Ethane Pipelines are not located within the Study Area of this Extraction Plan. Therefore, consultation with the following stakeholders is not relevant for this Extraction Plan and BFMP:

- Technical Committee required under condition C14: The Bargo Waste Management Centre is not included in the Study Area.
- EPA in relation to the Bargo Waste Management Centre: The Bargo Waste Management Centre is not included in the Study Area.
- NSW Department regulating the *Pipelines Act 1976* (DPE - Division of Energy, Climate Change and Sustainability): The Moomba to Sydney gas pipeline is not in the Study Area. Jemena will be consulted for the management of potential subsidence impacts to local gas pipelines within the Study Area.

2.4.2 Future Consultation for Management Plans

Tahmoor Coal and utilities and infrastructure owners (including WSC, Australian Rail Track Corporation (ARTC), Transport for NSW, Crown Lands, Sydney Water, Endeavour Energy, Jemena, Telstra and National Broadband Network (NBN) Co) have developed and acted in accordance with agreed subsidence management plans to manage potential impacts to services during the mining of Longwalls 22 to 32 and LW W1-W4. Management Plans have been developed in consultation with the owners of built features prior to the influence of LW S1A-S7A.

The management plans provide for ground and visual monitoring of built features and are reviewed periodically.

Tahmoor Coal has consulted with owners and stakeholders to develop Subsidence Management Plans for the following sites:

- Australian Wildlife Sanctuary - (Australian Wildlife Sanctuary and the National Trust);
- Wollondilly Anglican College;
- Bargo Petroleum;
- Inghams;
- Tahmoor Garden Centre; and
- MKD Machinery.

Separate Subsidence Management Plans for built features will be developed in consultation with stakeholders prior to the influence of subsidence on each relevant feature.

3 Existing Environment

3.1 Identification of Subsidence Hazards

Clause 34 of the Work Health and Safety Regulation (2017) requires that the duty holder (in this case Tahmoor Coal), in managing risks to health and safety, must identify reasonably foreseeable hazards that could give rise to risks to health and safety.

Mine subsidence hazards have been or will be identified, investigated and analysed in a systematic manner by examining each aspect of the built features. Each of the aspects below could potentially experience mine subsidence movements that give rise to risks to the health and safety of people:

- Electrical infrastructure;
- Gas infrastructure;
- Potable water infrastructure;
- Sewer infrastructure;
- Telecommunications infrastructure;
- Railway infrastructure;
- Local roads, bridges and culverts;
- Mining infrastructure;
- Picton Weir;
- Built heritage structures;
- Residential structures, including houses, swimming pools and other structures;
- Structures for public amenity, commercial, industrial and agricultural purposes;
- Farm dams; and
- Groundwater bores.

A description of mine subsidence hazards identified that could give rise to risks to health and safety will be described in each of the individual management plans for built features.

Tahmoor Coal has completed a risk assessment for built features likely to be affected by subsidence from the extraction of LW S1A-S6A. Following approval of Modification 3 (LW S7A), Tahmoor Coal has completed a risk assessment for built features likely to be affected by subsidence from the extraction of LW S7A. A copy of the risk assessments is included in the Public Safety Management Plan (Appendix B).

Tahmoor Coal, in consultation with built feature owners, will continue to build upon and refine the existing risk assessments to assess in detail the likelihood of the identified hazards affecting health and safety, and the severity of potential health and safety consequences. The results of the risk assessments will be included in each of the individual management plans for built features.

The identification and risk assessment process considered the location of built features relative to LW S1A-S7A and the associated timing and duration of the subsidence event.

Whilst mine subsidence predictions and extensive past experiences from previous mining at Tahmoor Coal have been taken into account, the identification and risk assessment process recognised that there are uncertainties in relation to predicting subsidence movements, and uncertainties in how mine subsidence movements may adversely impact built features. This includes the presence and influence of geological structures and valleys.

Tahmoor Coal will consider the outcomes of the hazard identification and risk assessment process when developing measures to manage potential impacts on the health and safety of people, and potential impacts on built features in consultation with stakeholders.

3.2 Built Features within the Study Area

The built features located within the Extraction Plan Study Area are managed by this BFMP and supporting individual management plans for built features.

Individual management plans have been developed for built features in consultation with stakeholders prior to the influence of subsidence on each relevant feature. Stakeholders include Endeavour Energy, Sydney Water, Jemena, Telstra, NBN Co., WSC, ARTC, and property owners.

Table 8 shows each built feature and the relevant assessment and management plans.

Table 8 Built Features within the Study Area and Associated Management Plans

Feature	Identification and Assessment	Management and Monitoring
Main Southern Railway	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Main Southern Railway, Report No. MSEC1201, Revision D, August 2025 • BFMP • Subsidence Monitoring Plan
Wellers Road Overbridge	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – Management Plan for LW S4A-S7A adjacent to Wellers Road Overbridge, Report No. MSEC1193-19, Revision B, March 2025 • BFMP • Subsidence Monitoring Plan
Public roads, bridges and culverts	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Wollondilly Shire Council Infrastructure, Report No. MSEC1193-03, Revision D, August 2025 • BFMP • Subsidence Monitoring Plan
Potable water infrastructure	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Sydney Water Potable Water Infrastructure, Report No. MSEC1193-04, Revision C, August 2025 • BFMP • Subsidence Monitoring Plan
Sewer infrastructure	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Sydney Water Sewer Infrastructure, Report No. MSEC1193-05, Revision B, August 2025 • BFMP • Subsidence Monitoring Plan
Gas infrastructure	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Jemena Gas Infrastructure, Report No. MSEC1193-06, Revision B, March 2024 and Amendment No. 1 for LW S4A in November 2024 • BFMP • Subsidence Monitoring Plan

Feature	Identification and Assessment	Management and Monitoring
Electrical infrastructure	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Endeavour Energy Infrastructure, Report No. MSEC1193-07, Revision C, August 2025 • BFMP • Subsidence Monitoring Plan
Telecommunications infrastructure	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Telecommunications Management Plan – Tahmoor South Domain Longwalls South 3A to South 7A – Revision of Telstra, NBN Co and TPG Management Plans for LW S1A-S6A, Tahmoor Coal, June 2024 • BFMP • Subsidence Monitoring Plan
Public amenities	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Built Structures, Report No. MSEC1193-09, Revision C, August 2025 • BFMP • Subsidence Monitoring Plan
Private Structures and farm dams	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024) • Water Management Plan • Land Management Plan	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Built Structures, Report No. MSEC1193-09, Revision C, August 2025 • Land Management Plan • BFMP • Subsidence Monitoring Plan
Heritage sites	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022) • Heritage Management Plan	• Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Wollondilly Shire Council Infrastructure, Report No. MSEC1193-03, Revision D, August 2025 • Heritage Management Plan • BFMP • Subsidence Monitoring Plan
Wollondilly Anglican College	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Wollondilly Anglican College, Report No. MSEC1193-11, 2023 • BFMP • Subsidence Monitoring Plan
Tahmoor Mine Site	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Tahmoor Mine Site, Report No. MSEC1247, 2023 • BFMP • Subsidence Monitoring Plan
Australian Wildlife Sanctuary	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Australian Wildlife Sanctuary, Report No. MSEC1074, Revision D, 2023 • Heritage Management Plan • Water Management Plan • BFMP • Subsidence Monitoring Plan

Feature	Identification and Assessment	Management and Monitoring
Picton Weir	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• Tahmoor Coal – LW S3A-S7A Management Plan for Potential Impacts to Picton Weir, Report No. MSEC1193-12, Revision C, April 2025 • BFMP • Subsidence Monitoring Plan
Groundwater bores	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024) • Water Management Plan • Groundwater Technical Report (SLR, 2022a) • Baseline Private Bore Assessment (SLR, 2022b)	• BFMP • Subsidence Monitoring Plan • Water Management Plan
Permanent survey control marks	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024) • BFMP	• BFMP • Subsidence Monitoring Plan
Bargo Petroleum and Hill Top Pit Stop (private ownership)	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• BFMP • Subsidence Monitoring Plan • Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Bargo Petroleum and Hill Top Pit Stop, Report No. MSEC1193-13, 2023 and Amendment No. 1 for LW S3A in May 2024
Inghams Bargo Breeder Farm and Turkey Farm (Inghams)	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022; MSEC, 2024)	• BFMP • Subsidence Monitoring Plan • Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Inghams Bargo Chicken Breeder Production Complex , Report No. MSEC1193-14, February 2023 • Tahmoor Coal – LW S5A-S7A Management Plan for Potential Impacts to Inghams Turkey Farm, Report No. MSEC1193-20 (planned to complete prior to LW S5A).
Tahmoor Garden Centre (private ownership)	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• BFMP • Subsidence Monitoring Plan • Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Tahmoor Garden Centre, Report No. MSEC1193-15, 2023, Amendment No. 1 for LW S3A in May 2024 and Amendment No. 2 for LW S4A in November 2024
MKD Machinery (private ownership)	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• BFMP • Subsidence Monitoring Plan • Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to MKD Machinery, Report No. MSEC1193-16, Revision D, August 2025
Bargo Valley Produce (Bargo Valley Produce Pty Limited)	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• BFMP • Subsidence Monitoring Plan Tahmoor Coal – LW S5A-S7A Management Plan for Potential Impacts to Bargo Valley Produce, Report No. MSEC1193-17 (planned to complete prior to LW S5A).

Feature	Identification and Assessment	Management and Monitoring
Canine Country Club (private ownership)	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• BFMP • Subsidence Monitoring Plan • Tahmoor Coal – LW S5A-S7A Management Plan for Potential Impacts to Canine Country Club, Report No. MSEC1193-18 (planned to complete prior to LW S6A).
Pamak Hobbies (private ownership)	• Subsidence Prediction and Impact Assessment Report (MSEC, 2022)	• Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Built Structures, Report No. MSEC1193-09, Revision C, August 2025 • BFMP • Subsidence Monitoring Plan

4 Built Features and Proposed Risk Controls

This section provides a summary of built features, the identification of potential hazards, and the proposed risk controls.

4.1 Main Southern Railway

The Main Southern Railway is a key national transport route that carries substantial freight and passenger services between Sydney and Melbourne. The Main Southern Railway is leased by ARTC, who is responsible for maintaining the track.

Approximately 3 km of track is located within the Study Area between kilometrages 98 km and 101 km. Approximately 2.1 km of track is located directly above proposed Longwalls S1A to S5A, between 98.6 km and 100.7 km, as shown in Drawing No. MSEC1192-10.

The railway line is a dual track consisting of 60 kg rail on concrete sleepers with a mix of straight and curved track sections within the Study Area. The maximum speed limits on both tracks are 95 km/h for normal services and 105 km/h for XPT services.

The railway consists of a number of items of infrastructure within the Study Area and these include Tahmoor Mine's overhead coal conveyor and Wellers Road Overbridge, culverts, cuttings, embankments and signalling, electrical and communications systems. Further details are provided in the Subsidence Predictions and Impact Assessment Reports (MSEC, 2022 and MSEC, 2024).

In addition to the section of track within the Study Area, there are a number of items of rail infrastructure along the Main Southern Railway that may be sensitive to differential far field horizontal movements. These include the Railway Viaduct and Remembrance Drive Road Bridge, which are located approximately 1.7 km to the north of LW S1A. The Viaduct consists of a series of masonry arches and is an item of Heritage Significance. While the Viaduct and Bridges may have experienced small far field horizontal movements during the extraction of the proposed longwalls, observed changes in distances between the abutments were within survey tolerance and less than trigger levels. No impacts have been observed to the Bridge and Viaduct due to mining of LW S1A-S3A. Whilst GNSS monitoring will continue, monitoring at the Bridge and Viaduct have ceased, in accordance with risk control procedures for LWs S1A to S3A of the Railway Management Plan. Further details on these items of infrastructure are provided in the Subsidence Predictions and Impact Assessment Report (MSEC, 2022 and MSEC, 2024) and the Railway Management Plan.

The potential impacts on the Railway comprise changes in track geometry and changes in rail stress, potential damage to railway structures, culverts, embankments and cuttings.

Tahmoor Coal and ARTC have previously managed potential mine subsidence impacts on the Railway during the extraction of LWs 22 to 32 and LW W1-W4. A Rail Management Group has been coordinated to develop the risk management strategies. The Rail Management Group includes representatives from ARTC, Tahmoor Coal and specialist consultants in the fields of railway track engineering, geotechnical engineering, structural engineering, track signalling, mine subsidence, risk assessment and project management. The Rail Management Group consults with the Resources Regulator and the Office of the National Rail Safety Regulator.

Tahmoor Coal and ARTC, under the advice of the Rail Management Group, have developed a plan to manage potential impacts during the mining of LW S1A-S7A prior to the influence of LW S1A. Risk controls include the installation of a track expansion system and maintaining the rail track to within operating standards prior to mining, surveys, rail stress monitoring, expansion switch displacement monitoring, track geometry monitoring and visual inspections along the railway and at the rail structures, and repair of impacts as required to maintain the safe and serviceable operation of the railway during and after mining.

The management plan also includes appropriate remedial measures and commitments to mitigate, repair, replace or compensate for predicted impacts on potentially affected built features in a timely manner.

Non-conventional movements have developed at three locations along the Railway during the mining of LWs S1A to S3A. The impacts to the Railway were successfully managed in accordance with the management plan.

With an appropriate management plan in place, potential impacts on the Main Southern Railway have been managed during the mining of LWs S1A to S3A and can be managed during the mining of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions or substantial non-conventional movements occur.

4.2 Wellers Road Overbridge

Wellers Road Overbridge is located on the Main Southern Railway and is owned by Transport for NSW (TfNSW) as part of the Country Regional Network (CRN).

The Wellers Road Overbridge spans across the Main Southern Railway at 101.162 km. The 8.27 metre single-span dual lane masonry arch bridge is comprised of a concrete arch on masonry abutments with masonry vehicle barrier parapet walls.

The overbridge was constructed in 1919 as part of the major duplication of the Main Southern Railway. The Bridge is listed as an Item of Heritage Significance on the Wollondilly Local Environmental Plan (2011).

As discussed in Section 4.1, Tahmoor Coal and ARTC have previously managed potential mine subsidence impacts on the Railway during the extraction of LWs 22 to 32 and LW W1-W4 and LWs S1A to S3A. Tahmoor Coal and ARTC, under the advice of the Rail Management Group, have developed a plan to manage potential impacts during the mining of LW S1A-S7A. The plan includes the management of Wellers Road Overbridge from a rail operations perspective.

Tahmoor Coal and TfNSW have previously managed potential mine subsidence impacts on the Victoria Bridge in Picton during the extraction of Longwalls W1-W4, and along the Picton to Mittagong Loop Line during the extraction of Longwalls W1-W4.

Tahmoor Coal and TfNSW, under the advice of the Rail Management Group, have developed a plan to manage potential impacts on the Wellers Road Overbridge during the mining of LW S4A-S7A prior to the influence of LW S4A. The final plan is currently being reviewed by TfNSW.

A Rail Management Group has been coordinated to develop the risk management strategies for Wellers Road Overbridge. The Rail Management Group includes representatives from TfNSW, ARTC, Tahmoor Coal and specialist consultants in the fields of railway track engineering, geotechnical engineering, structural engineering, mine subsidence, risk assessment and project management. The Rail Management Group consults with the Resources Regulator and the Office of the National Rail Safety Regulator.

Risk controls include surveys, laser distancemeter and draw wire displacement monitoring, measurement of crack gauges and repair of impacts as required to maintain the safe and serviceable operation of the Overbridge during and after mining.

The management plan also includes appropriate remedial measures and commitments to mitigate, repair, replace or compensate for predicted impacts on the Overbridge in a timely manner.

With an appropriate management plan in place, potential impacts on the Wellers Road Overbridge have been managed during the mining of LWs S1A to S3A and can be managed during the mining of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions or substantial non-conventional movements occur.

4.3 Tahmoor Mine Rail Loop

Trains enter Tahmoor Mine's Rail Loop at 95.000 km on the Main Southern Railway and travel through the mine site in a clockwise direction. The Rail Loop passes beneath four overhead coal conveyors, the rail loader bin and a road crossing. Further details on these items of infrastructure are provided in the Subsidence Predictions and Impact Assessment Report (MSEC, 2022). The Rail Loop consists of 53 kg rail on concrete sleepers. The track speed limit in the Rail Loop is 15 km/hour and 5 km/hour when coal loading. Rail operations vary depending on volumes of coal available at the stockpile and the arrival of ships at port. The maximum rail activity at the mine is 4 train movements per day.

The Rail Loop is located within the Study Area, as shown in Drawing No. MSEC1192-10. The closest distance between the Rail Loop and LW S1A is approximately 160 metres.

The potential impacts on the Rail Loop comprise changes in track geometry and changes in rail stress, potential damage to overhead conveyor structures that cross the Rail Loop, culverts, embankments and cuttings.

Tahmoor Coal, under the advice of the Rail Management Group, has successfully managed potential impacts on the Rail Loop during the mining of LW S1A-S3A. The Rail Loop has remained safe and serviceable during mining. No further management actions are required, in accordance with the Mine Site Management Plan.

4.4 Local Roads

The locations of local roads within the Study Area are shown in Drawing No. MSEC1192-11.

The main local road within the Study Area is Remembrance Drive which runs along the western side of the Main Southern Railway and crosses directly above the proposed Longwalls S1A to S5A. The road provides a connection between the M31 Hume Motorway and the townships of Bargo and Tahmoor, respectively to the south and north of the Study Area.

Caloola Road and Yarran Road are "no through" roads that connect to Remembrance Drive from the west. The two roads are located within the Study Area.

Great Southern Road runs alongside the eastern side of the Main Southern Railway and becomes Avon Dam Road, which connects to the M31 Hume Motorway. Only the northern end of Great Southern Road is located within the Study Area. Charlies Point Road is a sealed local road that connects Great Southern Road and Arina Road.

The local roads are maintained by Wollondilly Shire Council (WSC).

There are no bridges along local roads within the Study Area. A number of culverts are located within the Study Area, as shown in Drawing No. MSEC1192-11. Almost every culvert is a reinforced concrete pipe (RCP), with the exception of one earthenware pipe on Charlies Point Road. The pipe diameters vary between 500 mm and 1.8 metres.

There is a twin, 1.35 metre diameter reinforced concrete culvert beneath a bus stop at the end of Caloola Road. The culvert carries the pavement over Teatree Hollow and continues beneath Remembrance Drive.

Two culverts are located in close proximity at the intersection between Remembrance Drive, Yarran Road and the Main Southern Railway. The 1800 mm RCP culvert beneath Remembrance Drive drains into a small parcel of privately owned land and a 2000 mm diameter brick arch culvert beneath the Main Southern Railway.

There is extensive experience of mining directly beneath local roads in the Southern Coalfield which demonstrates that impacts can be managed with the implementation of suitable management strategies. In all cases the local roads have remained in safe and serviceable condition and have been remediated using normal road maintenance techniques.

LWs 22 to 32 and LW W1-W4 at Tahmoor Mine have mined directly beneath 28 kilometres of local roads and a total of 54 impact sites have been observed. The observed rate of impact on the local roads equates to an average of one impact for every 520 metres of pavement. In most cases, the impacts were relatively minor and were remediated by locally resurfacing the pavements.

The most severe impacts were located where substantial non-conventional movements had developed. These impact sites were identified using visual and ground monitoring and remediation was undertaken during active subsidence to maintain these roads in safe and serviceable conditions.

A Subsidence Management Plan has been developed in consultation with WSC to manage potential impacts on the local roads, bridges and culverts within the Study Area. With the implementation of these management strategies, it would be expected that the local roads could be maintained in safe and serviceable conditions during and after the extraction of the proposed longwalls. Non-conventional movements have developed at two locations along Remembrance Drive during the mining of Longwalls S1A to S3A. The impacts to the pavement were successfully managed in accordance with the management plan, with Remembrance Drive remaining safe and serviceable

With an appropriate management plan in place, potential impacts on the roads, bridges and culverts have been managed during the mining of LWs S1A to S3A and can be managed during the extraction of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions or substantial non-conventional movements occur.

4.5 Potable Water Infrastructure

The locations of the potable water infrastructure within the Study Area are shown in Drawing No. MSEC1192-12. The water pipelines are owned and operated by Sydney Water.

The potable water infrastructure includes a Cast Iron Cement Lined (CICL) 450 mm diameter watermain which follows the alignment of Remembrance Drive, before crossing beneath the Main Southern Railway and following Great Southern Road. 100 mm and 200 mm diameter Ductile Iron Cement Lined (DICL) water pipelines are located along Caloola Road, Yarran Road and along a short section Remembrance Drive to the south the railway crossing. The total length of potable water pipelines within the Study Area is approximately 6.4 km.

Longwalls 22 to 32 at Tahmoor Mine have directly mined beneath approximately 5.5 kilometres of DICL pipe and 19.5 kilometres of CICL pipe, with only minor impacts recorded to the older CICL pipes. Water leaks were repaired by Sydney Water using normal response procedures. Based on this experience, it is expected that some minor leakages of the water pipelines could occur at isolated locations, as the result of the extraction of the longwalls, however, the incidence of impacts is expected to be low. Impacts are more likely to occur in the locations of non-systematic movements, and at creek crossings, due to valley related movements.

Tahmoor Coal has previously developed a Subsidence Management Plan in consultation with Sydney Water for the extraction of existing LWs 22 to 32 and LW W1-W4 at Tahmoor Mine to manage potential impacts on potable water infrastructure. In all cases the potable water infrastructure has remained in safe and serviceable condition and have been remediated using normal repair and maintenance techniques.

A Subsidence Management Plan has been developed in consultation with Sydney Water to manage potential impacts on the potable water infrastructure within the Study Area. Any impacts are expected to be of a minor nature which could be easily remediated. Tahmoor Coal has developed management strategies, in consultation with Sydney Water, to manage these potential impacts. Non-conventional movements have developed at three locations on the 450 mm diameter watermain along Remembrance Drive during the mining of LWs S1A to S3A. The impacts to the watermain were successfully managed in accordance with the management plan.

With an appropriate management plan in place, potential impacts on the Sydney Water pipelines have been managed during the mining of LWs S1A to S3A and can be managed during the extraction of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions.

4.6 Sewerage Infrastructure

A *Priority Sewer Program* has been constructed in the township of Bargo by Sydney Water. The sewer infrastructure includes a pressure main along Remembrance Drive and a consumer reticulation network along the local roads. The locations of the sewerage infrastructure are shown in Drawing No. MSEC1192-13.

The sewerage system was designed to accommodate mine subsidence movements and consists of polyethylene (PE) pipelines with diameters up to 630 mm.

The sewer reticulation network within the Study Area consists of a 180 mm diameter welded PE pipe, which generally follows the alignment of Remembrance Drive.

Tahmoor Coal, in consultation with Sydney Water, has successfully mined beneath a sewerage system at Tahmoor and Thirlmere during the mining of Longwalls 22 to 32. The sewerage infrastructure at Tahmoor and Thirlmere comprises gravity sewers which consist mainly of PVC pipes. While impacts on the sewerage system at Tahmoor and Thirlmere have been successfully managed, the pressurised sewerage system at Bargo will be able to accommodate substantially greater differential subsidence movements.

The sewer main transports sewage by hydraulic pressure and does not rely on gravity. While the sewer main will experience changes in grade due to subsidence, the changes will not adversely affect it.

The PE pipes can accommodate substantial deformations without losing their integrity. Only extreme deformations, such as the development of a step in the ground may adversely impact on the pipes.

If the PE pipe experiences severe deformation, the pipe may become blocked. The sewerage system has been designed to store sewage for approximately 8 hours after which time sewage may leak or overflow from the sewerage system. Such blockages can be readily repaired by local excavation and repair.

A number of valves and chambers are located above the proposed longwalls. These chambers, valves and pipe fittings are small in size and are connected via flange adapters. It is expected that the chambers, valves and fittings will act as anchors to the ground during subsidence, allowing the PE pipe to stretch or compress in response to mining-induced differential horizontal movements. While there is potential for impacts to occur at these locations, many similar structures are located within the Tahmoor sewerage system and no impacts have occurred to chambers, valves and other pipe fittings during mining. There is, however, a remote chance that anomalous ground deformation could occur during extraction of the proposed longwalls.

Any impacts are expected to be of a minor nature which could be easily remediated. A Subsidence Management Plan has been developed in consultation with Sydney Water to manage potential impacts on the sewer infrastructure within the Study Area. Non-conventional movements have developed at three locations on the sewer main during the mining of LWs S1A to S3A. No impacts to were detected on the sewer main.

With an appropriate management plan in place, potential impacts on the Sydney Water sewerage pipelines have been managed during the mining of LWs S1A to S3A and can be managed during the extraction of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions.

4.7 Gas Infrastructure

4.7.1 Moomba-Sydney Gas Pipeline and Gorodok Ethane Pipeline

The *Moomba-Sydney Gas Pipeline and Gorodok Ethane Pipeline* is located south of Bargo township and will not experience mine subsidence movements due to the extraction of LW S1A-S7A.

4.7.2 Local Jemena Infrastructure

The locations of local gas infrastructure within and adjacent to the Study Area are shown in Drawing No. MSEC1192-14. There is a 150 mm diameter steel main, which runs along Remembrance Drive and distributes gas to the townships north of Bargo, including Tahmoor, Thirlmere and Picton.

The total length of gas pipelines within the Study Area is approximately 3.2 km.

The take-off point for the 150 mm steel main from the Moomba-Sydney Gas Pipeline is located on Hawthorne Road outside the Study Area. The local Jemena gas infrastructure servicing the Bargo township has a take-off point at the same location. The take-off point consists of a number of buried pits, a pillar box and guard rail.

Longwalls 22 to 32 have directly mined beneath approximately 19 kilometres of gas pipes and no impacts have been recorded so far. The local nylon and 160 mm polyethylene main along Remembrance Drive are very flexible and have demonstrated that they are able to withstand the full range of subsidence experienced during longwall extraction at Tahmoor Mine to date. While no impacts have been experienced to date, it is acknowledged that the most vulnerable element of the system is the rigid copper pipe connections between the gas mains and houses, which can be readily repaired.

A difference between the gas infrastructure at Bargo compared to the gas infrastructure at Tahmoor is the existence of the 150 mm steel gas main at Bargo. This pipe passes through the Bargo township, mainly along Remembrance Drive. As the steel pipe was constructed in 1994, it was designed and constructed in accordance with the requirements of SA NSW. Steel gas pipelines of similar and larger diameter have been successfully mined directly beneath in the past in the Southern Coalfield (McGill, 2007) and Newcastle Coalfield (Robinson, 2007). Being of relatively small diameter, the pipe is expected to withstand considerable deformation.

Tahmoor Coal has consulted with Jemena and has engaged specialist pipeline engineers who are experienced in mine subsidence to conduct analyses to assess the potential for impacts on the pipeline. The analyses included an assessment of changes in pipe stresses due to the predicted subsidence, tilt, curvature and strain movements and a sensitivity analysis to assess the magnitudes at which differential movements may exceed acceptable limits. The results indicate that the pipeline can tolerate the predicted conventional subsidence movements due to the extraction of LW S1A to LW S7A. Pipe stresses are assessed to exceed acceptable limits when compressive ground strains exceed approximately 6 mm/m.

If observed ground strains or severe ground deformations are observed to develop during mining, the pipe can be exposed and adjusted to decouple the pipe from the differential ground movements. Pre-planned traffic control and security measures would be required to be implemented if these works are required. In the event of a minor gas leak, the pipeline can also be repaired without interruption to services.

Tahmoor Coal has developed Subsidence Management Plans in consultation with Jemena for the existing LWs 22 to 32 and LW W1-W4 at Tahmoor Mine to manage potential impacts on local gas infrastructure at Tahmoor.

A Subsidence Management Plan has been developed in consultation with Jemena to manage potential impacts on the local gas infrastructure within the Study Area. With the implementation of these management strategies, it would be expected that the local gas infrastructure could be maintained in safe and serviceable conditions during and after the extraction of the proposed longwalls. Non-conventional

movements have developed at three locations on the steel gas main along Remembrance Drive during the mining of LWs S1A to S3A. The impacts to the steel gas main were successfully managed in accordance with the management plan.

With an appropriate management plan in place, potential impacts on the local gas infrastructure have been managed during the mining of LWs S1A to S3A and can be managed during the extraction of the proposed longwalls, even if actual subsidence movements are greater than the predictions or substantial non-conventional movements occur.

4.8 Electrical Infrastructure

The locations of the electrical infrastructure within the Study Area are shown in Drawing No. MSEC1192-15.

The electrical infrastructure comprises 66 kV transmission lines, 11 kV and low voltage powerlines which are located across the Study Area. The total length of powerlines within the Study Area is approximately 24 km.

The power lines generally comprise aerial copper cables supported on timber poles, but there are also some sections of direct buried cables. The power lines are owned and operated by Endeavour Energy.

The power lines are located across the Study Area and, therefore, could experience the full range of predicted subsidence movements.

The aerial power lines will not be directly affected by the ground strains, as the cables are supported by poles above ground level. The cables may, however, be affected by changes in the bay lengths, i.e. the distances between the poles at the levels of the cables, resulting from differential subsidence, horizontal movements, and tilt at the pole locations. The stabilities of the poles may also be affected by conventional tilt, and by changes in the catenary profiles of the cables.

There is extensive experience of mining directly beneath power lines in the Southern Coalfield which indicates that the incidence of impacts is very low and that any impacts are readily repairable.

Some remedial measures have been required, in the past, which included adjustments to cable catenaries, pole tilts and to consumer cables which connect between the power lines and building structures. It is expected that the mining during the proposed development will result in similar experiences.

If the actual subsidence movements exceeded those predicted by a factor of 2 times, the maximum tilt at the power lines would be 16.6 mm/m (i.e. 1.6 %), or a change in grade of 1 in 60. In this case, the tilts would still be less than the tolerable tilt, which is in the order of 33 mm/m. The incidence of impacts would increase in the locations of greatest tilt, such as adjacent to the active longwall maingate and adjacent to the ends of the proposed longwalls. It would still be expected that any impacts could remediated, including some adjustments of the cable catenaries, pole tilts and the consumer cables, as has been undertaken in the past.

While the predicted ground movements are important parameters when assessing the potential impacts on the power lines, it is noted that the impact assessments were primarily based on historical observations from previous longwall mining in the Southern Coalfield. The overall levels of impact on the power lines, resulting from the extraction of the proposed longwalls, are expected to be similar to those observed where longwalls have previously mined directly beneath power lines in the Southern Coalfield.

Tahmoor Coal has developed Subsidence Management Plans in consultation with Endeavour Energy for the existing longwalls at Tahmoor Mine to manage potential impacts on electrical infrastructure.

A Subsidence Management Plan has been developed in consultation with Endeavour Energy to manage potential impacts on the electrical infrastructure within the Study Area. With the implementation of these management strategies, it would be expected that the electrical infrastructure could be maintained in safe and serviceable conditions during and after the extraction of the proposed longwalls.

Non-conventional movements have developed at three locations along Remembrance Drive during the mining of LWs S1A to S3A. No impacts were observed to the powerlines.

With an appropriate management plan in place, potential impacts on the electrical infrastructure have been managed during the mining of LWs S1A to S3A and can be managed during the extraction of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions or substantial non-conventional movements occur.

4.9 Telecommunications Infrastructure

The locations of the telecommunications infrastructure are shown in Drawing No. MSEC1192-16.

The telecommunications infrastructure within the Study Area comprises optical fibre cables and copper cables. The total length of copper cables within the Study Area is approximately 32.6 km. The total length of optical fibre cables within the Study Area is approximately 6.4 km.

A Telstra optical fibre cable follows the alignment of Remembrance Drive and the Main Southern Railway and crosses directly above the proposed LW S1A to LW S5A. An NBN optical fibre cable follows the alignment of Remembrance Drive. TPG have installed an optical fibre cable along Remembrance Drive from the Wollondilly Anglican College to the Bargo Exchange, following the same route as the NBN optical fibre cable.

The copper telecommunications cables are generally direct buried and follow the alignments of local roads across the Study Area.

An NBN telecommunications tower is located at No. 3166 Remembrance Drive, with access from Yarran Road. The tower is located directly above LW S6A, as shown in Drawing No. MSEC1192-16.

The optical fibre cables along the Main Southern Railway and Remembrance Drive cross a number of streams within the Study Area and could experience valley-related movements in these locations.

The optical fibre cables are direct buried or buried in conduit and could, therefore, potentially be impacted by ground strains. The greatest potential for impacts will occur as the result of localised ground strains due to non-conventional movements or valley related movements.

Tensile strains in the optical fibre cables could be higher than predicted, 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 with 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 cables 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, the strains could be of sufficient magnitude to result in the reduction in capacities of the cables or transmission loss.

Strains transferred into the optical fibre cables can be monitored using Optical Time Domain Reflectometry (OTDR), which can be used to notify the infrastructure owners of strain concentrations due to non-conventional ground movements or valley related movements.

Longwalls in the Southern Coalfield have successfully mined directly beneath optical fibre cables in the past, with little to no adverse impacts on these cables.

The copper telecommunications cables are direct buried and could, therefore, potentially be impacted by ground strains. The greatest potential for impacts will occur as the result of localised ground strains due to non-conventional movements or valley related movements.

The copper cables are more likely to be impacted by tensile strains rather than compressive strains. It is possible, that the direct buried cables could experience higher tensile strains where they are anchored to the ground by associated infrastructure, or by tree roots. The cables could also experience higher compressive strains at the creek crossings as the result of valley related movements.

Aerial copper telecommunications cables are generally not affected by ground strains, as they are supported by the poles above ground level. The aerial cables, however, could be affected by the changes in bay lengths, i.e. the distances between the poles at the levels of the cables, which result from mining induced differential subsidence, horizontal ground movements and lateral movements at the tops of the poles due to tilting of the poles. The stabilities of the poles can also be affected by mining induced tilts and by changes in the catenary profiles of the cables.

Longwalls in the Southern Coalfield have successfully mined directly beneath copper telecommunications cables, where the magnitudes of the predicted mine subsidence movements were similar to those predicted within the Study Area.

It is expected that the mining during the proposed development will result in similar experiences as previously observed in the Southern Coalfield.

The NBN telecommunications tower is expected to experience subsidence during the extraction of proposed LW S5A to LW S7A. The tower is a single pole structure and its structural integrity is unlikely to be adversely affected by the extraction of the proposed longwalls. The predicted tilts of 2.5 mm/m, while small, may affect the operation of the antennae on the structure. The tilts can be readily adjusted by either relevelling the pole or the individual antennae, if required. Tahmoor Coal will consult with NBN regarding the tower to manage potential impacts on the tower and its operations.

Tahmoor Coal has developed Subsidence Management Plans in consultation with Telstra for the existing Longwalls 22 to 32 and LW W1-W4 at Tahmoor Mine to manage potential impacts on telecommunications infrastructure.

Subsidence Management Plans have been developed in consultation with Telstra, NBN and TPG to manage potential impacts on the telecommunications infrastructure within the Study Area. With the implementation of these management strategies, it would be expected that the telecommunications infrastructure could be maintained in safe and serviceable conditions during and after the extraction of the proposed longwalls. Non-conventional movements have developed at three locations on the Telstra optical fibre cable along Remembrance Drive and the Main Southern Railway during the mining of LWs S1A to S3A. The impacts to the optical fibre cable were successfully managed in accordance with the management plan.

With appropriate management plans in place, potential impacts on the telecommunications infrastructure have been managed during the mining of LWs S1A to S3A and can be managed during the extraction of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions or substantial non-conventional movements occur.

4.10 Picton Weir

The Picton Weir is located on the Bargo River just downstream of the confluence with Hornes Creek. The weir was constructed in the late 19th century and it provided water to the surrounding townships. It is now heavily silted and is no longer used for water supply. Water retained by the weir is released at its base through a seized open valve and outlet pipe. No impacts were reported on the Picton Weir during the mining of previously extracted Longwalls 14 to 19, the closest of which was approximately 1.5 kilometres from the Weir (Longwall 19).

The Picton Weir is located approximately 620 metres from LW S7A, as shown in Drawing No. MSEC1192-01. At this distance the Weir could experience very small far-field horizontal movements. While the Weir may experience very small differential horizontal movements as a result of the extraction

of the proposed longwalls, it is extremely unlikely that the Picton Weir would be adversely impacted by the proposed mining.

Tahmoor Coal has studied the potential for impacts to the Picton Weir and developed management measures to ensure that it remains safe throughout the mining period and that impacts on the Picton Weir do not result in environmental consequences on the Bargo River. The study has been completed with input from structural, geotechnical and subsidence engineers.

The management measures include a combination of:

- Mitigation or strengthening measures prior to mining;
- Installation of a monitoring system, which includes, among other things, the monitoring of ground movements (using continuous GNSS monitoring, periodic ground surveys, laser distance surveys, photogrammetric survey and vertical inclinometer surveys), groundwater level and surface water level monitoring;
- Conduct regular detailed visual inspections of the Picton Weir; and
- Implement planned responses if triggered by monitoring and inspections.

As Tahmoor Mine is progressively approaching the Picton Weir, it will be possible to review observations during the mining of each longwall and adjust the mine plan, if necessary to reduce the potential for impacts on Picton Weir. Picton Weir is also located beyond the finishing ends of the longwalls and it will be possible to stop the longwall during mining, if necessary based on actual observations during mining.

A Management Plan has been developed and submitted to Crown Land (as the asset owner) for review and feedback. Tahmoor Coal continues to monitor ground movements at the Weir in accordance with the Management Plan.

With an appropriate management plan in place, it is considered that the Picton Weir will remain safe and serviceable at all times during the extraction of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions or substantial non-conventional movements occurred.

4.11 Wollondilly Anglican College

The Wollondilly Anglican College is located within the Study Area and its location is shown in Drawing No. MSEC1192-19.

The Wollondilly Anglican College is located on Remembrance Drive opposite Tahmoor Mine, directly above and beyond the finishing end of LW S1A. The structures have been constructed in stages from 2003 to 2020.

The buildings are a mixture of single and double storey structures. The majority of the structures are steel framed with brick veneer walls. Newer double storey structures have been constructed as reinforced concrete frames with brick veneer walls. The oldest building, Sturt Cottage, is a single storey, double brick structure.

The building structures have been inspected by a structural engineer and are in good condition. The buildings have been designed to accommodate future subsidence movements. The brickwork is consistent across the buildings, with recessed yellow coloured brickwork beneath the window sills. Most of the windows have light-weight panelling above the window and door openings, which will reduce the potential for impacts.

While the majority of the building consist of standard classrooms, there are some specialised rooms that contain manufacturing and hospitality training equipment. A passenger lift is located within one building.

Small creeks drainage surface water at the rear of the campus. A steel footbridge crosses a creek to provide access to the Rev. John Flynn Collegiate.

Whilst many of the school buildings are larger in size, the form of construction of the structures within the Wollondilly Anglican School are similar to other rural and residential structures in the area. There is extensive experience of mining directly beneath similar structures in the Southern Coalfield which indicates that the incidence of impacts on these structures is very low and the structures have remained in safe and serviceable conditions. This is not surprising as these structures are generally small in size and of light-weight construction, such that they are relatively flexible and ductile compared to masonry buildings.

Whilst some impacts occurred at Wollondilly Anglican College during the mining of LW S1A to S3A, they were repaired in consultation with the school. The school remained safe and serviceable at all times during the mining of LW S1A to S3A. No further impacts are expected during the mining of LWs S4A to S7A, however a final survey and inspection will be conducted following completion of the LW S4A, in accordance with the Management Plan.

4.12 Australian Wildlife Sanctuary

The Australian Wildlife Sanctuary is located within the Study Area and its location is shown in Drawing No. MSEC1192-19.

The Australian Wildlife Sanctuary (formerly the Wirrimbirra Sanctuary) is located on Remembrance Drive and covers an area of approximately 95 ha. The Sanctuary contains rich and diverse plantings of native plants in formalised gardens, which were developed to provide areas of representative native plants for education and research purposes.

Australian Wildlife Sanctuary includes a visitor centre, a glass house and other shade structures, along with established gardens and walks. A dingo sanctuary is located on the property. Two cottages are located next to the visitor centre. Some structures were destroyed by bushfires in late 2019 but the main structures within the sanctuary, and the dingo sanctuary were successfully protected. It is planned to replace the lost buildings in the future.

The Australian Wildlife Sanctuary structures are located above LW S3A and LW S4A. The structures were inspected by structural engineer John Matheson of JMA Solutions in January 2020. The structures generally comprise timber-framed structures with metal-clad timber-framed rooves on reinforced concrete ground slabs. The structures were found to be in serviceable condition.

The nature and footprint size of structures within the Australian Wildlife Sanctuary are similar to other rural and residential structures in the area. There is extensive experience of mining directly beneath similar structures in the Southern Coalfield which indicates that the incidence of impacts on these structures is very low and the structures have remained in safe and serviceable conditions. This is not surprising as these structures are generally small in size and of light-weight construction, such that they are relatively flexible and ductile compared to masonry buildings.

Tahmoor Mine has mined directly beneath more than 2000 structures of similar construction during the mining of Longwalls 22 to 32,LW W1-W4 and LW S1A-S3A. It has managed the mining induced impacts with the implementation of suitable management strategies. The structures have remained safe and serviceable during mining.

If impacts occur, they will most likely consist of non-structural cracking of walls, concrete floors or ceilings. There remains a small probability (less than 2 %), however, that a structure may experience severe impacts as result of substantial non-conventional movements. If impacts occur to heritage listed properties, the damage can be repaired in consultation with a heritage consultant to ensure that the heritage value of the structure is restored.

The primary risk associated with mining beneath the public amenity structures is public safety. Occupants of building structures have not been exposed to immediate and sudden safety hazards as a result of impacts that occur due to mining at the depths of cover similar to those found within the Study Area. This includes the recent experience at Tahmoor Mine, where longwall mining has occurred beneath more than

2000 houses and civil structures. Tahmoor Mine has successfully mined directly beneath public amenity structures during the extraction of Longwalls 22 to 32.

Emphasis is placed on the words “immediate and sudden” as in rare cases, some structures have experienced severe impacts, but the impacts did not present an immediate risk to public safety as they developed gradually with ample time (over a period of months or weeks rather than hours) to relocate occupants.

The Dingo Sanctuary Bargo is located on the same property as the Australian Wildlife Sanctuary but is managed separately. The dingos reside in a fenced enclosure with small structures. It is unlikely that the dingo enclosure and associated structures will experience adverse impacts due to the extraction of the proposed longwalls. The integrity of the fences are being monitored during periods of active subsidence, so that potential impacts can be readily repaired.

Tahmoor Coal has developed a Subsidence Management Plan in consultation with the Australian Wildlife Sanctuary to manage potential impacts on the Australian Wildlife Sanctuary. The management measures include a combination of:

- Pre-mining hazard identification inspection of each structure by structural engineer (complete);
- Consider the implementation of possible mitigation measures prior to mining to reduce the likelihood of severe impacts (complete);
- Installation of a monitoring system, which includes, among other things, the monitoring of ground movements around the visitor centre (complete);
- Conduct regular visual inspections of the building structures and the adjacent Dingo Sanctuary; and
- Implement planned responses if triggered by monitoring and inspections. Repairs to heritage structures would be planned in consultation with a heritage consultant.

Non-conventional movements have developed at one location within the Australian Wildlife Sanctuary during the mining of LWs S1A to S3A. The impacts were successfully managed in accordance with the management plan.

With an appropriate management plan in place, the Australian Wildlife Sanctuary has remained safe and serviceable during the mining of LWs S1A to S3A and will remain safe and serviceable at all times during the extraction of LWs S4A to S7A, even if actual subsidence movements are greater than the predictions or substantial non- conventional movements occurred.

4.13 Industrial, Commercial and Business Establishments

A total of 143 structures are located within the Study Area that are used for industrial, commercial or business purposes. The establishments include the Bargo Petroleum and Hill Top Pit Stop (includes an automotive repair workshop and a wreckers yard), a concrete plant (MKD Machinery), Inghams poultry farms, Bargo Valley Produce facilities, the Canine Country Club and Cattery, Pamak Hobbies and garden railway, and the Tahmoor Garden Centre. They also include mine infrastructure owned and operated by Tahmoor Mine.

The Bargo Waste Management Centre is located more than 1 kilometre from the proposed LW S1A-S7A and will not experience mine subsidence as a result of the extraction of the proposed longwalls.

Tahmoor Coal has previously developed and acted in accordance with risk management plans to successfully manage potential impacts to industrial, commercial and business establishments during the mining of Longwalls 22 to 32, including a turkey processing plant, a large shopping centre and a variety of shops.

Each business is unique in terms of the structures on the property and the activities that are conducted on each property.

Due to the unique nature of each business, individual subsidence management plans have been developed in consultation with the owners of each business that are predicted to experience more than 20 mm of subsidence due to the extraction of the proposed longwalls, prior to the influence of mining. This includes Inghams Bargo Chicken Breeder Production Complex, Bargo Petroleum, MKD Machinery and the Tahmoor Garden Centre. The management strategy for each business includes:

- Consultation with the owner of each business;
- Pre-mining hazard identification inspection of each structure by structural engineer;
- Identification and assessment of potential impacts to the operation of each business and safety of workers and the general public;
- Consideration of mitigation measures to reduce risk prior to the commencement of subsidence movements;
- Consideration of appropriate monitoring measures;
- Consideration of appropriate triggered responses during mining; and
- Development of an agreed detailed subsidence management plan between Tahmoor Coal and the owners of each business.

With appropriate management plans in place, it is considered that the industrial, commercial or business establishments will remain safe and serviceable at all times during the extraction of the proposed longwalls, even if actual subsidence movements were greater than the predictions or substantial non-conventional movements occurred.

Pamak Hobbies includes a weatherboard structure that is used as a hobby train business. Tahmoor Coal and the Structures Management Group advised that the mine subsidence risks for this property are similar to the risks for other residential structures in the area. It was further noted that the weatherboard structure is predicted to experience less than 20 mm of vertical subsidence due to the extraction of LWs S1A to S7A. The property will, therefore, be managed under the Built Features Management Plan rather than developing a separate Property Subsidence Management Plan (PSMP) for the hobby train business. Tahmoor Coal consulted with DPHI, who agreed with the management strategy as per approval letter sent on 11 November 2024.

Tahmoor Coal also identified that a florist business operated in one room of a house on Remembrance Drive. Tahmoor Coal and the Structures Management Group advise that the mine subsidence risks for this property are similar to the risks for other residential structures in the area. The property will, therefore, be managed under the Management Plan rather than developing a separate Property Subsidence Management Plan (PSMP) for the florist business.

4.14 Tahmoor Mine Infrastructure

Surface facilities at Tahmoor Mine, including a total of 142 building structures, tanks and dams are located within the Study Area, as shown in Drawing No. MSEC1192-20. The majority of the facilities have not been directly mined beneath but a number of structures and other infrastructure experienced mine subsidence movements due to the extraction of the proposed LW S1A-S7A. These include:

- Rail loop line;
- The coal stockpile area;
- Overhead coal conveyors;
- Underground coal conveyors and associated tunnels;
- Plant associated with the coal conveyors,
- The drift portal;
- The winder;
- Building structures, including the coal bins, mine office, bath houses, the washery, workshops and the administration building;
- Overhead gantry crane and monorail within the washery;
- The road bridge over the Rail Loop;
- Associated services infrastructure;
- Dams or reservoirs; and
- Unsealed access roads.

There are also surface facilities just outside the Study Area, including the drift that is primary entry and egress from the mine, the No. 3 Shaft that is the second entry and egress from the mine, the gas plant and the power generation plant.

While some impacts occurred, Tahmoor Coal successfully managed potential impacts on the mine site during the mining of LWs S1A to S3A. Whilst GNSS monitoring will continue, monitoring at the mine site has ceased, in accordance with the management plan.

4.15 Structures

A total of 110 houses, 20 swimming pools and 471 associated sheds and other rural and residential structures have been identified within the Study Area. The locations of the structures within the Study Area are shown in Drawing No. MSEC1192-18. There are 78 houses located directly above the proposed longwalls, the majority of which are located directly above LW S4A and LW S5A.

The primary risk associated with mining beneath structures is public safety. Historically, residents have not been exposed to immediate and sudden safety hazards as a result of impacts that occur due to mine subsidence movements in the NSW Coalfields with longwall mining techniques, where the depths of cover were greater than 350 m, such as the case above LW S1A-S7A. This includes the recent experience at Tahmoor during the longwall mining of Longwalls 22 to 32 and LW W1-W4, with more than 2,000 houses and civil structures in the subsidence area.

Emphasis is placed on the words “immediate and sudden” as in rare cases, some structures have experienced severe impacts, but the impacts did not present an immediate risk to public safety as they developed gradually with ample time to relocate residents.

The existing condition of structures varies within the Study Area. This is a function of age, structural design, construction workmanship and maintenance. Pre-mining hazard identification inspections

undertaken by Tahmoor Coal have identified elements of structures that did not appear to comply fully with Australian Standards, in regard to design and construction. In a small number of previous cases prior to the extraction of previous longwalls, the existing structural condition has been considered potentially unsafe and Tahmoor Coal has undertaken measures to repair the defect.

There is a remote possibility that the comparatively small additional contribution of mine subsidence movements could be sufficient to result in the structures that do not meet Australian Standards to become potentially unstable.

Tahmoor Coal will continue its current practice of ensuring that built structures remain safe and serviceable at all times during mining, in accordance with its Built Structures Management Plan. In consultation with landowners, Tahmoor Coal have studied the potential for impacts on the built features and have developed management measures. The study includes input from structural and subsidence engineers. The risk management process has been implemented through a four-staged process, as described below.

4.15.1 Structures Risk Management Process

Stage One

Regular consultation, cooperation and coordination with the community before, during and after mining. This includes letters and door knocking to all residents of structures that will soon be affected by subsidence. The letters offer a free hazard identification inspection by a structural engineer and free survey monitoring marker installation by qualified surveyors.

From 1 July 2025, a mandatory pre-mining inspection is required for properties that are located in a mandatory pre-mining inspection zone. The pre-mining inspections are coordinated by Subsidence Advisory NSW and conducted by either Subsidence Advisory NSW or a nominated consultant. Subsidence Advisory NSW will undertake future pre-mining inspections above LWs S4A-S7A. **Stage Two**

Commercial and major infrastructure site-specific investigations, where they are necessary and appropriate, into the conditions of buildings and associated structures and their surrounding environment (where access is allowed). The site-specific investigations have been and will continue to be undertaken early so that there is adequate time, if required, to arrange additional inspections and/or surveys and implement any mitigation measures before mining-induced impacts are experienced.

For properties located directly above the first 300 metres of the commencing end of a longwall, the investigations are targeted to be undertaken prior to extraction or at the latest, they will be undertaken prior to the first 200 metres of extraction of the longwall.

The site-specific investigations include the following:

- Identification of structures from aerial photographs and kerbside inspections;
- Tahmoor Coal will request access to conduct pre-mining geotechnical inspections of structures located on or immediately adjacent to steep slopes that are predicted to experience more than 20 mm of incremental vertical subsidence due to the extraction of each longwall, if access is granted;
- Tahmoor Coal will request access to conduct hazard identification inspections by a structural engineer to properties with structures that have been specifically targeted on the basis that may be more sensitive to mine subsidence movements, if access is granted. These include:
    - Commercial and business establishments, public amenities and public utilities;
    - Structures of heritage significance;
    - Structures that are located above hidden creeks (none identified within the Study Area);
    - Structures that are located above mapped geological structures (none identified within the Study Area);

- Structures that are located on or adjacent to steep slopes or that have been recommended for structural inspection by the geotechnical engineer;
- Structures that have been identified as being potentially unstable or unsafe by landowners (Stage One), or from the front of house inspections (Stage Two);
- Houses and units located outside the declared Mine Subsidence Districts; and
- Houses and units estimated to have been constructed prior to the declaration of the Bargo Mine Subsidence District.

Stage Three

If access is granted, implementation of hazard mitigation measures following inspections by the geotechnical engineer and the structural engineer, in consultation and agreement with the landowner.

Stage Four

If access is granted surveys and inspections during mining within the active subsidence area:

- Detailed visual inspections and vehicle-based inspections along the streets;
- Ground surveys along the streets and properties;
- Visual inspections of residential structures that are either located on or adjacent to steep slopes, are in poor existing condition (based on the hazard identification inspections), have previously reported impacts, or where recommended by the Structures Response Group;
- Visual inspections of pool fences and gates; and
- Visual inspections of commercial, industrial and business establishments, public amenities and public utilities.

While some impacts have occurred, structures have remained safe and serviceable during the mining of LWs S1A to S3A.

With appropriate management plans in place, structures have been safe and serviceable at all times during the mining of LWs S1A to S3A and will remain safe and serviceable at all times during the extraction of the proposed longwalls, even if actual subsidence movements were greater than the predictions or substantial non-conventional movements occurred.

Regular updates are given to landholders pre-mining, during mining and post mining to ensure landholders are aware of the status of the longwall in relation to their property and the process of lodging a claim if required.

4.16 Built Heritage Sites

There are 4 built heritage sites which have been identified within the Study Area and their locations are shown in Drawing No. MSEC1192-17.

The Australian Wildlife Sanctuary built features are discussed in **Section 4.12**.

The Great Southern Road is discussed in **Section 4.4**.

Tahmoor Mine is discussed in **Section 4.14**.

The Bargo Cemetery is managed by WSC. It is located at the northern end of Great Southern Road directly above the south-eastern end of the proposed LW 5SA, as shown in Drawing No. MSEC1192-19.

The small cemetery is surrounded by a plantation of mature trees. The grave sites and tombstones are in various condition and some graves do not have tombstones. The tombstones are generally of low height. The grounds are grassed and well kept. The cemetery is listed as an item of Heritage Significance.

The grave sites consist of isolated concrete and stone structures that are typically placed on the natural ground surface with minimal foundations. Due to their small sizes, the sites are expected to accommodate normal conventional subsidence movements. Impacts may occur, however, if substantial non-conventional movements developed at the cemetery. This may result in cracking of the surrounds or displacement of tombstones relative to the graves. Non-conventional movements are localised in nature and should substantial non-conventional movements develop at the cemetery, it is extremely unlikely that they will affect every grave site.

Tahmoor Coal has consulted with WSC with respect to managing potential impacts on Bargo Cemetery and has developed a risk control procedures, which have been incorporated into Revision D of the Subsidence Management Plan for Wollondilly Shire Council infrastructure.

The risk control procedures include detailed visual inspections and surveys around the Cemetery during periods of active subsidence.

4.17 Permanent Survey Marks

This section provides detailed information about how the risks associated with mining beneath survey infrastructure will be managed by Tahmoor Coal and the Department of Finance, Service and Innovation, Spatial Services Division.

Permanent Survey Marks are fundamental to spatial infrastructure. This includes Geographic Information Systems and databases that are the primary spatial management tools for all levels of Government. The loss of Permanent Survey Marks can adversely affect future upgrades to physical infrastructure such as road, rail, ports and greenfield developments, as well as the planning and management of other development or resource management projects that require a spatial component, such as urban renewal, mapping and environmental management.

Cadastral Reference Marks are fundamental to the definition and re-establishment of the cadastre. The loss of these marks and Permanent Survey Marks can significantly degrade the integrity and accuracy of the cadastre, and add to the costs of subsequent surveys.

Within NSW there are two main types of survey infrastructure, which are:

- State Control Marks; and
- Cadastral Marks.

Survey marks are used as control for:

- Cadastral or Property Boundary;
- Mine Baselines;
- Engineering Construction;
- Stability Monitoring;
- Imagery and LiDAR control;
- Coordinate Services Utility Information; and
- Flood study.

Spatial Services Division within NSW maintain the Survey Control Information Management System to provide the following functions:

- A database of Marks, their coordinates and other associated Metadata;
- The single point of truth for survey control in NSW; and
- Current datums are GDA2020 and AHD71.

Survey infrastructure is governed by *Surveying & Spatial Information Act 2002*. Under Section 24 of *Surveying & Spatial Information Act 2002 a* person must not remove, damage, destroy, displace, obliterate or deface any survey mark unless authorised to do so by the Surveyor-General. An application is required under Clause 90 of the *Surveying and Spatial Information Regulation 2017* to remove survey marks under section 24 of the Act.

The Surveyor General Direction No. 11 (SGD11) – Preservation of Survey Infrastructure (POSI). In order to obtain authority from the Surveyor-General for the removal of any Permanent Survey Mark or Cadastral Reference Mark, SGD11 POSI process must be followed.

An application to remove, damage or replace Survey Marks affected by subsidence must be in accordance with the SGD11 POSI process.

Under SGD11 POSI process, Tahmoor Coal is responsible to ensure that all survey marks affected by subsidence are protected or that on completion of the works:

- The control survey should be of sufficient horizontal and vertical class to allow existing and/or replacement mark(s) to be coordinated to a similar standard as the mark(s) affected by the works; and
- Sufficient cadastral infrastructure is preserved, or additional marks are placed with appropriate measurements to re-establish the cadastre at the accuracies specified in the *Surveying and Spatial Information Regulation 2017.*

The Clause 90 POSI application, generally consists of the following:

- A report outlining the strategy;
- A field audit of all survey marks; and
- A project plan outlining the strategy and methodology for mark protection and reinstatement of survey infrastructure for the duration of the project, prior to commencement of any mining activity. The plan is to include a diagram or drawing showing the extent of the proposed works.

Agreement on following process:

- Future active longwalls require a Clause 90 POSI application to be submitted using *Application to Remove or Replace Survey Marks* form and following the *SGD11 POSI Procedure for Mining Projects*. A quarterly report to be provided to indicate the general survey mark movement; and

- Rehabilitation of survey marks post long-term subsidence period, if directed by the land owner (after at least 4 years post longwall) a further Clause 90 POSI application to be submitted to outline strategy for rehabilitation of survey marks.

5 Subsidence Monitoring Program

5.1 Performance Measures and Indicators

Performance measures for built features are provided in Table 8 of Condition C5 of SSD 8445 and are summarised in **Table 1** of this Built Features Management Plan.

It is anticipated that the performance measures will be achieved during and after mining of LW S1A-S7A through the implementation of the various Subsidence Management Plans for built features.

5.2 Monitoring Program

Tahmoor Coal has developed a Subsidence Monitoring Plan, which is included in the Extraction Plan for LW S1A-S7A. The Subsidence Monitoring Plan describes the inspection regimes, layout of monitoring points, parameters to be measured, monitoring methods and accuracy, timing and frequencies of surveys and inspections, and recording and reporting of monitoring results.

The Subsidence Monitoring Plan is consistent with the monitoring commitments as described in the following plans, which are submitted as part of Tahmoor Coal's Extraction Plan for LW S1A-S7A:

- Tahmoor Coal – Water Management Plan for LW S1A-S7A (TAH-HSEC-00361);
- Tahmoor Coal – Land Management Plan for LW S1A-S7A (TAH-HSEC-00362);
- Tahmoor Coal – Biodiversity Management Plan for LW S1A-S7A (TAH-HSEC-00363);
- Tahmoor Coal – Heritage Management Plan for LW S1A-S7A (TAH-HSEC-00364);
- Tahmoor Coal – Built Features Management Plan for LW S1A-S7A (TAH-HSEC-00366); and
- Tahmoor Coal – Public Safety Management Plan for LW S1A-S7A (TAH-HSEC-00365).

The Subsidence Monitoring Plan is a live document and will be updated to be consistent with detailed Subsidence Management Plans for built features, which will be developed by Tahmoor Coal in consultation with stakeholders prior to the influence of subsidence on each relevant feature. Each of these management plans describes measures that will be undertaken to monitor subsidence movements and physical changes and/or impacts that occur during mining.

The Subsidence Management Plans include:

- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Main Southern Railway, Report No. MSEC1201, Revision D, August 2025;
- Tahmoor Coal – Management Plan for LW S4A-S7A adjacent to Wellers Road Overbridge, Report No. MSEC1193-19, Revision B, March 2025;
- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Wollondilly Shire Council Infrastructure, Report No. MSEC1193-03, Revision D, August 2025;
- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Sydney Water Potable Water Infrastructure, Report No. MSEC1193-04, Revision C, August 2025;
- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Sydney Water Sewer Infrastructure, Report No. MSEC1193-05, Revision B, August 2025;
- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Jemena Gas Infrastructure, Report No. MSEC1193-06, Revision B, March 2024 and Amendment No.1 for LWS4A in November 2024;
- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Endeavour Energy Infrastructure, Report No. MSEC1193-07, Revision C, August 2025;

- Tahmoor Coal – Telecommunications Management Plan, Tahmoor South Domain Longwalls South 3A to South 7A, Revision of Telstra, NBN Co and TPG Management Plans for LW S1A-S6A, Tahmoor Coal, June 2024;
- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to Built Structures, Report No. MSEC1193-09, Revision C, August 2025;
- Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Wollondilly Anglican College, Report No. MSEC1193-11, 2023;
- Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Tahmoor Mine Site, Report No. MSEC1247, 2023;
- Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Australian Wildlife Sanctuary, Report No. MSEC1074, 2023 (Revision D);
- Tahmoor Coal – LW S3A-S7A Management Plan for Potential Impacts to Picton Weir, Report No. MSEC1193-12, Revision C, April 2025;
- Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Bargo Petroleum and Hill Top Pit Stop, Report No. MSEC1193-13, 2023 and Amendment No. 1 for LW S3A in May 2024;
- Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Inghams Bargo Chicken Breeder Production Complex, Report No. MSEC1193-14, 2023;
- Tahmoor Coal – LW S5A-S7A Management Plan for Potential Impacts to Inghams Turkey Farm, Report No. MSEC1193-20 (planned to complete prior to LW S5A).
- Tahmoor Coal – LW S1A-S6A Management Plan for Potential Impacts to Tahmoor Garden Centre, Report No. MSEC1193-15, 2023, Amendment No. 1 for LW S3A in May 2024 and Amendment No.2 for LWS4A in November 2024;
- Tahmoor Coal – LW S1A-S7A Management Plan for Potential Impacts to MKD Machinery, Report No. MSEC1193-16, Revision D, August 2025;
- Tahmoor Coal – LW S5A-S7A Management Plan for Potential Impacts to Bargo Valley Produce, Report No. MSEC1193-17 (in preparation); and
- Tahmoor Coal – LW S5A-S7A Management Plan for Potential Impacts to Canine Country Club, Report No. MSEC1193-18 (in preparation).

5.3 Baseline Monitoring to Support Future Extraction Plans

To assist in the preparation of future Extraction Plans, built feature monitoring as outlined in the Subsidence Monitoring Plan and the individual Subsidence Management Plans for built features would provide sufficient baseline data. Monitoring data collected during the mining of LW S1A-S7A would be used in the review of observed subsidence impacts to inform future Extraction Plans for the Tahmoor South Domain.

6 Subsidence Management Strategies

6.1 Mine Design Considerations

The Tahmoor South Domain mine plan has undergone a series of amendments since the issue of the first EIS for the Tahmoor South Project in 2014. These mine plan revisions are summarised below:

- EIS Submission (2014): Original EIS submission, which was placed on hold and subsequently withdrawn in late 2015.
- EIS Submission (January 2019): Updated EIS submission based on revised Secretary's Environmental Assessment Requirements (SEARs) issued in June 2018.
- Project Amendment Report (February 2020): The mine design was modified to reduce potential environmental impacts of the Project through the reduction in the extent of longwall mining. This was achieved by the following modifications:
    i. Removal of LW 109, which was located directly beneath Dog Trap Creek. This would result in elimination of direct impacts to Aboriginal heritage items;
    ii. Configuration of the longwall layout to comprise two series of shorter longwall panels;
    iii. Reduction in the proposed longwall width, from approximately 305 m to approximately 285 m; and
    iv. Reduction in the height of extraction within the longwall panels from up to 2.85 m to up to 2.6 m.
- Second Amendment Report (August 2020): The mine design was again modified to further reduce potential environmental impacts. This included the removal of two longwalls in the southern part of the mine near the township of Bargo (LW 107B and LW 108B), which would result in a reduction in magnitude of subsidence impacts.

The numerous modifications of the Tahmoor South Domain mine plan have resulted in a reduction of the magnitude and extent of subsidence impacts.

The current mine plan proposes to complete underground mining with access to the Tahmoor South Domain provided from the existing pit top facilities. This mine design consideration minimises surface impacts from mining through the avoidance of establishing new surface facilities.

6.2 Management and Remediation Measures

6.2.1 Public Safety Management

Tahmoor Coal proposes to continue its long-established practice of ensuring that built structures remain safe and serviceable at all times during mining. Tahmoor Coal, in consultation with landowners, routinely studies the potential for impacts on built features to develop management and mitigation measures. These studies draw upon the subsidence management expertise within Tahmoor Coal and its consultant structural, geotechnical, rail and subsidence engineers.

The Structures Risk Management Process will be implemented through a four-staged process, outlined in **Section 4.14.1**.

6.2.2 Remediation Measures

In the event that remediation of subsidence impacts is required, remediation will be undertaken in consultation with the relevant stakeholders and in accordance with the individual Subsidence Management Plans for built features and the *Coal Mine Subsidence Compensation Act 2017* and the *Coal Mine Subsidence Amendment Act 2024*.

6.3 Trigger Action Response Plan

A series of TARPs have been developed to address various components of built features using the performance indicators for implementation during LW S1A-S7A mining, in accordance with Condition C8(g)(viii) of the Consent. TARPs are included in each of the individual Subsidence Management Plans for built features.

6.4 Contingency Plan

In accordance with Conditions C8(g)(ix) and E5(f) of the Consent, in the event that performance measures (in the form of pre-defined triggers) are considered to have been exceeded or are likely to be exceeded, a response will be undertaken in accordance with the TARPs that are included in the individual management plans for built features. The responses are contingency plans that describe the management / corrective management actions which can be implemented where required to remedy the exceedance.

If a Corrective Action Management Plan is required in accordance with the TARPs, this plan will be prepared in accordance with Section 3.6.3 of the Extraction Plan Main Document.

The success of remediation measures that have been implemented for any TARP exceedance would be reviewed as part of any Corrective Action Management Plan and the Annual Review.

6.5 Adaptive Management Strategies

6.5.1 Adaptive Management for Built Features

Tahmoor Coal are proposing to implement adaptive management for the following built features:

- Wollondilly Anglican College;
- Picton Weir; and
- Wellers Road Bridge on the Main Southern Railway.

An outline of these adaptive management strategies is provided below.

6.5.1.1 Wollondilly Anglican College

In the extremely unlikely event that severe impacts had developed during mining, it would have been possible to pause longwall extraction as it approaches the school to ensure that the school remained safe, serviceable and operational during and after the proposed mining. There were no severe impacts observed during the mining of LW S1A to S3A and this response was not required.

6.5.1.2 Picton Weir

As Tahmoor Mine will progressively approach the Picton Weir, it will be possible to review observations during the mining of each longwall and adjust the mine plan, if necessary to reduce the potential for impacts on Picton Weir. Picton Weir is also located beyond the finishing ends of the longwalls and it will be possible to stop the longwall during mining, if necessary based on actual observations during mining.

6.5.1.3 Wellers Road Bridge

As Tahmoor Mine will progressively approach the Wellers Road Bridge, it will be possible to review observations during the mining of each longwall and adjust the mine plan, if necessary to reduce the potential for impacts on the Overbridge.

6.5.2 Continuous Improvement

Tahmoor Coal have adopted the “Plan-Do-Check-Act” model as shown in **Figure 4**. This model will be applied to all aspects of Tahmoor Coal’s environmental management and is utilised to embed the continuous improvement process in all system documents.

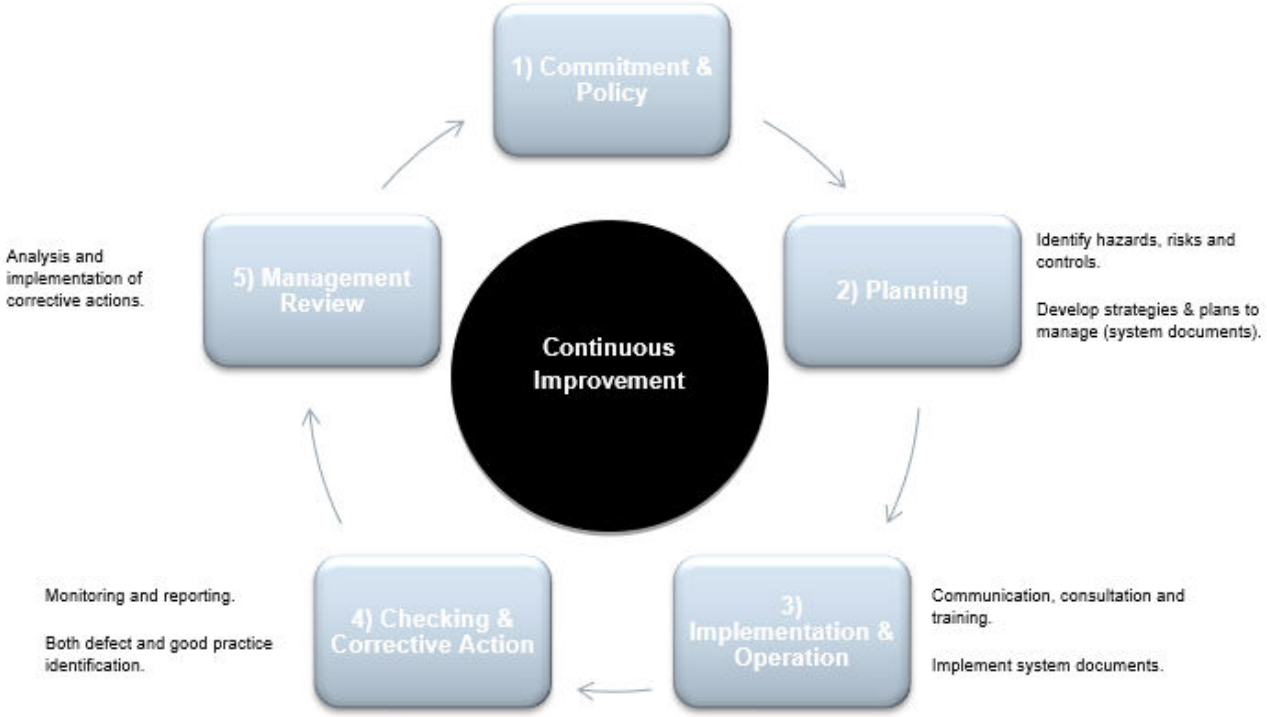

Figure 4 Continuous Improvement Model

7 Implementation and Reporting

7.1 General Requirements

This section of the management plan describes the key elements of implementation and reporting specific to the management of built features.

A description of requirements and procedures that are applicable to the extraction of LW S1A-S7A in general are provided in the Extraction Plan Main Document. This detail includes:

- General reporting requirements, including details regarding Annual Review, and Annual Return;
- Incident management and reporting requirements;
- Non-compliance management and reporting requirements;
- Exceedances management and reporting requirements;
- Compliant and dispute management protocol;
- Audit and review requirements for general environmental performance, including internal audits and reviews, and independent environmental audits;
- General roles and responsibilities;
- Employee and contractor training requirements;
- Response groups to facilitate the review of monitoring data;
- Internal and External Stakeholder Communication Procedures;
- Access to information requirements, including Tahmoor Coal website and the Tahmoor Colliery Community Consultative Committee;
- Document control protocol; and
- Risk assessment for built and natural features and corresponding outcomes.

7.2 Reporting Requirements

7.2.1 Performance Measure Exceedance

In accordance with Condition E4 of the Consent, where any exceedance of the criteria or performance measures outlined within this document has occurred, Tahmoor Coal will:

- Take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action;
- Within 14 days of the exceedance occurring (or other timeframe agreed by the Planning Secretary), submit a report to the Planning Secretary describing these remediation options and any preferred remediation measures or other course of action; and
- Implement reasonable remediation measures as directed by the Planning Secretary.

7.2.2 Specific Reporting for Built Features

Specific reporting requirements will be described in the individual Subsidence Management Plans for built features.

7.3 Review and Auditing

7.3.1 Plan Audit

Audits of the *Built Features Management Plan* are to be conducted in consultation with the Plan owner and nominated individuals and shall focus on the content and implementation.

Audits on the content shall consist of a determination of understanding of the *Built Features Management Plan* by the individual's allocated responsibility under this plan.

Audits on the implementation shall consist of reviews of the safe working procedures and risk assessments developed to ensure safe operation of this *Built Features Management Plan*, they may also involve discussions with personnel involved in the management plan to determine understanding and compliance.

Should an audit of this *Built Features Management Plan* determine that a deficiency is evident in the content or implementation, a corrective action must be developed and implemented. Actions will be assigned to a nominated individual and tracked in Cority.

Tahmoor Coal is responsible to verify that the nominated corrective action has been implemented by way of a follow up audit.

Any changes to the *Built Features Management Plan* are to be managed and communicated to all personnel in line with the Change Management Process.

7.3.2 Plan Review

This *Built Features Management Plan* will be reviewed:

Event based: in accordance with Condition E7 (a) of the Consent, a review will be required within 3 months of any incident, event or finding that identifies an inadequacy in the *Built Features Management Plan* risk assessment or associated documents to continue to effectively manage the identified hazard; a change to the workplace itself or any aspect of the work environment, a change to a system of work, a process or a procedure; or

Time based: in the absence of regular event-based reviews and in accordance with Condition E7 (b-e) of the Consent, this plan will be reviewed within three months of:

- the submission of an Annual Review under Condition E13;
- the submission of an Independent Environmental Audit under Condition E15;
- the approval of any modification of the conditions of this consent (unless the conditions require otherwise); or
- notification of a change in development phase under Condition A19;

If deemed appropriate, relevant stakeholders may be included in the review process. All reviews are to be documented. The process for review of this document will be in according to Tahmoor Coal's *Document and Record Control* (TAH-HSEC-00124).

Following changes (or as otherwise required above), a copy of the amended management plan will be forwarded to the Secretary of the DPHI for approval.

7.3.2.1 Plan Review due to Subsidence Observations

This BFMP can be reviewed and updated to continually improve the risk management systems based on audit, review and learnings from the development of subsidence during mining and manage changes in the nature, likelihood and consequence of subsidence hazards.

The review process will be conducted to achieve the following outcomes:

- Gain an improved understanding of subsidence hazards based on ongoing subsidence monitoring and reviews, additional investigations and assessments as necessary, ongoing verification of risk assessments previously conducted, ongoing verification of assumptions used during the subsidence hazard identification and risk assessment process, ongoing understanding of subsidence movements and identified geological structures at the mine;
- Revise risk control measures in response to an improved understanding of subsidence hazards;
- Gain feedback from stakeholders in relation to managing risks, including regular input from business or property owner;
- Ensure on-going detection of early warnings of changes from the results of risk assessments to facilitate corrective or proactive management actions or the commencement of emergency procedures in a timely manner; and
- Ensure timely implementation of a contingency plan in the event that the implemented risk control measures are not effective.

Some examples where review may be applied include:

- Observation of greater impacts on surface features due to mine subsidence than was previously expected;
- Observation of fewer impacts or no impacts on surface features due to mine subsidence than was previously expected; and
- Observation of significant variation between observed and predicted subsidence.

Should an audit of the BFMP be required during that period, an auditor shall be appointed by Tahmoor Coal to review the operation of the BFMP and report at the next scheduled Plan Review Meeting.

7.4 Roles and Responsibilities

Generic roles and responsibilities applicable for the implementation of the LW S1A-S7A Extraction Plan are discussed in the Extraction Plan Main Document. Roles and responsibilities specific to the implementation of built features management measures are described in the Subsidence Management Plans for built features.

8 Document Information

8.1 Referenced Documents

Reference information, listed in **Table 9** below, is information that is directly related to the development of this document or referenced from within this document.

Table 9 Reference Information

Title
Department of Planning and Environment (DPE) (2022), Extraction Plan Guideline.
Department of Planning and Environment (2017), Resources Regulator, Mine Safety Operations.
McGill (2007). Mitigating the Effects of Mine Subsidence Due to Coal Mining on Major Infrastructure Assets Critical to Sydney. Proceedings of the MSTS Mine Subsidence Technological Society 7th Triennial Conference on Mine Subsidence, 26th to 27th November 2007.
Mine Subsidence Engineering Consultants (2022), Tahmoor South Project – Extraction Plan for Longwalls S1A to S6A: Subsidence ground movement predictions and subsidence impact assessments for natural features and surface infrastructure. Prepared for Tahmoor Coal, May 2022, document MSEC1192.
Mine Subsidence Engineering Consultants (2024), Tahmoor Coal – Modification 3 – Longwall S7A: The effect of the proposed addition of LW S7A on previous subsidence predictions and impact assessments. Prepared for Tahmoor Coal, March 2024, document MSEC1348, Rev B.
NSW Department of Planning & Environment (2017), Resources Regulator, Mine Safety Operations.
Robinson, M. (2007). West Wallsend Colliery - A Coordinated Approach to Managing Subsidence Impacts on Multiple High Risk Sensitive Surface Features: LW27 Case Study. Robinson, M. Proceedings of the MSTS Mine Subsidence Technological Society 7th Triennial Conference on Mine Subsidence, Nov 2007 (pp. 11-22).SIMEC (2019) Tahmoor South Project Environmental Impact Statement, Volumes 1 and 7, dated January 2019.
SIMEC (2020a) Tahmoor South Project Amendment Report, including Appendices A to R and response to submissions, dated February 2020.
SIMEC (2020b) Tahmoor South Project Second Amendment Report, Appendices A to O and response to submissions, dated August 2020.
SIMEC (2020c) Additional information responses dated 14 September 2020 (including Appendices A to L), 23 October 2020 and 4 November 2020.

8.2 Related Documents

Related documents, listed in **Table 10** below, are internal documents directly related to or referenced from this document.

Table 10 Related Documents

Number	Title
TAH-HSEC-00124	Document and Record Control
TAH-HSEC-00365	LW S1A-S7A Extraction Plan Main Document
TAH-HSEC-00361	LW S1A-S7A Water Management Plan
TAH-HSEC-00362	LW S1A-S7A Land Management Plan
TAH-HSEC-00364	LW S1A-S7A Heritage Management Plan
TAH-HSEC-00365	LW S1A-S7A Public Safety Management Plan
TAH-HSEC-00367	LW S1A-S7A Subsidence Monitoring Plan

8.3 Glossary of Terms

Section 8.3 of the Extraction Plan Main Document provides a compiled Glossary of Terms.

8.4 Abbreviations

Abbreviations used in this document are provided below in **Table 11.**

Table 11 Abbreviations

Abbreviation	Definition
ARTC	Australian Rail Track Corporation
BFMP	Built Features Management Plan
CICL	Cast Iron Concrete Lined
CCL	Consolidated Coal Lease
CHPP	Coal handling and preparation plant
Commonwealth DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water Formerly known as Commonwealth Department of Agriculture, Water and the Environment (DAWE)
DAWE	Commonwealth Department of Agriculture, Water and the Environment Now known as Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW)
DPE	NSW Department of Planning and Environment Formerly known as NSW Department of Planning, Industry and Environment (DPIE) Now known as NSW Department of Planning, Housing and Infrastructure (DPHI)
DPHI	NSW Department of Planning, Housing and Infrastructure Formerly known as NSW Department of Planning and Environment (DPE)
DPIE	NSW Department of Planning, Industry and Environment Now known as NSW Department of Planning, Housing and Infrastructure (DPHI)
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
km	Kilometre/s
kV	Kilovolt
LGA	Local Government Area
LW	longwall
LW W1-W3	Longwalls West 1 to West 3
LW W1-W4	Longwalls West 1 to West 4
LW S1A-S6A	Longwall South 1A – South 6A
m	Metre/s
mm	Millimetre/s
ML	Mining Lease
MSEC	Mine Subsidence Engineering Consultants
NBN Co	National Broadband Network Corporation
NSW	New South Wales
OTDR	Optical Time Domain Reflectometry
PCBU	Persons conducting a business or undertaking

Abbreviation	Definition
PE	Polyethylene pipeline
POSI	Preservation of Survey Infrastructure
RCP	Reinforced concrete pipe
Resources Regulator	Department of Regional NSW – Resources Regulator
SA NSW	Subsidence Advisory NSW
SSD 8445	Tahmoor South Project Development Consent (the Consent)
Study Area	Study Area applicable to this management plan consists of a combination of the predicted 20 millimetre (mm) Total Subsidence Contour and the 35o Angle of Draw Line as shown in **Figure 2.**
Tahmoor Mine	Tahmoor Coal Mine
Tahmoor Coal	Tahmoor Coal Pty Ltd
TARP	Trigger Action Response Plan
TfNSW	Transport for NSW
WHS laws	*Work Health and Safety Act 2011* and the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and associated Regulations
WSC	Wollondilly Shire Council

8.5 Change Information

Full details of the document history are recorded below in **Table 12**.

Table 12 Document History

Version	Date Reviewed	Reviewed By	Change Summary
1.0	May 2022	April Hudson, Charlie Wheatley, Zina Ainsworth, Malcolm Waterfall, Peter Vale	New Document.
2.0	September 2022	April Hudson, Charlie Wheatley, Zina Ainsworth	Updated document following consultation with DPE (now DPHI), government agencies and the Independent Advisory Panel for Underground Mining.
3.0	January 2023	April Hudson, Zina Ainsworth	Review in accordance with Condition E7(e) following the commencement of first and second workings (18 October 2022) of the Consent SSD 8445.
4.0	June 2023	April Hudson, Zina Ainsworth	Review in accordance with Condition E7(b) following the submission of an Annual Review (31 March 2023), Condition E7(c) following the submission of an Independent Environmental Audit (2 June 2023) and Condition E7 (d) following the approval of any modification (Modification - 13 June 2023) of the Consent SSD 8445.

Version	Date Reviewed	Reviewed By	Change Summary
5.0	June 2024	April Hudson, Zina Ainsworth	Review in accordance with Condition E7(b) following the submission of an Annual Review (28 March 2024).
6.0	February 2025	Daryl Kay, Nick Le Baut, Zina Ainsworth	Review following the approval of Amendment 2 (shortening of LWS4A) to the Tahmoor South LWS1A-S6A Extraction plan (11 November 2024).
7.0	October 2025	Daryl Kay, Nick Le Baut	Review in accordance with Condition E7(d) following the approval of Modification 3 (26 May 2025) and Condition E7(b) following the submission of an annual review (30 September 2025).

APPENDIX A – Drawings

I:\Projects\Tahmoor South\MSEC1192 - Extraction Plan for LW S1A-S6A\AcadData\MSEC1192-01 General Layout (LWS1A to LWS6A).dwg

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TAHMOOR SOUTH PROJECT EXTRACTION PLAN LW S1A TO LW S7A GENERAL LAYOUT

DATE:	SCALE:	DRAWING No:	Rev No
26 Aug 2025	as shown	MSEC1192-01	D

TAHMOOR
COURIDJAH
BARGO
YANDERRA

276 000
278 000
280 000
6 208 000
6 206 000
6 204 000
6 202 000

LW 14A, LW 9, LW 14B, LW 17, LW 18, LW 19, LW 16, LW 15, LW 8, LW 10B, LW 10A, LW 12, LW 11, LW 1, LW 2

LW S1A, LW S2A, LW S3A, LW S4A, LW S5A, LW S6A, LW S7A

Study Area

600m Study Area for Natural Features

Predicted 20mm Contour after LW S1A to LW S7A

EXTENT OF LONGWALLS

Railway Viaduct

Remembrance Drive Bridge over Bargo River & Main Southern Railway

1755 m

1690 m

Rockford Rd Bridge

Road bridge over Arina Road & Dogtrap Creek

2335 m to Rockford Rd Bridge

2235 m

620 m

PICTON WEIR

to Wellers Rd Bridge

370 m

Wellers Road Bridge over Railway

Bargo River

Dogtrap Ck

Hornes Ck

Yeatree Hollow

BARGO RIVER ROAD
REMEMBRANCE DR
REMEMBRANCE DRIVE
OLIVE GROVE
FIRE ROAD NO P1
STRATFORD RD
PHEASANTS NEST RD
CALOOLA ROAD
YARRAN ROAD
MAIN SOUTHERN RAILWAY
CHARLIES POINT ROAD
GLENGARRY ROAD
WARROBYN RD
ANTHONY ROAD
DWYERS RD
ARINA ROAD
WELLERS ROAD
CLAREMONT DRIVE
ROGANS DRIVE
ASHBY CLOSE
ELVY STREET
IRONBARK ROAD
WATTLE STREET
GREAT SOUTHERN ROAD
GOVERNMENT ROAD
DYMOND ROAD
KADER STREET
BARGO ROAD
HINKLER AVE
JOHNSTON RD
HAWTHORNE ROAD
AVON DAM RD
TYLERS ROAD
MARSHALL AVENUE
RESERVOIR ROAD
REMEMBRANCE DRIVE
ARINA ROAD
M31 HUME MOTORWAY
MOOMBA-SYDNEY GAS PIPELINE
CARLISLE STREET
SILICA ROAD
LUPTON ROAD
AVON DAM ROAD
FIRE ROAD NO 5B

Grid to MGA co-ordinates

LEGEND
- Structures potentially sensitive to differential far field movements
- Historical Mine Workings

Note: The 'Extent of Longwalls' boundary encompasses the proposed extent of underground workings, being the proposed longwall panels & mains headings (first workings).

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TAHMOOR SOUTH PROJECT
EXTRACTION PLAN LWS1A TO LWS7A
RAILWAYS & ASSOCIATED INFRASTRUCTURE

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278 000

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6 208 000

6 206 000

6 204 000

Bargo River Road Bridge

Railway Viaduct (over Bargo R)

96.300

96.400

Remembrance Drive bridge (over Rail)

96.860

Railway culvert

See inset diagram below for Railway loop features

97.560

Railway culvert (over tributary of Bargo River)

97.980

98.160

Tahmoor Mine coal conveyor

BARGO RIVER

Hidden creek

98.445

98.739

Hidden creek

Rail culverts (over tributary of Teatree Hollow)

STUDY AREA

LWS1A

LWS2A

LWS3A

LWS4A

LWS5A

LWS6A

LWS7A

99.035

99.388

TEATREE HOLLOW

Rail culverts (over tributary of Teatree Hollow)

TRIBUTARY OF TEATREE HOLLOW

DOGTRAP CK

100.121

100.425

Rail culvert (over tributary of Teatree Hollow)

101.000

101.162

Wellers Road Bridge

101.470

MAIN SOUTHERN RAILWSAY

101.920

102.244

102.279

102.440

Bargo Railway Station & Pedestrian footbridge

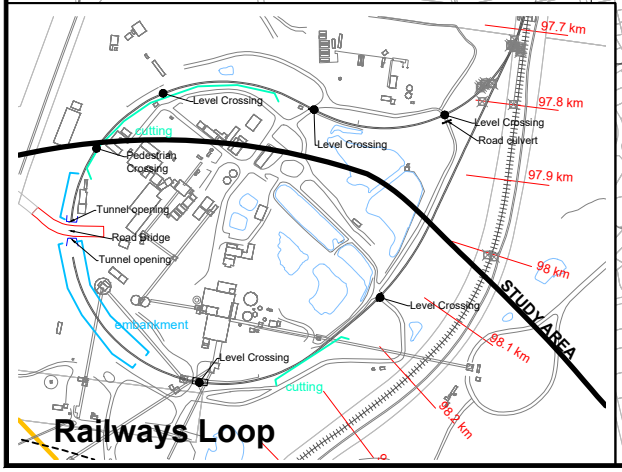
102.873

LEGEND

RAILWAYS

BRIDGE

CULVERT



Railways Loop

Grid to MGA co-ordinates

I:\Projects\Tahmoor South\MSEC1192 - Extraction Plan for LW S1A-S6A\AcadData\MSEC1192-11 Roads.dwg

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TAHMOOR SOUTH PROJECT MANAGEMENT PLAN LW S1A TO LW S7A

ROADS & ASSOCIATED INFRASTRUCTURE

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278 000

6 208 000

6 206 000

6 204 000

REMEMBRANCE DR

Bargo River Road bridge (over Main Southern Railway)

Bargo River Road bridge (over tributary of Bargo R)

Railway Viaduct (over Bargo R)

BARGO RIVER RD

BARGO RIVER

STRATFORD RD

ROCKFORD RD

Remembrance Drive Bridge over Bargo River & Main Southern Railway

OLIVE GROVE

MAIN SOUTHERN RAILWAY

TEA TREE HOLLOW

FIRE RD NO P1

Hidden Creek

Hidden Creek

LW S1A

LW S2A

LW S3A

LW S4A

LW S5A

LW S6A

LW S7A

STUDY AREA

CALOOLA RD

TEA TREE HOLLOW

TRIBUTARY OF TEATREE HOLLOW

YARRAN RD

CHARLIES POINT RD

DOGTRAP CREEK

ANTHONY RD

Wellers Road Bridge

WELLERS RD

CLAREMONT DR

HOGANS DR

ASHBY CLOSE

ELVY ST

LLOYDS WAY

HORNES CK

IRONBARK RD

GOVERNMENT RD

Causeway

HAMBRIDGE RD

MIMOSA ST

KADER ST

GWYNN HUGH

CAMBALAN ST

RADNOR RD

GREAT SOUTHERN RD

HAWTHORNE RD

WATTLE ST

DYMOND RD

BARGO RD

NOONGAH ST

Grid to MGA co-ordinates

LEGEND

- RAILWAY
- PRINCIPAL RDS
- LOCAL RDS
- FIRE RDS
- BRIDGE
- CULVERT

GEOLOGICAL STRUCTRES

- FAULTS
- DYKES

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TAHMOOR SOUTH PROJECT MANAGEMENT PLAN LW S1A TO LW S7A

SYDNEY WATER
POTABLE WATER INFRASTRUCTURE

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PIPE SIZE
- 100 mm Ø
- 150 mm Ø
- 200 mm Ø
- 250 mm Ø
- 300 mm Ø
- 375 mm Ø
- 450 mm Ø
- 500 mm Ø
- 600 mm Ø
- Stop Valves

Bargo River Rd over Railway
Railway Viaduct
Bargo River Rd over tributary
Remembrance Drive Bridge
BARGO RIVER
Hidden Creek
(D-section) Type: DICL Size: 375mmØ Size: 100mmØ
Type: CICL Size: 450mmØ
(T-section) Type: SCL Size: 450mmØ
Type: CICL Size: 100mmØ
LW S1A
LW S2A
LW S3A
LW S4A
LW S5A
LW S6A
LW S7A
TEATREE HOLLOW
TRIBUTARY OF TEATREE HOLLOW
STUDY AREA
PICTON DAM WALL
Type: CICL Size: 200mmØ
Type: DICL Size: 100mmØ
Type: CICL Size: 100mmØ
Type: DICL Size: 100mmØ
(T-section) Type: CICL Size: 150mmØ
Type: DICL Size: 200mmØ
Wellers Rd Bridge (WR-BR1)
TANK
Kader St bridge (KS-BR1)
TRIBUTARY 2 OF DOG TRAP CREEK
TRIBUTARY 1 OF DOG TRAP CREEK
DOGTRAP CK
Grid to MGA co-ordinates

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TAHMOOR SOUTH PROJECT MANAGEMENT PLAN LW S1A TO LW S7A

SYDNEY WATER
SEWERAGE INFRASTRUCTURE

DATE:	SCALE:	DRAWING No:	Rev No
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PIPE SIZE
- 40 mm Ø
- 50 mm Ø
- 63 mm Ø
- 75 mm Ø
- 90 mm Ø
- 100 mm Ø
- 110 mm Ø
- 125 mm Ø
- 140 mm Ø
- 150 mm Ø
- 160 mm Ø
- 180 mm Ø
- 225 mm Ø
- 630 mm Ø

Downstream sensing:
SF0094 at Tahmoor
upstream of SP0919

278 000

Bargo River Rd over Railway

Railway Viaduct

Bargo River Rd over tributary

Remembrance Drive Bridge

270 000

6 208 000

BARGO RIVER

Hidden Creek

Hidden Creek

T-section
Type: PE
Size: 110mmØ

LW S3A

LW S1A

LW S2A

Type: PE
Size: 180mmØ

LW S4A

6 206 000

TEATREE HOLLOW

LW S5A

LW S6A

LW S7A

TRIBUTARY OF TEATREE HOLLOW

PICTON DAM WALL

T-section
Type: PE
Size: 110mmØ

STUDY AREA

Wellers Rd Bridge
(WR-BR1)

TRIBUTARY 2 OF DOG TRAP CREEK

6 204 000

Upstream sensing:
SS0004 at Bargo
Radnor Road / Hambridge Road
High water alarm issued at SS0004

TRIBUTARY 1 OF DOG TRAP CREEK

Kader St bridge
(KS-BR1)

DOGTRAP CK

Grid to MGA co-ordinates

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TAHMOOR SOUTH PROJECT MANAGEMENT PLAN LW S1A TO LW S7A

JEMENA INFRASTRUCTURE

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LEGEND:
Jemena Pipeline
- Ø 32mm NY
- Ø 50mm NY
- Ø 63mm PE
- Ø 150mm Steel Main
- Ø 160mm PE

278 000
276 000
6 208 000
6 206 000
6 204 000

Bargo River Rd over Railway
Railway Viaduct
Bargo River Rd over tributary
Remembrance Drive Bridge
BARGO RIVER
MAIN SOUTHERN RAILWAY
Hidden Creek
Hidden Creek
STUDY AREA
LW S1A
LW S2A
LW S3A
LW S4A
LW S5A
LW S6A
LW S7A
TEATREE HOLLOW
TRIBUTARY OF TEATREE HOLLOW
PICTON DAM WALL
Wellers Rd Bridge (WR-BR1)
TRIBUTARY 2 OF DOG TRAP CREEK
TRIBUTARY 1 OF DOG TRAP CREEK
Kader St bridge (KS-BR1)
DOGTRAP CK
N
Grid to MGA co-ordinates

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TAHMOOR SOUTH PROJECT MANAGEMENT PLAN LW S1A TO LW S7A

ELECTRICAL INFRASTRUCTURE

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276 000

278 000

6 208 000

6 206 000

6 204 000

BARGO RIVER

Hidden Creek

Hidden Creek

STUDY AREA

LW S1A

LW S2A

LW S3A

LW S4A

LW S5A

LW S6A

LW S7A

LEGEND:

- Transmission Lines
- Low Voltage
- 11 kV
- 66 kV
- Substation
- Power Poles

Grid to MGA co-ordinates

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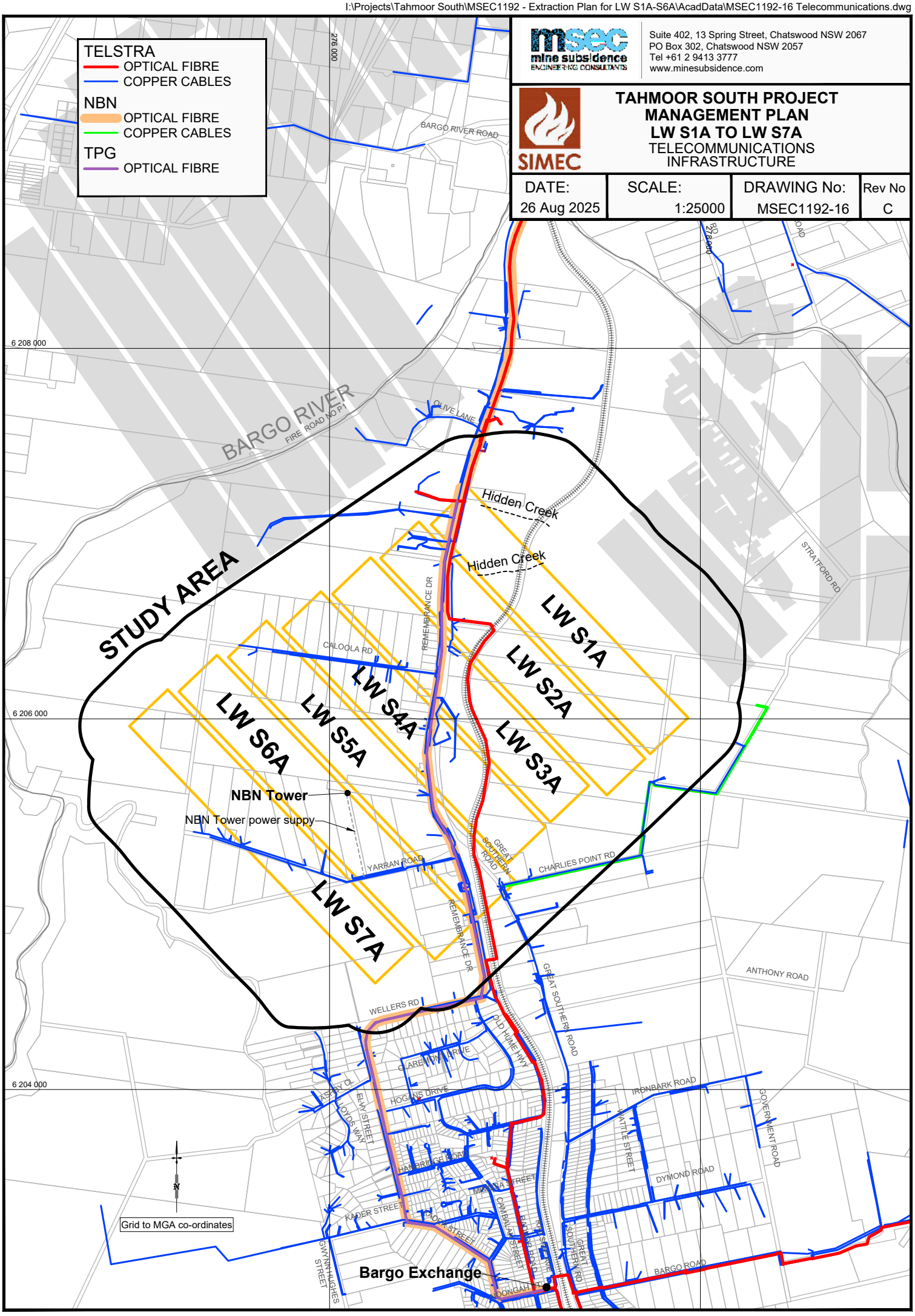

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TAHMOOR SOUTH PROJECT
MANAGEMENT PLAN
LW S1A TO LW S7A
TELECOMMUNICATIONS INFRASTRUCTURE

DATE:	SCALE:	DRAWING No:	Rev No
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TAHMOOR SOUTH PROJECT EXTRACTION PLAN LW S1A TO LW S7A

ARCHAEOLOGICAL & HERITAGE SITES

DATE:	SCALE:	DRAWING No:	Rev No
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LEGEND

ARCHAEOLOGICAL SITES -
- GRINDING GROOVE
- OPEN CAMP SITE
- ISOLATED FIND
- ABORIGINAL DREAMING STORY
- SCARRED TREE
- SHELTER WITH ART
- HERITAGE
- WATERCOURSE

Locations courtesy of Niche

276 000
278 000
6 208 000
6 206 000
6 204 000

BARGO RIVER
MAIN SOUTHERN RAILWAY
Tahmoor Mine
Hidden creek
Hidden creek
48-2-0275
STUDY AREA
52-2-3968
LW S1A
LW S2A
LW S3A
LW S4A
LW S5A
LW S6A
LW S7A
52-2-4471
Wirrimbirra Sanctuary (Australian Wildlife Sanctuary)
TEATREE HOLLOW
TRIBUTARY OF TEATREE HOLLOW
Picton Weir
52-2-1532
DOGTRAP CK
Bargo Cemetery
52-2-3921
52-2-1540
Kalinya Gardens
52-2-4194
52-2-4195
52-2-1538
52-2-1539
Wellers Road bridge (Bargo Railway Bridge North)
Great Southern Road
52-2-4395
Old Coomeroo Homestead
Homestead
Cottage
Bargo Surgery
Post Office
Hotel Bargo
Bargo Railway Station and WC
Bargo Rural Trading Centre
House
House
Railway cottages
Commercial
Cottage
Bargo Public School
Hawthorne
Bargo Public School Residence
Avon Dam Road bridge (over Railway)
52-2-4034
52-2-3872

N

Grid to MGA co-ordinates

I:\Projects\Tahmoor South\MSEC1192 - Extraction Plan for LW S1A-S6A\AcadData\MSEC1192-18 Buildings & Dams.dwg

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TAHMOOR SOUTH PROJECT MANAGEMENT PLAN LW S1A TO LW S7A

BUILDINGS & DAMS

DATE:	SCALE:	DRAWING No:	Rev No
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276 000

278 000

6 208 000

6 206 000

6 204 000

BARGO RIVER

Hidden Creek

Hidden Creek

STUDY AREA

LW S1A

LW S2A

LW S3A

LW S4A

LW S5A

LW S6A

LW S7A

LEGEND

- HOUSES
- RURAL STRUCTURES
- HERITAGE STRUCTURES
- COMMERCIAL STRUCTURES
- PUBLIC AMENITIES & UTILITIES
- POOLS
- TANKS
- DAMS
- GEOLOGICAL STRUCTURES

Grid to MGA co-ordinates

I:\Projects\Tahmoor South\MSEC1192 - Extraction Plan for LW S1A-S6A\AcadData\MSEC1192-19 Public Amenities & Commercial.dwg

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TAHMOOR SOUTH PROJECT MANAGEMENT PLAN LW S1A TO LW S7A

PUBLIC AMENITIES & COMMERCIAL PREMISES

DATE:	SCALE:	DRAWING No:	Rev No
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LEGEND
- COMMUNITY BUILDINGS & SPACES
- PUBLIC UTILITIES
- COMMERCIAL OR INDUSTRIAL BUILDINGS
- GEOLOGICAL STRUCTURES

Grid to MGA co-ordinates

276 000
278 000
6 208 000
6 206 000
6 204 000

BARGO RIVER
Tahmoor Mine
Wollondilly Anglican College
Hidden Creek
Hidden Creek
Inghams Bargo Chicken Breeder Production Complex
Auto Wreckers
Bargo Petroleum and Hill Top Pit Stop
Tahmoor Garden Centre
LW S3A
LW S4A
LW S2A
LW S1A
NBN Communications Infrastructure
Wirrimbirra Sanctuary
MKD Machinery
Bargo Valley Produce
Ingham Turkey Farm
LW S5A
LW S6A
Cemetery
Canine Country Club and Cattery
LW S7A
STUDY AREA
Bargo Waste Management Centre
MAIN SOUTHERN RAILWAY
Sydney Water Reservoir
BARGO EXCHANGE
Bargo Railway Station

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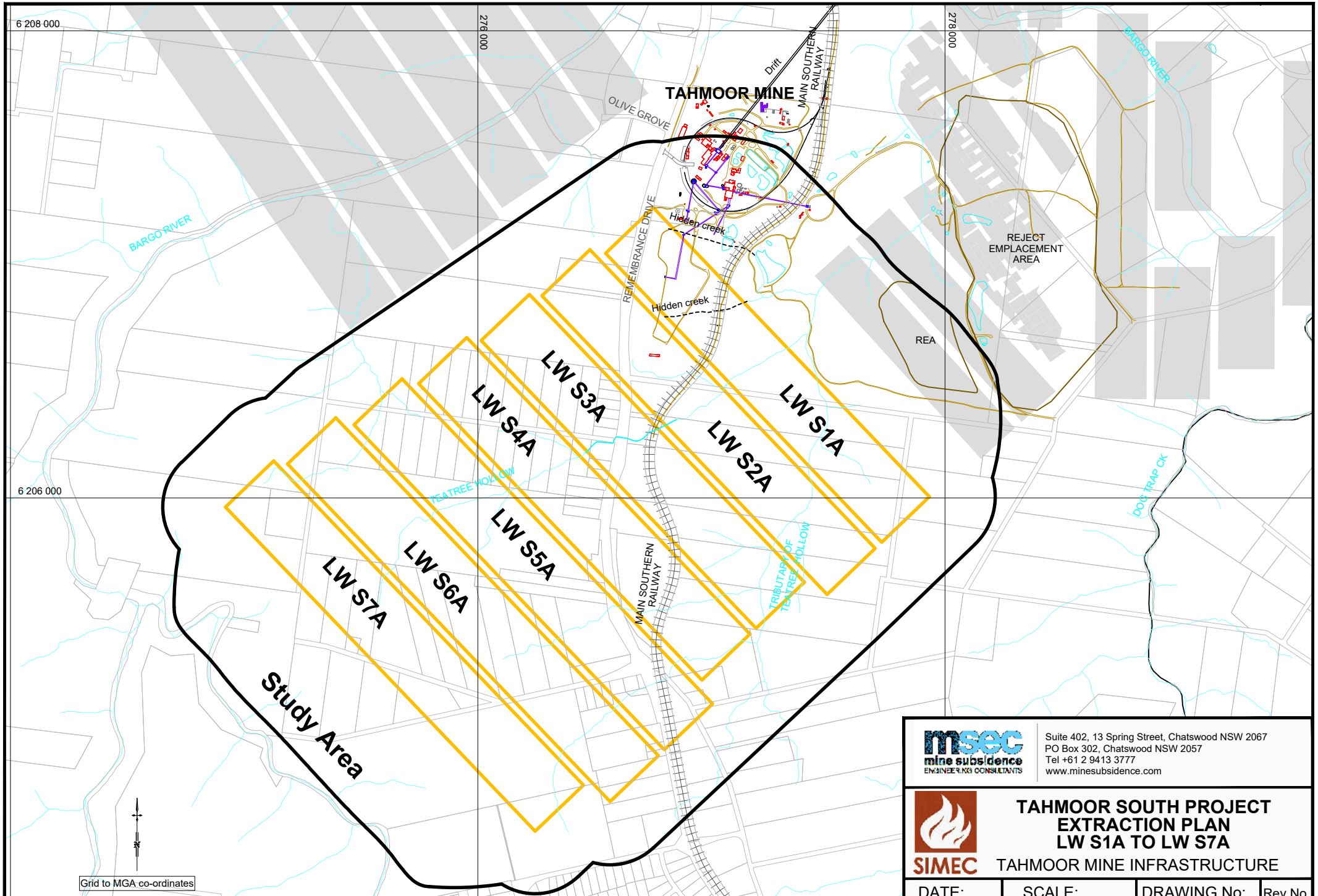

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TAHMOOR MINE INFRASTRUCTURE

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TAHMOOR SOUTH PROJECT
EXTRACTION PLAN
LW S1A TO LW S7A
GROUNDWATER BORES & SURVEY CONTROL MARKS

DATE:	SCALE:	DRAWING No:	Rev No
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LEGEND
- SURVEY CONTROL MARKS

GROUNDWATER BORES
- PRIVATELY OWNED BORES
- SHALLOW MONITORING BORES
- DEEP MONITORING BORES
- PIT-TOP & REA MONITORING BORES

STUDY AREA
LW S1A
LW S2A
LW S3A
LW S4A
LW S5A
LW S6A
LW S7A
BARGO RIVER
Hidden creek
TEATREE HOLLOW
TRIBUTARY OF TEATREE HOLLOW
MAIN SOUTHERN RAILWAY
DOGTRAP CK
276 000
278 000
6 208 000
6 206 000
6 204 000
GW062068
PM 46929
PM 46930
PM 46931
PM 46932
PM 46934
PM 46933
PM 46939
PM 46940
PM 46941
PM 68136
PM 60502
PM 60503
PM 60501
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PM 60496
PM 60495
PM 60494
PM 60493
PM 60492
PM 33057
PM 33058
PM 3116
PM 34218
PM 59421
PM 32597
PM 71324
PM 39417
PM 66365
PM 66368
PM 71331
PM 71332
PM 2601
PM 50489
PM 50490
PM 60491
PM 59409
SS 23783
SS 1909
SS 92424
SS 154156
SS 139423
SS 121598
SS 154287
TS 10705
SS 154157
SS 108773
SS 12146
SS 12147
SS 12148
SS 12149
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SS 12254
SS 12257
SS 19036
SS 20172
SS 47468
SS 52436
SS 52437
SS 55112
SS 58694
SS 64024
SS 64035
SS 81810
SS 88967
SS 101949
SS 101950
SS 118555
SS 118556
SS 118855
SS 118920
SS 118921
SS 133466
SS 175196
SS 175198
SS 175952
SS 1910
SS 1911
MM 2003
MM 2004
MM 2005
MM 2006
MM 2009
MM 2012
MM 2002
GW110669
GW104659
GW104323
GW032443
GW109257
GW014262
GW105883
GW111810
GW105847
GW007445
GW105395
TBC001
TBC024
TBC032
TBC033
TSC-1
P51
P52
P53
P54
P55
P56
P57
REA1
REA2
REA3
REA4
REA5
REA6
REA7
PitTop1
PitTop2
PitTop4
MAIN SOUTHERN RAILWAY
Grid to MGA co-ordinates