



**Planning &
Environment**

**Tahmoor North Mine
Modification to Subsidence Area
(DA 67/98 MOD 4)**

Environmental Assessment Report
Section 75W of the Environmental Planning and Assessment Act 1979

EXECUTIVE SUMMARY

Tahmoor Coal is proposing to modify a development consent for the Tahmoor North underground coal mine to allow mining-related subsidence within a relatively small area that was not previously predicted to experience subsidence during assessment of the approved project. The area, referred to as the 'modification area', comprises some 11 hectares and lies outside the footprint of the proposed longwall panels. Land use in the modification area includes some 48 residential houses in South Picton, as well as Picton High School.

Revised subsidence modelling indicates that the modification area would experience minor subsidence effects, including vertical subsidence of between 20 and 70 millimetres, but with no significant tilts or strains. While there is some potential for minor abnormal or unconventional subsidence associated with geological complexities in the area, all buildings and structures in the modification area are expected to remain safe, serviceable and repairable throughout the mining operations, with no significant structural issues expected.

To manage subsidence during the mining operations, Tahmoor Coal proposes to implement a range of measures consistent with its existing approvals, including preparation and implementation of Subsidence Management Plans for all second workings, risk management plans, property specific management plans and subsidence monitoring programs. Tahmoor Coal has considerable experience with implementing similar plans for its existing project, having subsided some 1,955 houses in the locality since 2004.

The Department considers that the modification application represents a reasonable expansion of the anticipated subsidence footprint for the Tahmoor North mine, and that its assessment indicates that the proposal would not result in any significant environmental impacts. Subject to the adoption of subsidence-related management, monitoring and mitigation measures consistent with the existing approvals, the Department considers that the modification is in the public interest.

1 BACKGROUND

Tahmoor Coal Pty Ltd (Tahmoor Coal) owns and operates the Tahmoor Mine, an underground coal mine located to the south of Picton in the Southern Highlands (see **Figure 1**). Tahmoor Coal was previously a subsidiary of Glencore. However, on 20 April 2018, Glencore finalised sale of Tahmoor Coal to SIMEC (Australia) Mining Pty Ltd (SIMEC).

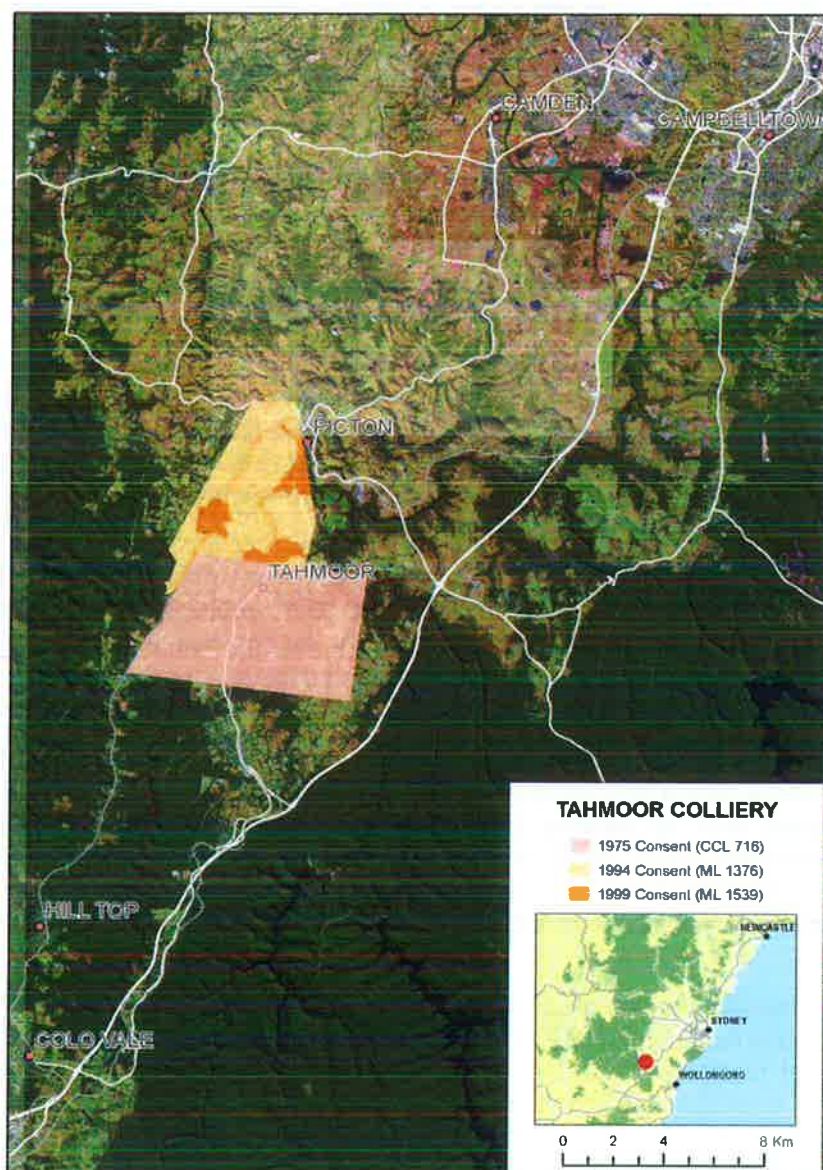


Figure 1: Regional context

The mine operates under several development consents, the earliest of which dates back to 1975, with the key consents shown in **Table 1** below. The approved operational areas are shown in **Figure 2**.

Table 1: Tahmoor Mine development consents

Consent	Consent authority	Permits
DA 1975	Wollondilly Shire Council in 1975	Allows underground mining in the southern area of the Tahmoor Mine
DA 57/93	Land and Environment Court in 1994	Allows mining in the Tahmoor North area, excluding certain areas below urban land and rail infrastructure where mining was, at that time, prohibited under the applicable environmental planning instruments
DA 67/98	Minister for Planning in 1999	Allows mining in parts of the areas previously excluded under DA 57/98. Mining in these areas had become permissible by this time, and the application sought to subside those parts of the excluded areas where subsidence was predicted in the mine plan

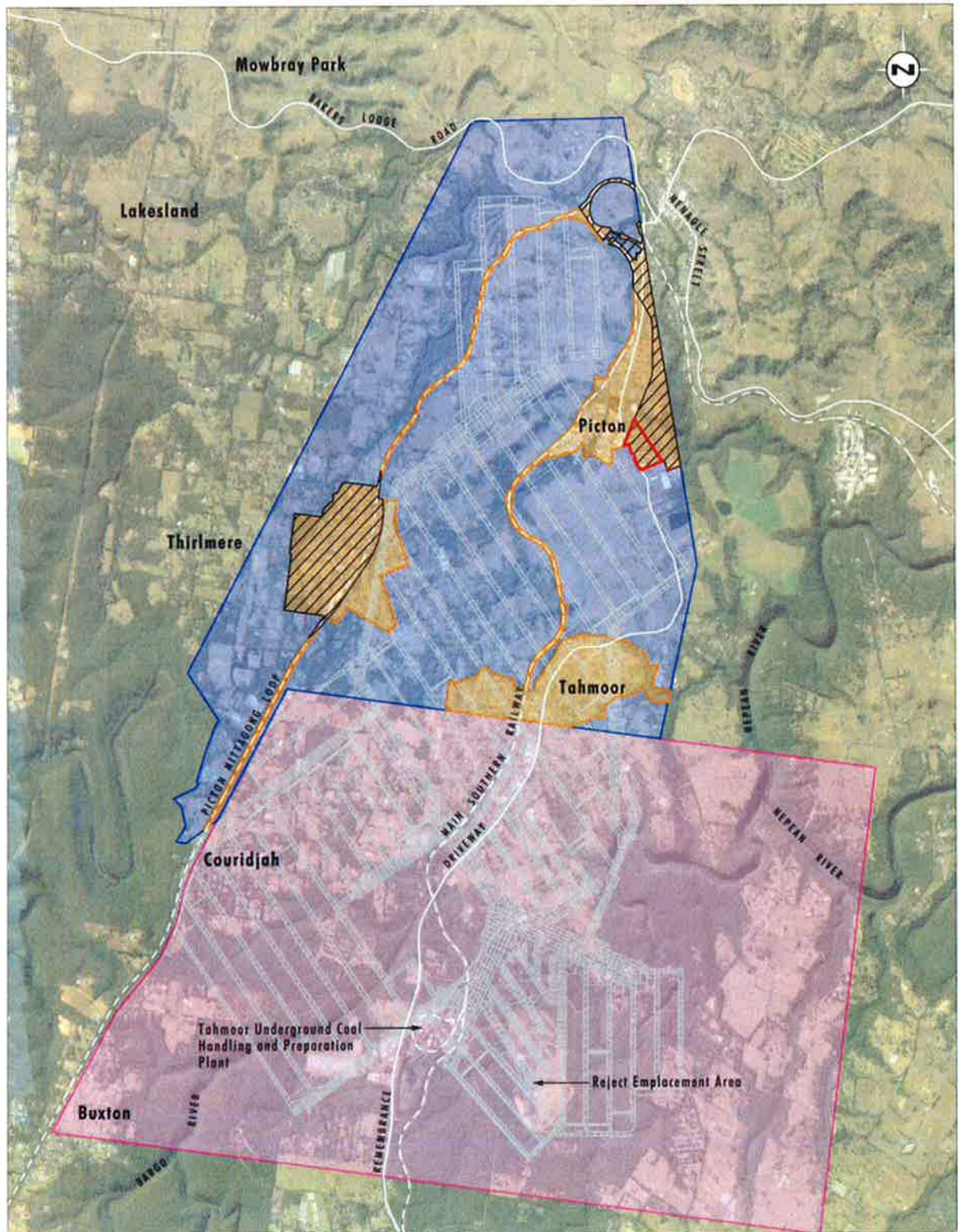


Image Source: Google Earth (CNES/Airbus May 2016)
 Data Source: Tahmoor Underground (2017).
 NSW Department of Industry (2017)

0 1.0 2.0 3.0 km
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Legend

- Proposed Modification Area
- DA 1975 Consent Area (CC: 716)
- DA 57/93 Consent Area (Mt 1376)
- DA 67/98 Consent Area (Mt 1539)
- Area where subsidence is not permitted to occur

FIGURE 2

Tahmoor Underground Operations

Figure 2: Approved operations

Although DA 67/98 allows subsidence in some of the areas previously excluded under DA 57/93, it did not seek, and the consent consequently does not allow, subsidence within other excluded areas that were outside the then-predicted subsidence area. These areas are shown with black hatching on **Figure 2**.

However, DA 67/98 does contemplate the potential for mining in these remaining excluded areas, subject to separate consent. Condition 6(i) of the DA 67/98 consent provides that Tahmoor Coal is not allowed to cause subsidence with the black hatched areas, unless it obtains further approval under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Tahmoor Coal’s ongoing mining operations, geotechnical analysis, subsidence monitoring and subsidence modelling has identified that low levels of subsidence may extend further north-east of the approved mine plan (Longwall 32) than previously predicted. This area includes approximately 11 hectares of the excluded area, which comprises some 48 residential houses in the southern part of Picton, as well as Picton High School. The area is shown in **Figures 3 and 4**.



Figure 3: Modification area

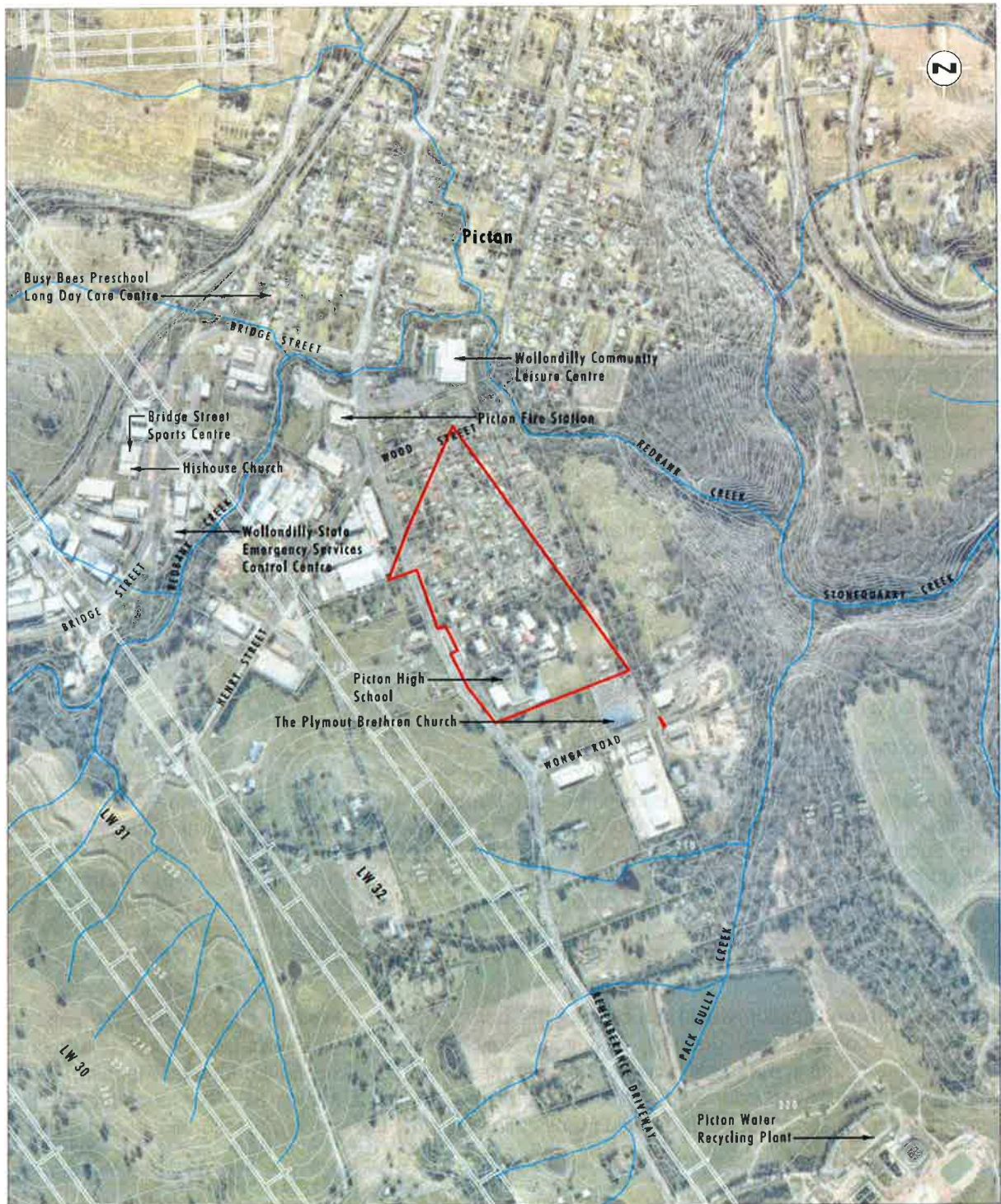


Image Source: Nearmap (Jul 2017)
 Data Source: Tahmoor Underground (2017), Department of Finance, Services & Innovation (2017)
 Note: 5m Contours Interval

Legend
 Proposed Modification Area
 LW 31-37 SMP Mine Plan

FIGURE 1.4

Topography and Land Use Context

Figure 4: Land use context

To allow subsidence in this area, Tahmoor Coal is proposing to modify DA 67/98.

This consent has been modified on three previous occasions, being:

- MOD 1 – granted by the Minister in 2006, which involved a change to the mine plan and allowed mining and subsidence within some of the excluded areas;
- MOD 2 – granted by the Minister's delegate in 2012, which involved a rail line deviation around the Redbank rail tunnel and subsequent mining and subsidence in this area; and
- MOD 3 – granted by the Minister's delegate in 2012, which provided for subdivision associated with the rail deviation.

As outlined above, Tahmoor Coal has previously obtained modification approvals for mining within the excluded areas. Under its existing approvals, Tahmoor North has subsided in excess of 1,955 premises in the Tahmoor and Thirlmere areas since commencement of Longwall 22 in 2004. Subsidence impacts are managed in accordance with detailed Subsidence Management Plans (SMPs) and risk management frameworks regulated by the Department's Division of Resources and Geoscience (DRG) and Resources Regulator under the *Mining Act 1992* and Tahmoor's mining leases.

2 PROPOSED MODIFICATION

Tahmoor Coal is proposing to modify DA 67/98 to allow subsidence within the modification area (see **Figures 3 and 4**).

The proposal does not involve any changes to the approved mining operations, surface facilities or production. The need for the proposal has arisen as a result of improved accuracy in subsidence predictions, as informed by ongoing review of subsidence monitoring data and additional geotechnical information.

The modification is described in detail in the Environmental Assessment (EA - see **Appendix A**).

3 STATUTORY CONTEXT

3.1 Section 75W

DA 67/98 was originally approved under Part 4 of the EP&A Act. However, due to previous modifications, the project is now a 'transitional Part 3A project' under Schedule 2 of the *EP&A (Savings, Transitional and Other Provisions) Regulation 2017*. The power to modify transitional Part 3A projects under section 75W of the Act, as in force immediately before its repeal on 1 October 2011, is being wound up but, as the request for this modification was made before the 'cut-off date' of 1 March 2018, the provisions of clause 3 of Schedule 2 continue to apply. Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister (or delegate) may approve or disapprove the carrying out of the project under section 75W of the EP&A Act.

The proposed modification would not change the purpose of the development for which the existing development consent was granted, or involve any changes to the existing mining operations. Underground mining in the modification area is permissible under *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (the Mining SEPP). Consequently, the Department is satisfied that the proposed modification is within the scope of section 75W, and may be determined accordingly.

3.2 Consent Authority

Under the instrument of delegation dated 11 October 2017 the Minister has delegated his function under section 75W down to 'Executive Directors who report to the Deputy Secretary, Planning Services'. However, this is relevant only where, 'a political disclosure statement has not been made' or 'a political disclosure statement has been made, but only in respect of a previous related application'. The Independent Planning Commission of NSW (IPC) must determine the application, as reportable political donations have previously been declared by Glencore Coal.

In determining this modification, the IPC is the approval authority and has the authority to consider changes to any conditions of consent.

3.3 Environmental Planning Instruments

A number of environmental planning instruments (EPIs) apply to the modification, including:

- *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011;*
- *SEPP (Mining, Petroleum Production and Extractive Industries) 2007;*
- *SEPP (Infrastructure) 2007;*
- *SEPP No 33 – Hazardous and Offensive Development;* and
- *Wollondilly Local Environmental Plan 2011.*

The Department has considered the assessment of these EPIs in the EA and assessed the proposed modification against the relevant provisions of these instruments. Based on this assessment, the Department is satisfied that the proposed modification can be carried out in a manner that is consistent with the aims, objectives and provisions of these instruments.

3.4 Objects of the EP&A Act

The approval authority must consider the objects of the EP&A Act when making decisions under the Act. The objects of the EP&A Act changed on 1 March 2018. The Department has assessed the proposed modification against the current objects of the EP&A Act (see section 1.3 of the Act). The objects of most relevance to the decision on whether or not to approve the proposed modification are:

- Object 1.3(a): *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources;*
- Object 1.3(b): *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;*
- Object 1.3(c): *to promote the orderly and economic use and development of land;*
- Object 1.3(e): *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;*
- Object 1.3(f): *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage); and*
- Object 1.3(j): *to provide increased opportunity for community participation in environmental planning and assessment.*

The Department is satisfied that the proposal would permit the continued proper management and development of a regionally significant coal resource (Objects 1.3(a) and (i)). The Department is also satisfied that the proposal represents an orderly and economic use of land (Object 1.3(c)).

The Department has considered the principles of ecologically sustainable development (ESD, Object 1.3(b)) in its assessment of the proposed modification and considers that the proposed modification is able to be carried out in a manner that is consistent with the principles of ESD. The Department's assessment has sought to integrate all significant environmental, social and economic considerations.

Consideration of the protection of the environment and heritage (Objects 1.3(e) and(f)) is provided in **Section 5** of this report. The proposed modification does not involve any material changes to environment and heritage matters.

The Department exhibited the modification application and accompanying EA and also made them publicly available (Object 1.3(j)).

4 CONSULTATION

After accepting the EA for the proposed modification, the Department:

- publicly exhibited the EA from 8 November 2017 until 22 November 2017; and
- notified relevant State and local government authorities.

During the exhibition period, the Department received 5 submissions from public authorities and 1 from a member of the general public residing in Elanora Heights in northern Sydney.

None of the public authorities objected to the proposal. The single public submission objected to the proposal, on the grounds that subsidence should not be allowed to occur in the excluded areas.

The **Division of Resources and Geoscience** (DRG) noted that the SMP for Longwalls 32-37 is yet to be approved (contrary to what was indicated in the EA). Sustainable rehabilitation outcomes can be achieved notwithstanding the proposed modification, and risks can be effectively regulated through

conditions of mining leases granted under the *Mining Act 1992*. Tahmoor Coal subsequently confirmed that the reference in the EA to the SMP for Longwalls 32-37 being approved was in error.

The **NSW Resources Regulator** acknowledged that low levels of subsidence may be expected, but that there is some uncertainty about the likely extent of subsidence because:

- the area is in close proximity to a major geological structure (ie the Nepean Fault);
- there is a buried creek within the area, which may result in valley closure/upsidence subsidence effects, and may be associated with geological complexities (eg faulting or jointing) which could also result in higher-than-predicted subsidence; and
- some buildings at Picton High School may be more vulnerable to subsidence compared to nearby residential structures.

The Resources Regulator requested additional investigation and sensitivity analysis in relation to these matters and the feasibility of undertaking high frequency subsidence monitoring within the school. Tahmoor Coal subsequently provided additional information on these matters (see **Section 5.1** below).

In its submission on the RTS, the Resources Regulator acknowledged the additional investigations undertaken by Tahmoor Coal and its consultants. The Resources Regulator noted that there remained inherent uncertainty about the potential for abnormal subsidence, however this is essentially an operational matter which can be dealt with under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013*.

The **Office of Environment and Heritage** (OEH) noted that the EA's flood assessment was limited to the 1% AEP (Annual Exceedance Probability) event, and recommended that Tahmoor Coal considers the impact of mine subsidence for the full range of flooding, up to the Probable Maximum Flood (PMF). Tahmoor Coal subsequently provided additional information in this regard (see **Section 5.2**).

The **Department of Industry – Lands and Water Division** (Dol) did not raise any issues, but suggested that the Environmental Management Plan and Groundwater Management Plan be updated and submitted to Dol for review. The Department notes that existing consent conditions require Tahmoor Coal to update its management plans following any modification of the consent.

Subsidence Advisory NSW acknowledged that, while significant subsidence impacts in the modification area are unlikely, appropriate management plans should be in place to ensure that buildings and other improvements within this area remain safe and serviceable.

Tahmoor Coal provided a Response to Submissions document in June 2018 to address issues raised in the submissions. The submissions and response document are provided as **Appendices B and C** respectively.

5 ASSESSMENT

The Department has considered the merits of the modification application. **Section 5.1** contains a summary of the Department's consideration of the key issue, being subsidence impacts. Consideration of other potential impacts is provided in **Section 5.2**.

5.1 Subsidence

Land uses and key built features in the modification area include 48 residential dwellings, Picton High School, three local roads (Argyle Street, Wood Street and Coachwood Crescent), a small area of industrial zoned land, services and infrastructure (including potable water, sewer, gas, electricity and telecommunications) and a survey control mark.

There are no significant environmental features within the modification area, including no watercourses, alluvial land or significant aquifers, steep slopes or significant remnant vegetation. There is also no major sensitive infrastructure that has the potential to be impacted by the proposal, such as highways, railways, bridges or tunnels.

The EA includes a detailed Subsidence Assessment, prepared by Mine Subsidence Engineering Consultants (MSEC), which assesses potential subsidence and subsidence impacts associated with the proposed modification.

The Subsidence Assessment indicates that subsidence in the modification area would be relatively minor, ranging from 20 to 70 millimetres (mm) vertical subsidence. A summary of maximum predicted

subsidence parameters, both in the modification area and the broader mining area for Longwalls 31-37, is provided in **Table 2** below, and the predicted subsidence contours are shown in **Figure 5**.

Table 2: Maximum subsidence predictions

Location	Vertical Subsidence (mm)	Tilt (mm)	Hogging curvature (km ⁻¹)	Sagging curvature (km ⁻¹)
Modification area	70	<0.5	<0.01	<0.01
Longwall 31-37 area	1,225	6.0	0.09	0.13

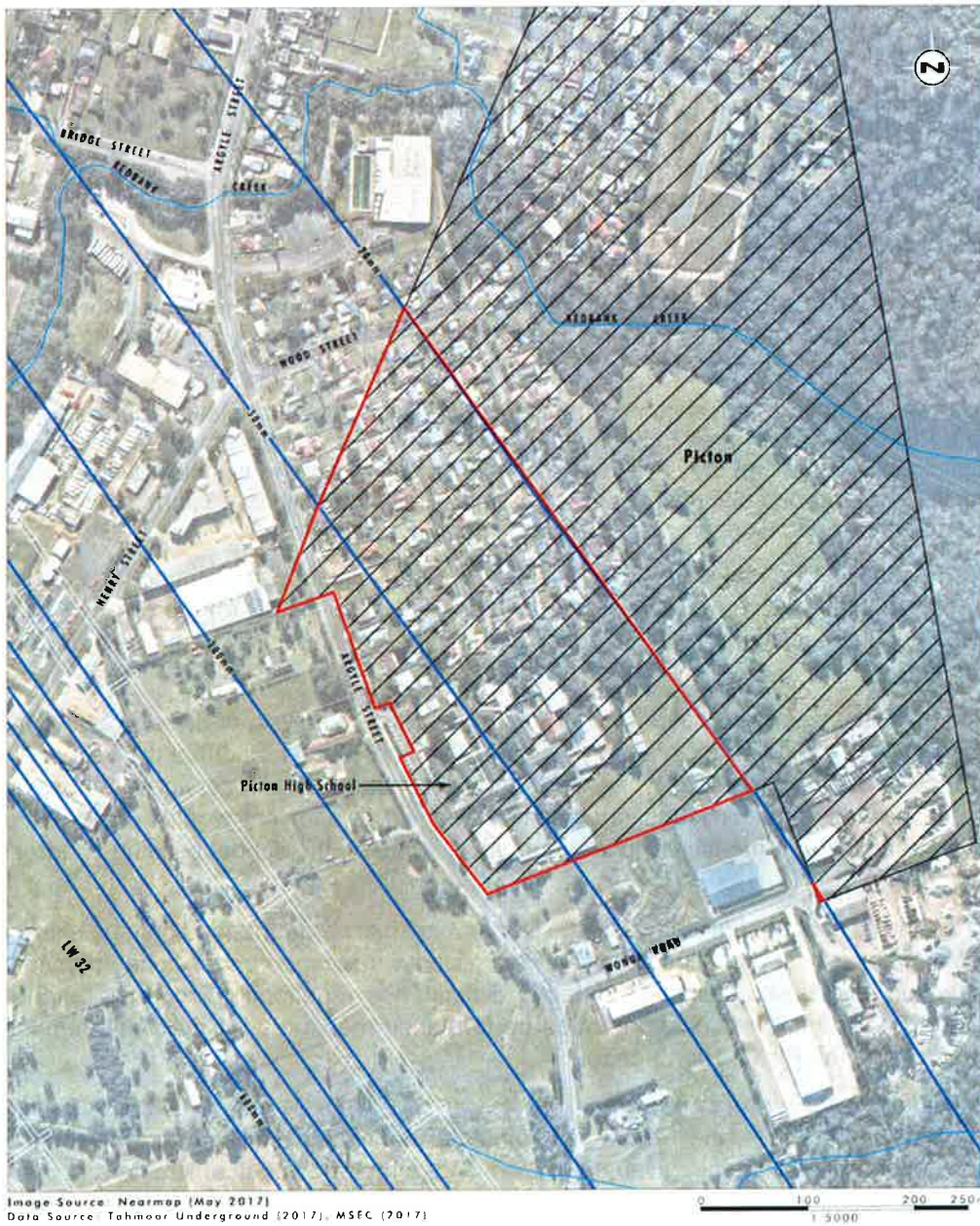


Image Source: Nearmap (May 2017)
 Data Source: Tahmoor Underground (2017), MSEC (2017)

- Legend**
- ▭ Proposed Modification Area
 - Area where subsidence is not permitted to occur
 - Predicted Subsidence Contour
 - LW 31-37 SMP Mine Plan

FIGURE 6.1
 Predicted Total Subsidence
 LW31-37 SMP Mine Plan

Figure 5: Predicted subsidence

Based on these predictions, the Subsidence Assessment concludes that subsidence in the modification area is unlikely to result in any surface cracking or hydraulic connection to water resources, given the

considerable depth of mining (greater than 480 metres (m)). Fracturing is predicted to extend approximately 150 m above the extracted coal seams.

5.1.1 Residential houses

The Subsidence Assessment predicts that vertical subsidence would range from 20 to 70 mm, with no measurable tilts, curvatures or strains. Consequently, all houses and associated buildings/structures are predicted to experience nil to negligible impacts and are expected to remain safe, serviceable and repairable throughout mining operations. Any impacts are expected to be able to be rectified with minor adjustments to door/window swings, or repair of cornices and expansion joints.

Tahmoor Coal proposes to manage subsidence impacts on residential structures in accordance with its existing risk management and SMP framework, which provides for:

- preparation of property-specific management plans (PSMPs) for all properties predicted to be affected;
- pre-mining identification of buildings that may be subject to subsidence-related risks;
- implementation of management measures based on this risk assessment;
- subsidence monitoring during mining operations; and
- rectification and repair of structures as required.

5.1.2 Picton High School

The Subsidence Assessment predicts that vertical subsidence would range from 20 to 70 mm, with no measurable tilts, curvatures or strains. All buildings and structures are predicted to remain safe, serviceable and repairable throughout mining operations, with no disruption to school operations or safety expected.

Tahmoor Coal would manage subsidence impacts on the school in a similar manner as residential houses, with a PSMP to be prepared in consultation with the school. Initial structural investigations of the school buildings indicate that they are in serviceable condition with no significant structural issues. The EA notes that the school is planning some redevelopment works, and that Tahmoor Coal is working with the Department of Education to ensure that any impacts are minimised.

Monitoring for Picton High School is proposed to involve 'high frequency' monitoring (as suggested by the Resources Regulator), which would be developed as part of the PSMP for the school. The PSMP would be developed in consultation with the school. The Department has recommended a condition to ensure this occurs.

The Subsidence Assessment also notes that structural sensitivity analysis of the school buildings (by engineers John Matheson and Associates, on behalf of Tahmoor Coal) found that the school buildings comprise a range of standard building types, and that the structures are in serviceable condition with no significant structural dilapidation identified. Additional sensitivity analyses would be undertaken prior to mining, with strategies and measures to manage subsidence on the school buildings addressed as part of the school PSMP.

For Longwall 33 and all subsequent longwalls, the Department has recommended that the existing SMP process is replaced by a best-practice Extraction Plan process, managed under updated conditions of consent. Extraction Plans would include detailed Subsidence Monitoring Programs and PSMPs. Furthermore, the Department has recommended performance measures for built features, including public infrastructure (ie the Picton High School).

5.1.3 Potential environmental constraints

As outlined in **Section 4** above, the Resources Regulator cautioned that there is some uncertainty about the likely extent of subsidence, given the proximity of a major geological structure in the locality (ie the Nepean Fault) and a buried creek within the modification area. These geological complexities have the potential to result in higher than predicted subsidence and/or 'valley closure' or 'upside' effects.

In response to these issues, Tahmoor Coal commissioned specialist engineering geologists SCT Operations to map and assess the potential effects associated with the Nepean Fault. It also commissioned MSEC to further consider the issues raised by the Resources Regulator, including the buried creek.

Nepean Fault

With regard to the Nepean Fault, SCT's mapping work found that the modification area is 340 m to the south-west and 190 m to the north of the fault structure (at its closest), although a second-order fault passes through the southern corner of the modification area (see **Figure 6**).

SCT considered a number of potential subsidence outcomes associated with the fault, including the potential for:

- greater than predicted subsidence;
- unconventional subsidence;
- fault plane mobilisation; and
- subsidence to occur more quickly due to micro-seismic activity.

Based on previous mining at Tahmoor near the Nepean Fault and its additional assessment, SCT concluded that none of these potential outcomes are likely to occur, and none have the potential to be principal hazards.

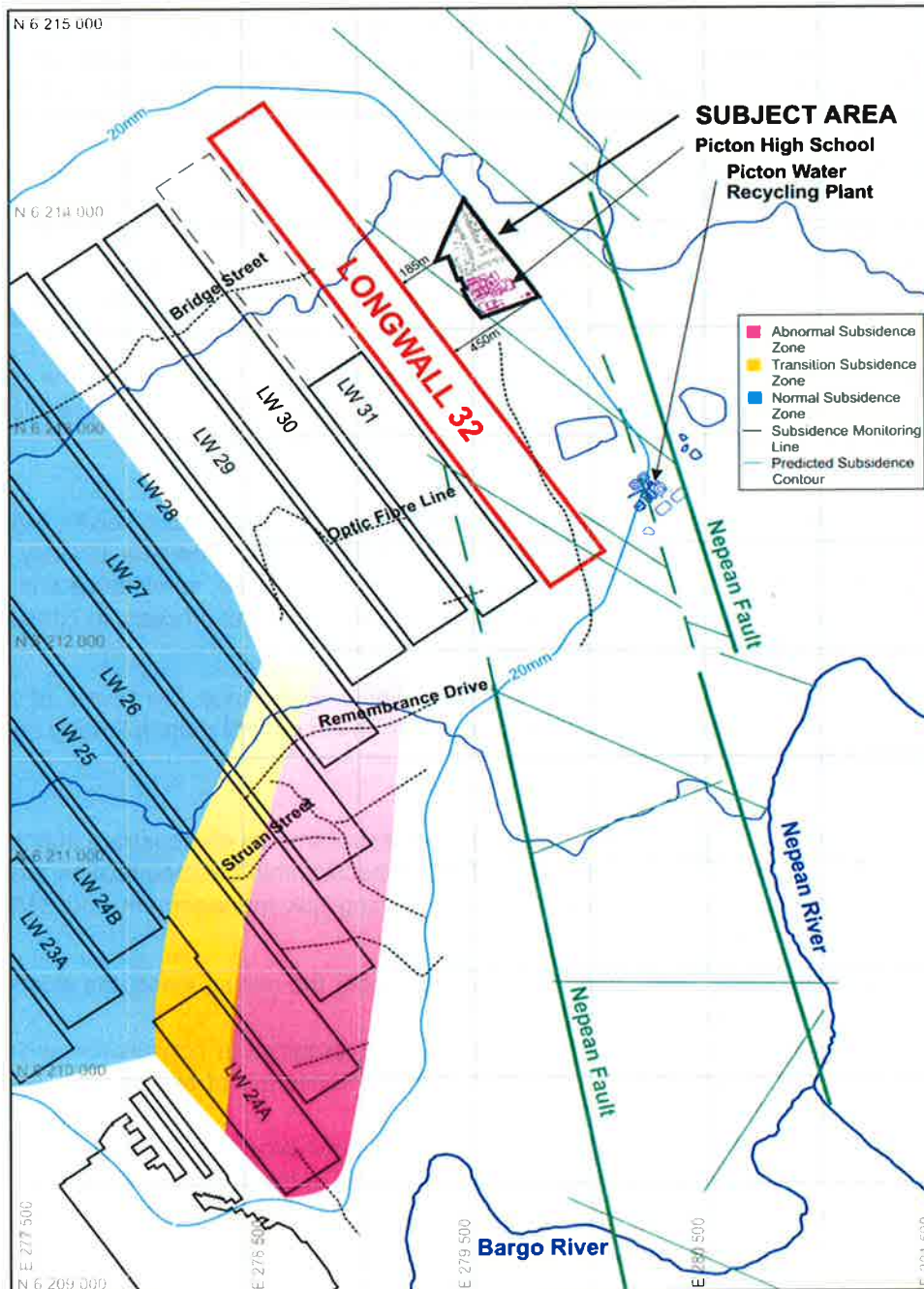


Figure 6: Nepean Fault and abnormal subsidence

SCT noted that previous mining near the Nepean Fault (Longwall 13) did not lead to any unusual or unconventional subsidence behaviour. Abnormal subsidence near the south-eastern ends of Longwalls 24A to 28 has been observed, however this has not extended beyond the panel edges. This abnormally decreased as mining moved northward and became minimal by Longwall 29, despite mining being closer to the fault (see **Figure 6**). The abnormal subsidence in this area is believed to be primarily the result of local characteristics¹ associated with the incised gorge in this location, rather than the Nepean Fault.

MSEC's Subsidence Assessment noted that there has been no increased subsidence, tilt or strains observed in other areas mined at Tahmoor that have similar distances to the Nepean Fault and extracted panels as has the modification area. MSEC's assessment also includes additional review of potential subsidence effects associated with the fault, reaching a similar conclusion as SCT (ie that no impacts are likely).

'Buried creek'

The Subsidence Assessment notes that a former creek within the modification area is situated within a broad valley and has a depth of about 5 m. The predicted valley closure associated with the creek is very low, due to the distance of the area to the nearest mining area (ie Longwall 32) and the relatively shallow valley depth.

This assessment acknowledges that, while predicted movements are low, there is some possibility of unconventional, valley closure related movements due to the geological complexities possibly associated with the buried creek (ie faulting or jointing). However, based on experience with other mined areas below residential areas with buried creeks at Tahmoor, the assessment indicates that any such unconventional movements are likely to be minor, with built structures remaining safe and serviceable throughout the mining period and subsequently.

With the implementation of robust subsidence monitoring and management, the Subsidence Assessment concludes that any unconventional subsidence and associated impacts would be able to be detected early and mitigation implemented to avoid more significant impacts.

Other infrastructure

With regard to infrastructure within the modification area (including roads, water, sewer, electricity, gas and telecommunications), the Subsidence Assessment indicates that there is unlikely to be any significant adverse impacts, and that all infrastructure would remain safe, serviceable and repairable. Risk management plans would be prepared as part of the SMP approval process, in consultation with each of the applicable infrastructure owners or service providers.

The survey control mark within the modification area would experience low levels of subsidence (approximately 50 mm), and Tahmoor Coal would re-establish the control mark following completion of subsidence-related ground movements.

Conclusion

The Department accepts that Tahmoor Coal's subsidence assessments demonstrate that the proposal is unlikely to result in any significant subsidence-related impacts within the modification area, and that subsidence can be managed in accordance with the existing risk management and SMP approval frameworks established for the mine.

In this regard, in addition to the SMP approval framework under the mining lease, the existing consent requires Tahmoor Coal to (among other things):

- prepare and implement a detailed subsidence monitoring program in consultation with DRG and Council. The monitoring program is required to include monitoring of strains and impacts in the vicinity of the Nepean Fault;
- notify landowners within the subsidence area of the intention to proceed with second workings;
- undertake pre-mining structural inspections of improvements in the subsidence area;
- rectify or compensate any damage caused by project-related subsidence; and
- acquire properties where damage is, or is likely to be, severe or unrepairable.

¹ Localised weathering of joint and bedding planes above a depressed water table.

The Department believes that these conditions (and the SMP approval process) are adequate to address the potential impacts associated with the proposed modification. However, in accordance with the Resources Regulator's recommendations, the Department has recommended a condition requiring Tahmoor Coal to undertake high frequency subsidence monitoring and additional structural sensitivity analyses at Picton High School.

In addition to the existing requirements, the Department has taken the opportunity to update the consent to reflect current best practice for management of underground coal mines in NSW, including recommending performance measures and requiring that all longwalls from Longwall 33 onwards be managed under a contemporary Extraction Plan process.

The performance measures are drafted so that individual impact limits apply to groups of similar and related features. The performance measures provide a management regime based not only on the significance and sensitivity of the feature being protected, but also the risk profile, likelihood and severity of potential impacts occurring at the particular feature.

The performance measures are not intended to act in isolation; rather, they operate to provide an umbrella framework under which a range of other considerations and assessments are undertaken either prior to, during or following the extraction of each longwall panel to avoid and minimise subsidence impacts. In particular, these assessments relate to the preparation and approval of Extraction Plans. The Extraction Plan process provides a detailed assessment process which supports the achievement of the performance measures.

5.2 Other Issues

The Department's consideration of other issues is summarised in **Table 3** below.

Table 3: Consideration of other issues

Issue	Consideration	Recommendation
<i>Water resources and flooding</i>	<ul style="list-style-type: none"> There are no natural watercourses in the modification area, with the closest creek (Redbank Creek) being located approximately 100 m to the north-east. Predicted subsidence in the modification area is not expected to result in any impacts to this creek system or other surface water systems in the area. There are no alluvial lands, significant groundwater aquifers or registered groundwater bores in the modification area. As such, no significant groundwater impacts are expected. The modification area is outside the 1% AEP flood level for Redbank Creek, and is not expected to influence the local flooding or drainage regime. In response to OEH's request for consideration of other flood events including the PMF, Tahmoor Coal noted that the modification area is well outside the 1 in 100-year flood level, and that mining in the Tahmoor North area is not expected to result in significant changes to flood levels along Redbank Creek. While the PMF level has not been modelled, Tahmoor notes that the mine is unlikely to have any significant effect on the PMF, which is used for flood emergency planning purposes rather than for urban development planning. Nonetheless, Tahmoor Coal has committed to undertaking modelling of the PMF as part of the SMP for Longwall 32. In response to this additional information, OEH noted that the modelling should not be limited to the impacts of subsidence on the PMF event. Rather, it should provide a sound understanding of flood behaviour in a PMF event so that flood risk for the project and the adjacent community can be understood and managed. The Department accepts that the flood modelling indicates that the modification area is well outside the 1 in 100-year flood level and acknowledges Tahmoor Coal's commitment for additional flood modelling prior to mining closer to the area. The Department has recommended a condition formalising this commitment. The Department also notes that condition 7 of Schedule 2 of the existing consent requires Tahmoor Coal to manage mining so as not to result in the subsidence of any habitable floors to below the 1% AEP flood level. In addition to these requirements, the Department has also recommended that all future Extraction Plans include a flood management protocol to: 	<p>The Department recommends Tahmoor Coal undertake additional flood modelling prior to mining Longwall 32 as part of the SMP process. The Department also recommends that a flood management protocol be developed as part of future Extraction Plans.</p>

Issue	Consideration	Recommendation
	<ul style="list-style-type: none"> - identify secondary access routes for those properties that could potentially be adversely impacted by 1% AEP flood events; - regularly consult with landowners that would not have either a primary or secondary access route during 1% AEP flood events; - provide up-to-date information (including subsidence and flooding predictions) to the State Emergency Service and Council regarding privately-owned residences that could be adversely affected by lack of access during 1% AEP flood events; and - work with landowners, State Emergency Service and Council to develop evacuation plans to ensure landowners know what to do in the event of emergency as a result of a 1% AEP flood event. 	
<i>Noise, air quality and greenhouse gases</i>	<ul style="list-style-type: none"> • The proposed modification is not expected to result in any increase to approved impacts. 	No additional conditions required.
<i>Biodiversity</i>	<ul style="list-style-type: none"> • There is no significant remnant vegetation or habitat in the modification area, and the proposed modification is not expected to result in any impact to the biodiversity values of the locality. 	No additional conditions required.
<i>Heritage</i>	<ul style="list-style-type: none"> • There are no known Aboriginal or non-indigenous heritage items in the modification area, and the proposed modification is not expected to result in any impact to the heritage values of the locality. 	No additional conditions required.
<i>Traffic</i>	<ul style="list-style-type: none"> • The proposed modification would not result in any increase in traffic impacts associated with the existing project. 	No additional conditions required.
<i>Visual amenity</i>	<ul style="list-style-type: none"> • Subsidence effects and impacts in the modification area would be very minor, and are unlikely to result in any discernible changes to visual amenity of the locality. 	No additional conditions required.
<i>Hazards and wastes</i>	<ul style="list-style-type: none"> • The proposed modification would not result in any significant increase in non-subsidence related hazards or waste generation associated with the project. 	No additional conditions required.
<i>Socio-economic</i>	<ul style="list-style-type: none"> • The proposed modification would not result in any increase in employment at Tahmoor Mine, however it would support the continued employment of the mine's 343 employees. • The proposal would also assist in avoiding sterilisation of some 300,000 tonnes of run-of-mine (ROM) coal, most of which is good quality coking coal, which may otherwise be sterilised if mining of Longwall 32 cannot proceed due to the existing restriction on subsidence in the modification area. 	No additional conditions required.
<i>Land resources and agriculture</i>	<ul style="list-style-type: none"> • There are no significant agricultural resources in the modification area, and the proposed modification is not expected to result in any impact to other land resources. 	No additional conditions required.
<i>Mining in excluded area</i>	<ul style="list-style-type: none"> • The Department acknowledges the public submission that objects to mining within the excluded areas under but notes that these areas were only excluded as a result of prevailing prohibitions under EPIs at the time of the original consent. • Underground mining is permissible in the modification area under current EPIs, and the Department considers that mining in the modification area should be assessed on its merits. 	No additional conditions required.

6 RECOMMENDED CONDITIONS

The Department has prepared a draft notice of modification for the proposed modification and a resultant consolidated consent (see **Appendices D and E**).

The recommended conditions include a small number of administrative updates. They also formalise the Resources Regulator's recommendations for monitoring of subsidence at Picton High School and Tahmoor Coal's commitment to undertaking additional flood modelling. The Department considers that the key subsidence-related impacts associated with the proposed modification can be otherwise addressed under the existing SMP approval process and mining leases. In addition to the existing requirements, the Department has taken the opportunity to update the consent to reflect current best practice for management of underground coal mines in NSW, including recommending performance measures and requiring that all longwalls from Longwall 33 onwards be managed under a contemporary Extraction Plan process.

Tahmoor Coal has reviewed and accepted the recommended conditions.

7 CONCLUSION

The Department has assessed the modification application, EA, submissions on the proposal and Tahmoor Coal's response to these submissions, in accordance with the objects of the EP&A Act and the principles of ecologically sustainable development.

This assessment indicates that the subsidence effects and impacts within the modification area would be relatively minor and that all buildings, structures and infrastructure in the area would remain safe, serviceable and repairable throughout the mining operations, with no significant structural issues expected.

To manage subsidence during mining operations, Tahmoor Coal proposes to implement a range of measures consistent with its existing approvals, including preparation of SMPs for all second workings, risk management plans, PSMPs and subsidence monitoring programs.

The Department considers that the modification application represents a reasonable expansion of the anticipated subsidence footprint for the Tahmoor North mine, and that its assessment indicates that the proposal would not result in any significant environmental impacts. Subject to the adoption of subsidence-related management, monitoring and mitigation measures generally consistent with the existing approvals, the Department considers that the modification is in the public interest.

Following its assessment of the project, the Department considers that the modification is approvable, subject to the proposed conditions (see **Appendix D**). This assessment report is hereby presented to the Independent Planning Commission of NSW for determination.

Recommended by:



Howard Reed
Director
Resource Assessments

13-9-18

Recommended by:



Oliver Holm
Executive Director
Resource Assessments and Compliance

13/9/18

APPENDIX A:

ENVIRONMENTAL ASSESSMENT

See the Department's website at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8853

APPENDIX B: SUBMISSIONS

See the Department's website at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8853

APPENDIX C:

RESPONSE TO SUBMISSIONS

See the Department's website at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8853

APPENDIX D:
NOTICE OF MODIFICATION

APPENDIX E:
CONSOLIDATED CONSENT
