



APPENDIX R

Social Impact Assessment Addendum

Tahmoor South - Addendum SIA
Tahmoor Coal Pty Ltd
20-Feb-2020



Tahmoor South Project

Addendum to Social Impact Assessment

Tahmoor South Project

Addendum to Social Impact Assessment

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Executive Summary

Tahmoor Coal is seeking development consent for the continuation of mining at Tahmoor Mine, extending underground operations and associated infrastructure to the south of the existing mine, within the Bargo area (the Project). The Project seeks to continue the life of underground mining at Tahmoor Mine for an additional 13 years until approximately 2035.

An Environmental Impact Statement (EIS), including a Social Impact Assessment (SIA) (Appendix Q of the EIS), was prepared and placed on public exhibition from 23 January 2019 to 5 March 2019. Government agencies, local councils, organisations and community members were invited to comment on the Project and the findings of the EIS by lodging a submission with the Department of Planning, Industry and Environment. Issues raised in public and regulatory submissions have been addressed in a Response to Submissions Report.

Project amendments

Key issues raised in submissions included concerns relating to the proposed extent of longwall mining, the associated subsidence impacts, greenhouse gas emissions and the extent of vegetation clearing required for the extension of the rejects emplacement area (REA). In response to these and other issues raised in submissions, Tahmoor Coal made the decision to revise the Project in order to reduce impacts of the Project while protecting the commercial viability of the Project and economic benefit to the state and the local community.

Amendments to the Project have been detailed in a Project Amendment Report, which also provides an updated assessment of environmental impacts, and include:

- Amended mine plan including:
 - Removal of LW109, which was directly beneath Dog Trap Creek;
 - Reconfiguration of the longwall layout to comprise two series of shorter longwall panels;
 - Reduction in the proposed longwall width, from approximately 305 metres (m) to approximately 285 m;
 - Reduction in height of extraction within longwall panels from up to 2.85 m to up to 2.6 m; and
 - Extraction of up to 43 Mt ROM coal over the life expectancy of the Project.
- Reduced REA footprint including:
 - Reduction of estimated volume of rejects from approximately 14.3 million tonnes (Mt) to 11.6Mt;
 - Increased height of the REA from RL 305 m to RL 310 m; and
 - Reduced REA extension footprint from 43 ha to 11.06 ha.
- Amend REA operations including:
 - Operation of haulage production hours from 24 hours to occur during the daytime and evening hours (7 am to 10 pm);
 - Transport rejects via conveyer to the load out point where rejects would be stockpiled for haulage to the REA during daytime and evening hours; and
 - Updated operations to include an additional haul truck (for a total of two trucks) and a front-end loader to transport rejects during the day, to replace night-time haulage of rejects.
- Update ancillary infrastructure to include:
 - Inclusion of a 66-kV overhead powerline easement from the pit top to the proposed ventilation shafts; and
 - Continuation of existing upcast ventilation shaft (T2), with operation reducing usage from two fans to one fan.

Assessment of the Amended Project indicates that impacts would be reduced when compared to the original Project presented in the EIS. This includes impacts on natural and built features (reduction in level of subsidence), terrestrial ecology (reduction in clearing), and amenity (reduction in night time noise impacts).

This SIA Addendum has been prepared to update the original SIA prepared for the EIS, following Project amendments. Whilst it is recognised that the Project amendments would reduce the overall impact of the Project, a review of the social consequences of these changes against the original SIA indicates that there would be no subsequent reduction in the level of social impact. This is based on the fact that impacts have not been fully removed or avoided by the amendments and that the community is deemed to remain highly sensitive to social consequences of these issues. As such the overall social significance of the Project has remained unchanged and would remain consistent with those of the already operational mine.

Issues raised in submissions

This SIA Addendum also further addresses social impacts associated with the Project in relation to issues raised in submissions:

- Subsidence impacts;
- The Aboriginal community;
- Groundwater bore users; and
- Community with ties to surrounding natural features.

The additional social impact assessment of issues raised in submissions identified:

- Subsidence related social impacts - The likelihood of indirect impacts from subsidence (stress, anxiety, uncertainty, disturbance, hardship) is considered to be *almost certain* with *moderate* consequences on affected community members, resulting in a significance/ risk rating of *extreme* (without mitigation). With the implementation of a subsidence management process (designed to inform and support affected community members through the subsidence management and claims process) the likelihood rating can be reduced to *likely*, with the consequence rating likely to remain at *moderate*. This would result in a residual post mitigation significance/ risk rating of *high*.
- Social impacts to the Aboriginal community - The likelihood of social impacts to the Aboriginal community has been rated as *possible* with *moderate* consequences resulting in a significance/ risk rating of *high* (without mitigation). With the implementation of cultural heritage management and consultation measures, the likelihood rating would remain as *possible*, and the consequence of rating can be reduced to *minor* resulting in a residual post-mitigation significance/ risk rating of *moderate*.
- Social impacts to groundwater bore users - The likelihood of indirect social impacts to groundwater bore users is considered to be *possible* with *moderate* consequences of impact without mitigation, resulting in a significance/ risk rating of *high* (without mitigation). With the implementation of groundwater management and consultation processes, designed to make-good affected bore users and support their claims process, the likelihood rating would remain as possible, while the consequence rating of impacts can be reduced to *minor* resulting in a residual post-mitigation significance/ risk rating of *moderate*.
- Social impacts to community with ties to surrounding natural features – The likelihood of social impacts on community with ties to the natural environment is considered to be *possible* and *moderate* in consequence, resulting in a significance/ risk rating of *high* (without mitigation). With the implementation of mitigation and consultation measures aimed at ensuring that the community has input and buy-in into decision making, it is considered that the consequence rating would reduce to *minor* resulting in a post-mitigation risk rating of *moderate*.

Mitigation and conclusion

The management and mitigation measures outlined above are identified in Section 7 of the Tahmoor South Project Response to Submissions Report and are considered sufficient and adequate to address the above social impacts and no additional mitigation measures have been identified.

It is considered that the social impacts identified in the original SIA and this SIA Addendum can be managed by Tahmoor Coal through the implementation of proposed measures. These have been informed by over 40 years of mining in the Southern Coalfields and through significant experience gained in managing social impacts in consultation with the community and other stakeholders.

1.0 Introduction

1.1 Overview of the Project

Tahmoor Coal is seeking development consent for the continuation of mining at Tahmoor Mine, extending underground operations and associated infrastructure south, within the Bargo area (the Project). The Project would extend the life of underground mining at Tahmoor Mine for an additional 13 years, until approximately 2035.

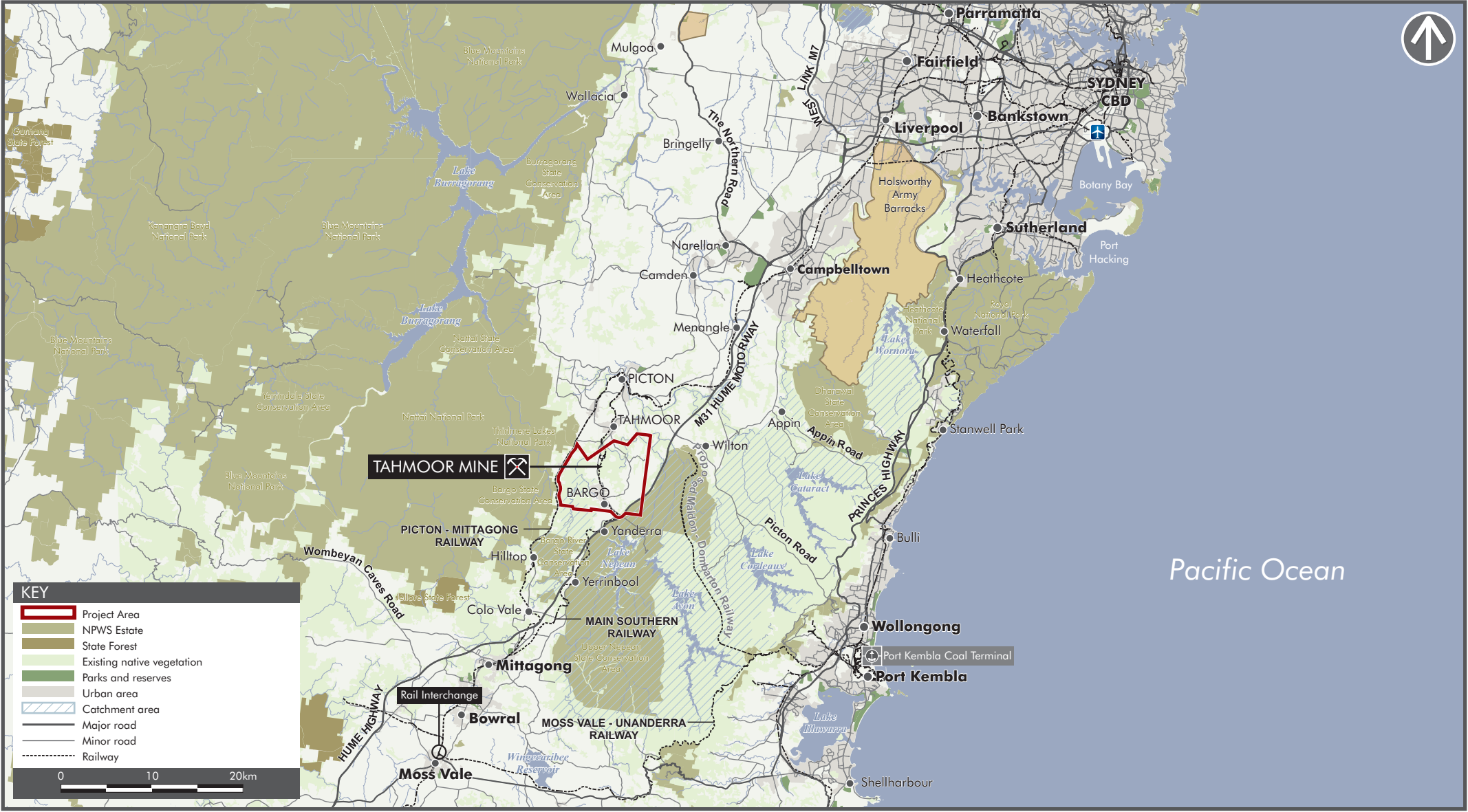
The Project would use longwall mining to extract coal from the Bulli seam within the bounds of Consolidated Coal Lease 716 (CCL716) and Consolidated Coal Lease 747 (CCL747). A map illustrating the location of the Project is shown **Figure 1-1**. Once the coal has been extracted and brought to the surface, it would be processed at Tahmoor Mine's existing coal handling and preparation plant (CHPP) and coal clearance facilities, and then transported via the existing rail loop, the Main Southern Railway and the Moss Vale to Unanderra Railway to Port Kembla and, from time to time, Newcastle, for export to Australian and international markets. Up to 200,000 tonnes per annum of either product coal or reject material is proposed to be transported to customers via road.

In summary the components of the Project comprise:

- Longwall mining in the Central Domain including underground redevelopment, ventilation shaft construction, pre-gas drainage and service connection;
- Upgrades to the existing surface facilities area including:
 - Upgrades to the CHPP;
 - Extension of the existing rejects emplacement area (REA);
 - Additions to the existing bathhouses and associated access ways; and
 - Upgrades to onsite and offsite service infrastructure, including electrical supply.
- Rail transport of product coal to Port Kembla and, from time to time, Newcastle;
- Up to 200,000 tonnes per annum of either product coal or reject material transported to customers by road;
- Mine closure and rehabilitation; and
- Environmental management.

Several amendments have been made to the Project in response to issues raised in Government agencies, local councils, community organisations and community submissions, and as a result of ongoing mine planning. These amendments are detailed **Chapter 2.0**.

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TAHMOOR SOUTH PROJECT

Tahmoor South Project
SIA Addendum

FIGURE 1.1

1.2 Overview of approval process, exhibition and response to submissions

Approval for the Project is being sought as a State Significant Development under Division 4.7, Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project meets the State Significant Development requirements set out in Schedule 1, Clause 5 of the *State Environment Planning Policy (State and Regional Development) 2011*, being a development for the purpose of coal mining. The Project is declared to be a State Significant Development for the purposes of the EP&A Act and the Minister for Planning is the consent authority for the development application.

Secretary's Environmental Assessment Requirements (SEARs) for the Tahmoor South Project (Project) were issued on 9 June 2017, with revised SEARs being issued on 20 June 2018 (in relation to social impact assessment requirements).

The Project was determined to be a controlled action, under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), by the Department of Environment and Energy on 12 January 2018 and supplementary SEARs were issued for the Project on 14 February 2018 to include Commonwealth environmental assessment requirements. The Commonwealth Government has accredited the NSW environmental assessment process under the EP&A Act in a bilateral agreement between the Commonwealth and State governments. As such, the Project is subject to assessment under the provisions of the EP&A Act in accordance with the bilateral agreement.

In accordance with the requirements of the EP&A Act, an EIS was prepared to assess the potential environmental impacts of the Project and address the SEARs and supplementary SEARs issued for the Project. The EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (the Regulation), required the EIS to be placed on exhibition for not less than 30 days. The EIS for the Project was placed on public exhibition by the Department of Planning, Industry and Environment (DPIE) (formerly the Department of Planning and Environment (DPE)) between 23 January 2019 and 5 March 2019.

The EIS was made available on the DPIE web site (<http://majorprojects.planning.nsw.gov.au/>) and in hard copy for public viewing at the following places:

- Wollondilly Shire Council office in Picton;
- Picton Library;
- Wingecarribee Shire Council office in Bowral; and
- Bowral Central Library.

During the exhibition of the EIS, 106 submissions were made: 15 from Government agencies and local Councils, eight from organisations and 83 from the general public. In accordance with clause 85A of the EP&A Regulation, DPIE provided copies of the submissions to Tahmoor Coal, and requested the preparation of a report detailing a response to the issues raised in the submissions.

A Response to Submissions Report has been prepared in response to public and regulatory submissions received on the Project and includes the details of amendments made to the Project since exhibition to reduce overall impacts.

1.3 Purpose of this report and SIA methodology

A Social Impact Assessment (SIA) was prepared and exhibited as part of the EIS for the Project (original SIA).

This SIA Addendum provides an update to the original SIA to confirm changes in predicted social impacts, as reported in the original SIA, resulting from the amendments made to the Project. This Addendum SIA should be read in conjunction with the Tahmoor South Project SIA exhibited as part of the EIS (Appendix Q): *Tahmoor South Project – Social Impact Assessment* (AECOM, 2018).

In addition, this SIA Addendum provides an assessment of specific social concerns raised in public and regulatory submissions following public exhibition of the EIS as follows:

- Subsidence, including:
 - The psychological and other indirect impacts of subsidence including stress, anxiety, uncertainty, disturbance and hardship;
 - The timeframe of subsidence impacts, from when a property owner begins to experience subsidence impacts to when those subsidence impacts conclude; and
 - The assessment of those impacts, the subsequent claims process and possible appeals.
- Social impacts on the Aboriginal community;
- Impacts to groundwater bore users; and
- Impacts on those with ties to surrounding natural features (especially Thirlmere Lakes).

Responses to issues raised by the community and Government agencies have been provided in the Response to Submissions Report for the Project, and an assessment of these potential issues is provided in **Chapter 4** of this SIA Addendum.

The Methodology and Baseline Study for the SIA (detailed in Chapters 2 and 3 of the Tahmoor South Project SIA, Appendix Q of the EIS) remain relevant to this SIA Addendum, and have not been reproduced in this document. The SIA Addendum is limited to providing an update of the impacts (as related to the Project amendments) (**Chapter 3**) and the assessment of the additional matters raised in submissions, including the identification of any additional mitigation measures if required (**Chapter 4**).

The Response to Submissions Report for Tahmoor South identifies a suite of revised mitigation measures for the Project. The additional measures identified in **Section 5.0** of this Addendum SIA should be read in conjunction with those in Chapter 7 of the Response to Submissions Report.

1.4 Structure of this report

This Addendum SIA is structured as follows:

- **Chapter 1.0** - provides an overview of the Project, the EIS and Response to Submission process, the purpose and structure of this Addendum SIA report and an overview of methodology;
- **Chapter 2.0** - provides a description of amendments made to the Project subsequent to the public exhibition of the EIS;
- **Chapter 3.0** - provides an update of the original SIA, based on the amendments made to the Project;
- **Chapter 4.0** - provides an assessment of the issues raised in submissions; and
- **Chapter 5.0** - identifies additional measures (as required) to manage and mitigate the social impacts assessed and presents a conclusion with reference to the Amended Project further described in the Project Amendment Report.

2.0 Project amendments

The Project has been amended as a result of ongoing mine planning in order to further reduce the predicted environmental impacts of the Project, and in response to the following key issues raised in submissions made on the EIS:

- The extent of longwall mining (mine plan) and magnitude of subsidence impacts;
- The extent of vegetation clearing required for the extension of the REA;
- The REA operating during night-time hours causing sleep disturbance; and
- Amendments to the Project are outlined in **Sections 2.1 to Section 2.5**, with an assessment of social impacts provided in **Chapter 3**.

Further detail regarding these amendments is provided in the following sections.

2.1 Mine plan

The following amendments have been made to the mine plan to reduce the extent and magnitude of anticipated surface subsidence:

- Removal of LW109, which was directly beneath Dog Trap Creek;
- Reconfiguration of the longwall layout to comprise two series of shorter longwall panels (refer **Figure 2-1**); and
- Reduction in the proposed longwall width, from approximately 305 m to approximately 285 m;
- Reduction in the height of extraction within longwall panels from up to 2.85 m to up to 2.6 m.

Notably, the revised longwall geometry (longwall width and height of extraction) now proposed as part of the Amended Project is consistent with the longwall mining currently undertaken in Tahmoor North.

The updated Subsidence Assessment undertaken for the Amended Project predicts that the revised longwall extent would reduce levels of subsidence. The results of the revised Subsidence Assessment are detailed in Section 7.1 and Appendix B of the Project Amendment Report.

The above changes would reduce the estimated production volume of the Project from approximately:

- 48 Mt to 43 Mt of run of mine (ROM) coal;
- 35 Mt to approximately 30 Mt of coking coal product; and
- 3.5 Mt to approximately 2 Mt of thermal coal product.

The revised Economic Assessment undertaken for the Amended Project (refer Section 7.11 and Appendix L of the Project Amendment Report) demonstrates that the Project would still generate significant economic benefits to the local and State economy, with a net benefit of \$784 million.

2.2 REA extension

During exhibition of the EIS, concerns regarding the proposed management of coal rejects were raised in submissions.

The EIS proposed to extend the existing REA by 43 ha, which would have required the clearing of a total of 39.7 ha of native vegetation, mainly comprising the Shale Sandstone Transition Forest (SSTF) endangered ecological community (34 ha). Government agency and community concerns related to the impacts of the proposed extension to the REA on native vegetation, and whether alternatives to extending the REA had been properly explored. In response to these concerns, Tahmoor Coal has:

- Undertaken further investigations into alternatives to surface emplacement of rejects; and
- Amended the Project to reduce the REA extension footprint from 43 ha to 11.06 ha, resulting in a reduced extension area of approximately 74% (refer **Figure 2-2**).

Changes to the longwall extent as identified in **Section 2.1** have allowed the estimated volume of rejects generated by the Amended Project to be reduced from approximately 14.3 Mt (Table 11-101 of the EIS) to 11.6 Mt. In addition, it is proposed that the height of the REA final landform be increased by 5 m from RL 305 m to RL 310 m to further minimise the REA footprint. These combined changes have resulted in a reduction of the required extension area for the REA from 43 ha to 11.06 ha. This results in a significant reduction in required vegetation clearing and associated terrestrial ecology impacts (including required biodiversity offsets).

The increase in proposed REA height by 5 m (from EIS height of RL 305 m to RL 310 m) has the potential to result in increased amenity impacts (visual, noise and air quality) to some receptors in the vicinity of the REA. These impacts have been assessed in revised technical assessments undertaken for the Amended Project and discussed further in Section 7.12 of the Project Amendment Report.

2.3 REA operations

The NSW Environment Protection Authority (NSW EPA) raised concerns regarding night-time noise impacts on residential receivers, including sleep disturbance impacts. Tahmoor Coal proposes to amend the Project so that the haulage of rejects at the REA would only occur during daytime and evening hours (7am to 10pm). Rejects would continue to be conveyed to the load-out point to be stockpiled at the REA the following morning. A front-end loader would then load the stockpile of reject material into a haul truck for transport around the REA. To manage the stockpiled volume, as well as the daytime conveyed volume of rejects, two haul trucks would be required to operate during the day-time and evening periods.

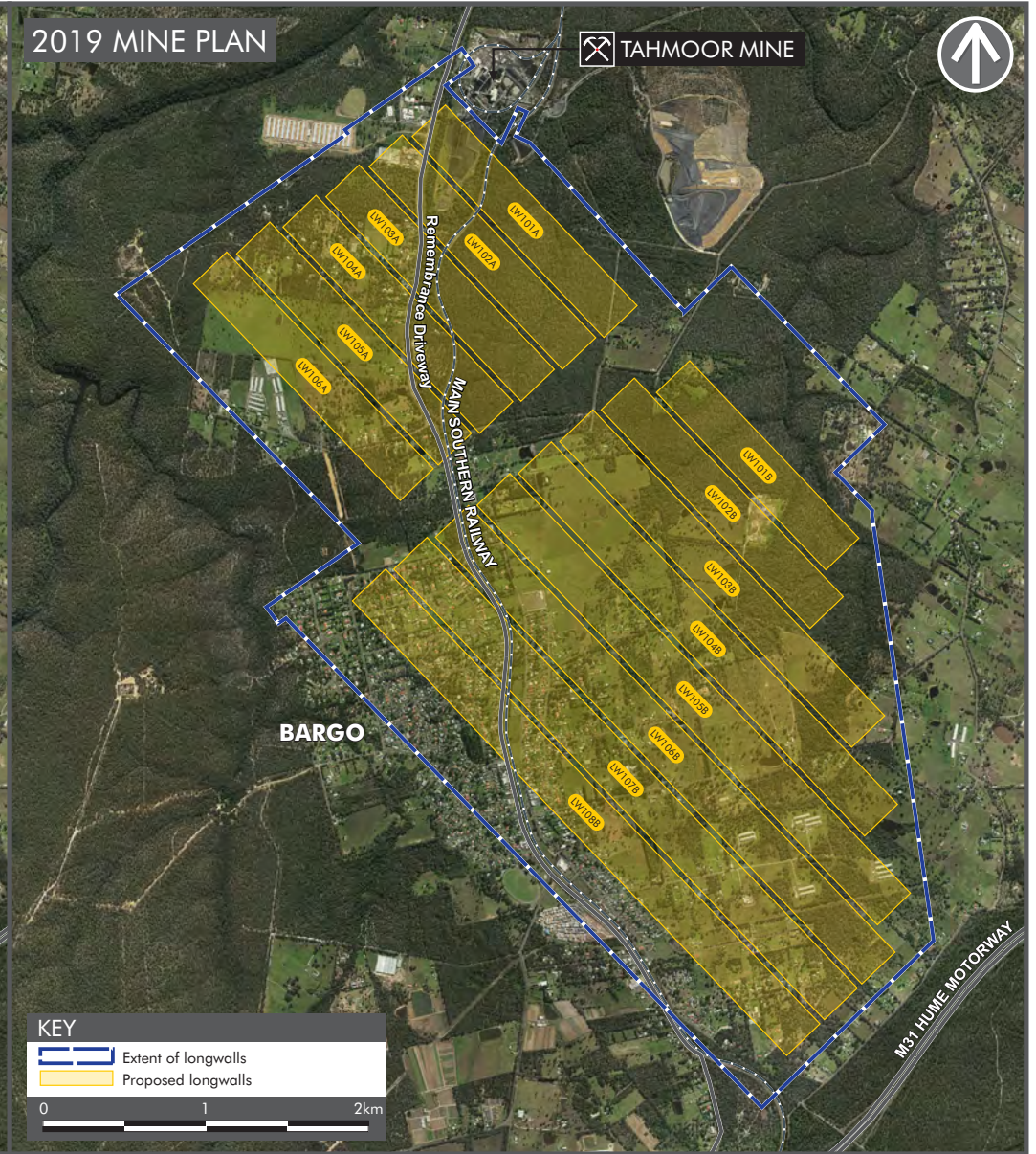
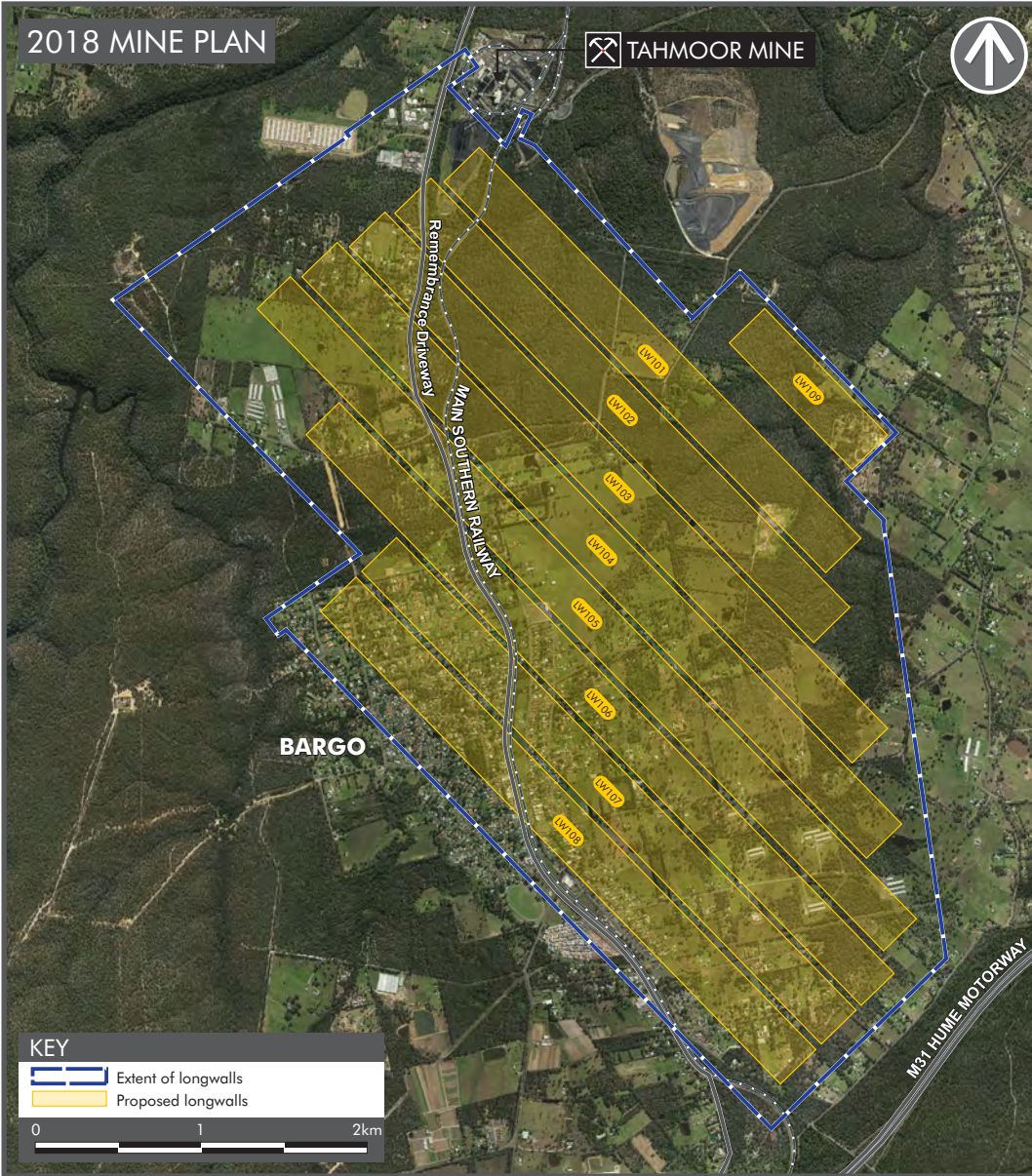
2.4 Power line easement

Since the exhibition of the EIS, the location and footprint of the power line easement for ventilation shaft site TSC1 has been confirmed (refer **Figure 2-3**). Therefore, the construction and operation of the powerline would be included in the Amended Project for which approval is sought under Part 4 of the EP&A Act. Additional assessments have been completed for this Project component. The results of these assessments are summarised in Chapter 7 of the Project Amendment Report and demonstrate that the proposed ancillary infrastructure has been designed to avoid and minimise impacts wherever possible. Mitigation measures, as detailed in the relevant assessments, would be implemented to minimise and manage impacts during construction.

2.5 Mine ventilation

A review of the ventilation strategy for the Project has been undertaken and concluded that the Project would require continued use of the existing upcast shaft (T2). Importantly, the operation will reduce from two fans during Tahmoor North operations to one fan once the new ventilation shafts and fans (TSC1 and TSC2) are in operation in Tahmoor South. The continued use of T2 as part of the Amended Project has been considered as part of an updated air quality assessment, which is discussed in Section 7.9 of the Project Amendment Report.

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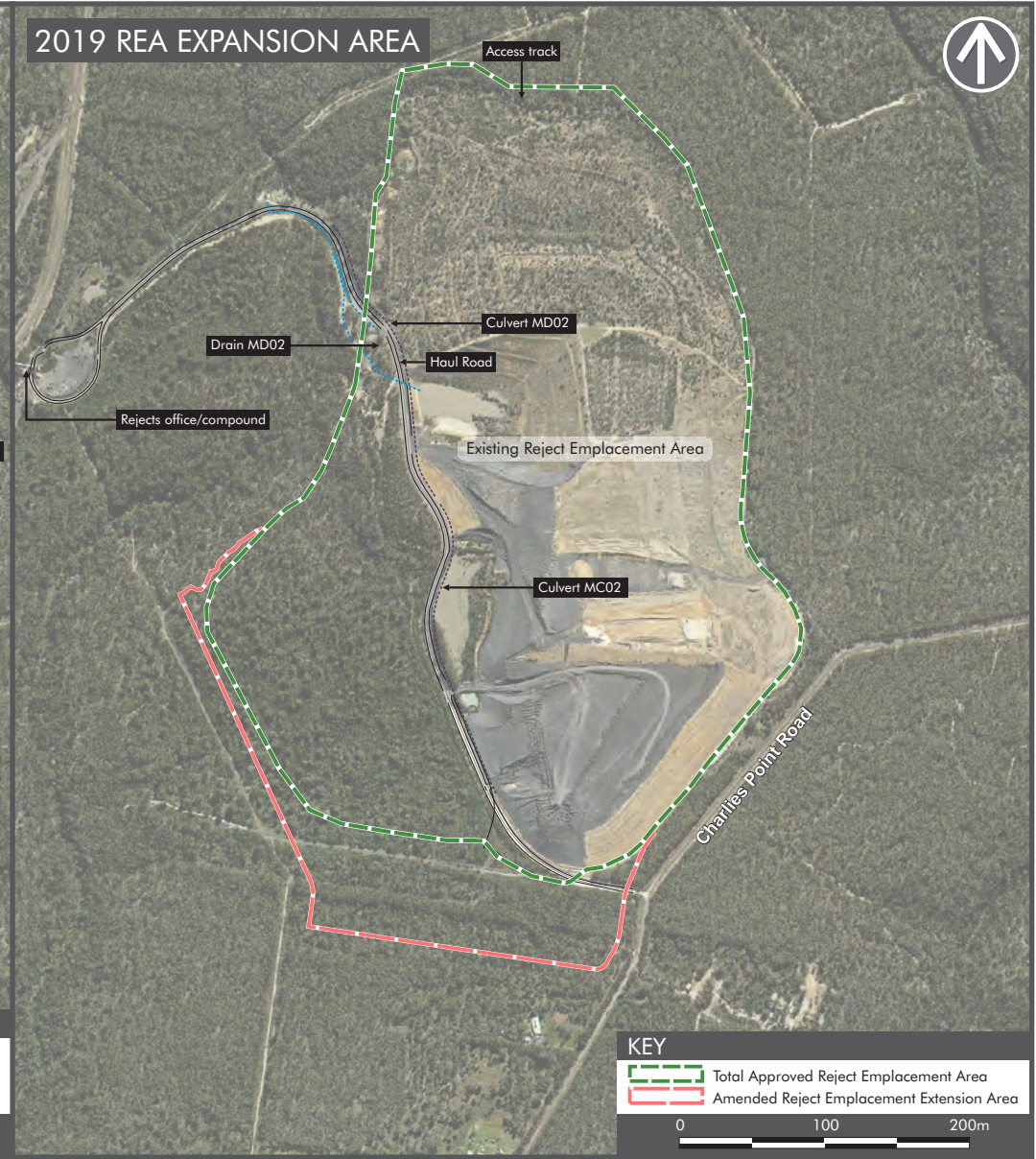
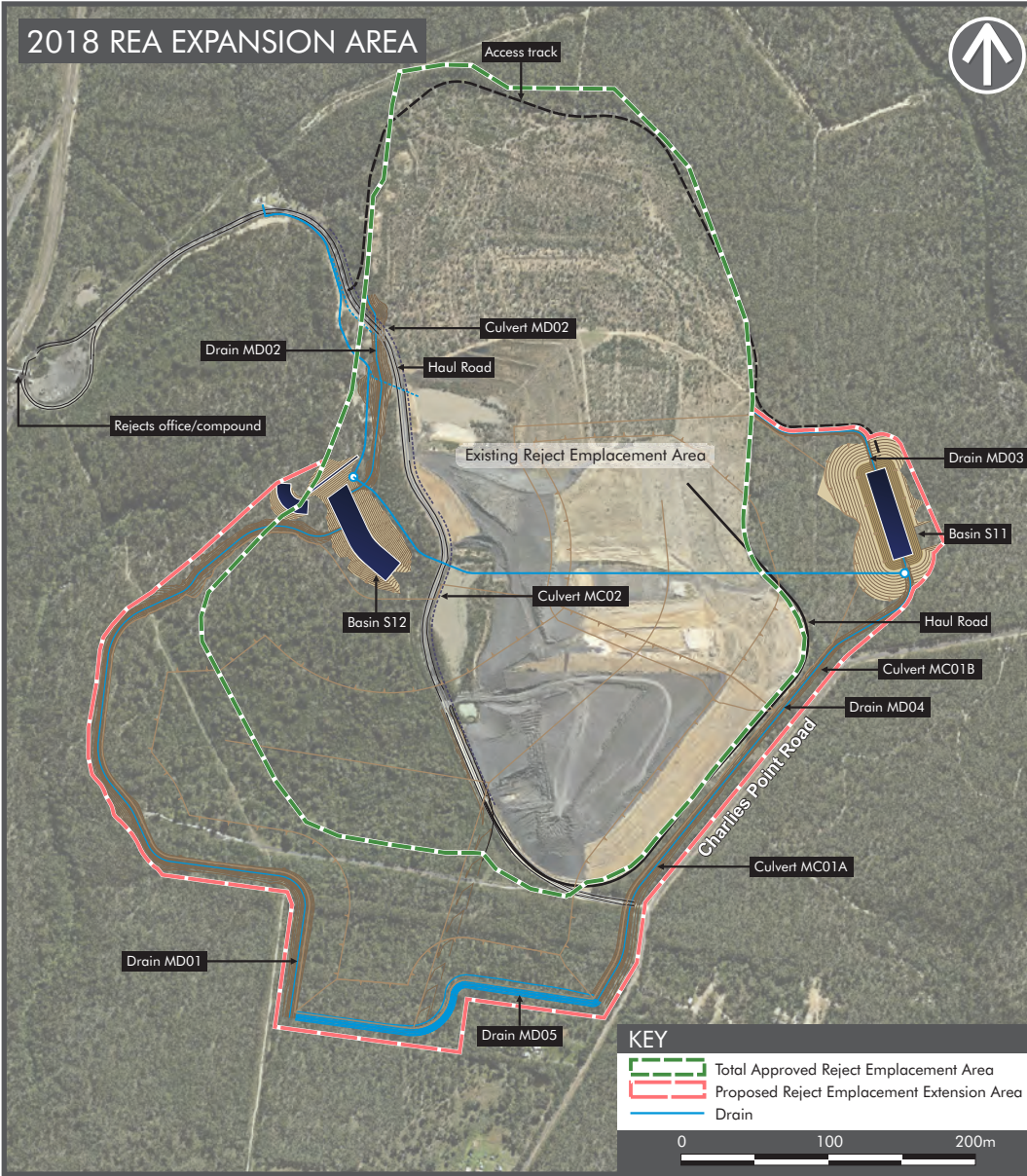


COMPARISON OF EIS MINE PLAN (2018) AND AMENDED PROJECT MINE PLAN (2019)
Tahmoor South Project
SIA Addendum



FIGURE 2.1

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COMPARISON OF REA EXPANSION AREA (2018) AND AMENDED REA EXPANSION AREA (2019)

Tahmoor South Project
SIA Addendum



FIGURE 2.2

I:\Projects\6056058857\4_Tech work area\4.99 GIS\FIGURES\2019 APR\6058857_F2.3 Confirmed Powerline Easement for TSC1 07.11.2019 TO



CONFIRMED POWERLINE EASEMENT FOR TSC1
Tahmoor South Project
SIA Addendum

FIGURE 2.3

3.0 Update of SIA

This section of the SIA Addendum serves as an update of the original SIA prepared to support the EIS for the Project. The update focuses on the impacts that may have changed, in either magnitude or extent, as a result of amendments made to the Project since exhibition of the EIS.

The Methodology (Chapter 3 of the original SIA) and the Baseline Assessment (Chapter 4 of the original SIA) remains relevant and unchanged from the original SIA.

Social impacts associated with the Project are summarised in Chapter 4 of the original SIA. There are two main types of social impacts: direct impacts, and indirect impacts. Direct impacts are those that would cause changes to the existing community as a result of the Project, as measured through the use of social indicators, such as population, health, and employment. Indirect impacts are those that result from changes brought about by the Project relating to non-quantitative measures such as community values and sense of place. Both direct and indirect impacts were assessed in Chapter 4 of the original SIA to determine the likely impact of the Project on social amenity.

The assessment of direct impacts was undertaken against the range of social indicators outlined in Section 2.7 of the original SIA to predict the degree of change (benefit or loss). An assessment of the potential cumulative social impacts of the Project was also undertaken, when considered in the context of other past, current and future planned developments close to the Project.

The significance of impacts (both positive and negative) for each of the social aspects identified were summarised in Section 4.10 in accordance with the matrix approach outlined in the SIA Guideline, and as described in Sections 2.7.1 and 2.7.2 of the original SIA. Based on the matrix assessment, the significance/ risk rating of impacts without mitigation and with the implementation of mitigation (residual) is shown in Table 4-1 of the original SIA.

3.1 Summary of the changes in impacts

The original SIA assessed the following impacts against the social aspects (Chapter 4 of the original SIA):

- Surroundings - Natural Features
 - Surface Water
- Surroundings - Amenity
 - Subsidence Impacts
 - Noise and Vibration Impacts
 - Air Quality and Odour Impacts
 - Visual Aesthetics Impacts
 - Traffic Impacts
 - Land Use Impacts
- Way of Life
 - Housing
 - Mine Closure
 - Employment
- Community Identity and Cohesion (composition, cohesion, character, function, sense of place)
 - Use of Existing Mine facilities
 - Barrier/ Access
 - New Facilities

- Natural features
- Employment and Demographics
- Wollondilly CSP
- Community contributions
- Access to, and use of, infrastructure, services and facilities
 - Subsidence Impacts
 - Construction impacts
 - Natural resource use
 - Workforce
 - Royalties
- Culture
 - Aboriginal cultural
 - Historic Heritage
- Health and Wellbeing
 - Subsidence
 - Other environmental impacts
- Other Impacts
 - Fears and Aspirations
 - Personal and property rights
 - Decision- Making Systems
- Cumulative Social Impacts
 - Direct Cumulative Social Impacts
 - Indirect Cumulative Social Impacts

A summary of project amendments is provided in **Table 3-1**. A summary of the changes in social impacts, resulting from the Project amendments, is provided in **Table 3-2**.

Table 3-1 Summary of project amendments

Original Project	Amended Project	Change in impacts
Mine plan		
<ul style="list-style-type: none"> Establish 9 longwalls to the south of Tahmoor Mine, within the Central Domain. Dimensions of the longwalls include: <ul style="list-style-type: none"> Approximately 305 m wide and up to 2.85 m in height The gate roads would be approximately 5.2 m wide and at a height of up to 3 m Extraction of up to 48 Mt ROM coal over the life expectancy of the Project. 	<ul style="list-style-type: none"> Removal of LW109, which was directly beneath Dog Trap Creek; Reconfiguration of the longwall layout to comprise two series of shorter longwall panels; Reduction in the proposed longwall width, from approximately 305 m to approximately 285 m; Reduction in the height of extraction within longwall panels from up to 2.85 m to up to 2.6 m; and Extraction of up to 43 Mt ROM coal over the life expectancy of the project. 	<ul style="list-style-type: none"> Reduction in magnitude and extent of subsidence movements. Reduction in volume of coal rejects Reduction in number of houses that would be directly mined beneath (reduction of 180 houses). Reduction in the overall frequency and severity of subsidence impacts to houses.
Rejects extension		
<ul style="list-style-type: none"> Expected volume of rejects to be generated is approximately 14.3 Mt; Maximum height of the REA would be increased from RL 300 m to 305 m; and, The extension area would cover 43 ha. 	<ul style="list-style-type: none"> The estimated volume of rejects to be generated by the Project is now 11.6 Mt; Reduction in the REA extension area to 11.06 ha; and Increased height of the REA from RL 305 m to RL 310 m to optimise the REA footprint. 	<ul style="list-style-type: none"> Reduced vegetation clearing resulting in a lower impact on terrestrial ecology; and Increased visual impacts from raising the height of the REA.
REA Operations		
<ul style="list-style-type: none"> Operation of REA 24 hours a day seven days a week, consistent with the working hours of the current operations at Tahmoor Mine. 	<ul style="list-style-type: none"> Reduced haulage production hours; from 24 hours to occur during the daytime and evening hours (7 am to 10 pm); Transport rejects via conveyer to the load out point where rejects would be stockpiled for haulage to the REA during daytime and evening hours; and Updated operations to include an additional haul truck (for a total of two trucks) and a front-end loader to transport rejects during the day, to replace night-time haulage of rejects. 	<ul style="list-style-type: none"> Reduction in night-time noise impacts Reduction in sleep disturbance impacts

Original Project	Amended Project	Change in impacts
Power line easement		
<ul style="list-style-type: none"> Location for powerline easement for 66 kV overhead powerline from the REA to the ventilation shaft not confirmed and not included as part of the Project. 	<ul style="list-style-type: none"> Inclusion of a 66-kV overhead powerline easement to the proposed ventilation shafts. 	<ul style="list-style-type: none"> Increase in vegetation clearing, and terrestrial ecology impacts
Mine Ventilation		
<ul style="list-style-type: none"> Partial use of the existing mine ventilation upcast shaft T2 in emergency situations only. 	<ul style="list-style-type: none"> Continuation of existing upcast shaft (T2), with operation reducing usage from two fans to one fan. 	<ul style="list-style-type: none"> Reduction in odour levels when one fan is used when compared with two fans at Vent Shaft T2.

Table 3-2 Summary of impacts as a result of the amended project description (refer to Chapter 4 of the original SIA for the full impact assessment)

Environmental aspect	Change in impact	Change resulting from Amended Project compared to the EIS Project
Surroundings - Natural Features		
Surface Water	Similar impact	<ul style="list-style-type: none"> Improvements in streamflow for Dog Trap Creek, Eliza Creek and Bargo River; Increased groundwater inflow to the underground mine; Increased discharge via LDP1; Increased discharge via the licensed overflow points (LOPs) to Tea Tree Hollow; Reduced predicted peak of simulated annual release to Bargo River from dam S11 based on the 95th percentile results; and The underground stored water volume is predicted to increase from 2025 and is likely to near the storage capacity by 2032, based on 95th percentile model results.
Surroundings – Amenity		
Subsidence	Reduced impact	<ul style="list-style-type: none"> Reduction in the maximum predicted subsidence, tilt and curvature by approximately 15%; and Reduction of the maximum total conventional subsidence, upsidence and closure movements to waterways.
Noise and Vibration	Reduced impact	<ul style="list-style-type: none"> A reduction in night noise emissions compared to existing noise levels from the mine by at least 2 dB and up to 18 dB; Reduction in the number of privately-owned dwellings affected by operational noise emissions more than 5 dB above the relevant project noise trigger level; and Operational noise at the nearby Anglican Church and School is predicted to be reduced by at least 3 dB, compared to existing noise levels.
Air Quality and Odour	Minor reduction	<ul style="list-style-type: none"> Reduction in odour levels when one fan is used when compared with two fans at Vent Shaft T2.
Visual Aesthetics Impacts	No material change	<ul style="list-style-type: none"> The amended REA is unlikely to result in a significant visual impact.
Traffic	No material change	<ul style="list-style-type: none"> The Project amendments would not influence the traffic impacts associated with the Project.

Environmental aspect	Change in impact	Change resulting from Amended Project compared to the EIS Project
Land use, Agriculture and Resources	No material change	<ul style="list-style-type: none"> Rehabilitation of previously pre-REA Class 6 agricultural land to REA Class 7.
Way of Life	No material change	<ul style="list-style-type: none"> Construction and operation workforce numbers would not be substantially altered by the Project amendments. Therefore, impacts to employment and housing would remain unchanged from that presented in the original SIA.
Community Identity and Cohesion	No material change	<ul style="list-style-type: none"> There would be little, if any, change in impacts as a result of the Project amendments for <ul style="list-style-type: none"> Use of Existing Mine Facilities Access New Infrastructure Employment and Demographics Wollondilly Community Strategic Plan (local strategic community direction) Community Contributions In terms of natural features – the potential for the project to affect local natural features, resulting in impacts upon the community’s sense of place – the Project amendments would result in the following reductions in impacts: <ul style="list-style-type: none"> Shale Sandstone Transition Forest: reduced clearing from 43.4 ha to 23.57 ha (approximate 46% reduction); <i>Persoonia bargoensis</i>: avoided removal of 96 individuals, leaving eight individuals that would be impacted by the Amended Project; <i>Grevillea parviflora subsp. Parviflora</i>: avoided removal of 2,324 individuals, leaving 491 individuals that would be impacted by the Amended Project; and <i>Pomaderris brunnea</i>: avoided removal of approximately 40 individuals, leaving one individual that would be impacted by the Amended Project.
Access to, and use of, infrastructure, services and facilities	No material change	<ul style="list-style-type: none"> There would be little, if any, change in impacts as a result of the Project amendments for: <ul style="list-style-type: none"> Subsidence impacts Construction damage Resources Workforce Royalties
Culture	No material change	<ul style="list-style-type: none"> There are three Aboriginal cultural heritage sites (comprising stone artefacts) that are now outside of the limit of subsidence; and An addendum to the ACHA been prepared to address the additional archaeological test excavation and assessment, which identified one ironbark tree with scarring within the Project area, however specialist assessment concluded the scar was relatively modern and of European origin.
Health and Wellbeing	No material change	<ul style="list-style-type: none"> There would be little, if any, change in impacts as a result of the Project amendments for: <ul style="list-style-type: none"> Anxiety relating to subsidence impacts Anxiety relating to impacts to natural systems, including greenhouse gases Noise impacts would reduce as a result of the Project amendments.

Environmental aspect	Change in impact	Change resulting from Amended Project compared to the EIS Project
Other Impacts	No material change	<ul style="list-style-type: none"> Personal and property rights Decision making systems Fears and Aspirations
Cumulative Social Impacts		
Direct Cumulative Social Impacts	No material change	<ul style="list-style-type: none"> Workforce for the Project, and extent of other mining operations are largely unchanged by the Project amendments.
Indirect Cumulative Social Impacts	Slight reduction	<ul style="list-style-type: none"> Reduction in impacts on terrestrial ecology may reduce concerns in the community regarding the overall environmental impact of the Project. Additional commitments made by Tahmoor Coal to reduce the greenhouse gas impacts of the Project (i.e. a parent company target to achieve zero carbon emissions by 2030) may reduce concerns in the community regarding the overall environmental impact of the Project.
Economic	Increased net benefits	<ul style="list-style-type: none"> Increase in net benefit from \$699.5 million to \$783.8 million.

3.2 Summary and significance of impact

The significance ratings of impacts have been re-assessed without mitigation and with the incorporation of mitigation and management measures and is provided in **Table 3-3** below. The approach for the assessment was the same as that applied in the original SIA (i.e. in accordance with the SIA Guideline (DPE, 2017). High residual (negative) impacts are highlighted in bold and positive impacts or benefits of the Project are shown in green.

Although there have been some changes to the extent of impacts resulting from the Project amendments, the significance rating of impacts remains the same for all aspects. Whilst it is recognised that the Project amendments would reduce the overall impact of the Project, a review of the social consequences of these changes against the original SIA indicates that there would be no subsequent reduction in the level of social impact. This is based on the fact that impacts have not been fully removed or avoided by the amendments and that the community is deemed to remain highly sensitive to social consequences of these issues. As such the overall social significance of the Project has remained unchanged and would remain consistent with those of the already operational mine.

Table 3-3 Summary of Assessment of Significance

Impact Category		Likelihood	Consequence (Negative) or Scale of Benefit (Positive)	Rating (Before mitigation)	Likelihood	Consequence (Negative) or Scale of Benefit (Positive)	Rating (After mitigation)
Surroundings - Natural features	Surface Water	B	4	B4 (Extreme Impact)	B	3	B3 (High Impact)
Surroundings - Amenity	Subsidence	B	4	B4 (Extreme Impact)	B	3	B3 (High Impact)
	Groundwater	B	4	B4 (Extreme Impact)	B	3	B3 (High Impact)
	Acoustic - operation	C	3	C3 (High Impact)	C	2	C2 (Moderate Impact)
	Acoustic - construction	B	3	B3 (High Impact)	B	2	B2 (High Impact)
	Particulate matter	D	2	D2 (Low Impact)	D	1	D1 (Low Impact)
	Odour	D	2	D2 (Low Impact)	D	1	D1 (Low Impact)
	Visual	D	2	D2 (Low Impact)	D	1	D1 (Low Impact)
	Traffic	C	3	C3 (High Impact)	C	2	C2 (Moderate Impact)
	Land use	C	1	C1 (Low Impact)	C	1	C1 (Low Impact)
Population and way of life	Housing	D	2	D2 (Low Impact)	D	2	D2 (Low Impact)
	Mine Closure	A	4	A4 (Extreme Impact)	B	3	B3 (High Impact)
	Employment	B	3	B3 (High Benefit)	B	3	B3 (High Benefit)

Impact Category		Likelihood	Consequence (Negative) or Scale of Benefit (Positive)	Rating (Before mitigation)	Likelihood	Consequence (Negative) or Scale of Benefit (Positive)	Rating (After mitigation)
Community (composition, cohesion, character, function, sense of place)	Use of Existing Mine facilities	D	2	D2 (Low Impact)	D	2	D2 (Low Impact)
	Barrier/ Access	D	2	D2 (Low Impact)	D	2	D2 (Low Impact)
	New Facilities	C	2	C2 (Moderate)	C	1	C1 (Low Impact)
	Natural features	C	3	C3 (High Impact)	C	2	C2 (Moderate Impact)
	Employment and Demographics	D	2	D2 (Low Impact)	D	2	D2 (Low Impact)
	Wollondilly CSP	C	3	C3 (High Impact)	C	2	C2 (Moderate Impact)
	Community contributions	A	3	A3 (Extreme Benefit)	A	3	A3 (Extreme Benefit)
Access to and use of infrastructure, services and facilities	Subsidence Impacts	B	3	B3 (High Impact)	B	2	B2 (High Impact)
	Construction impacts	C	2	C2 (Moderate Impact)	C	1	C1 (Low Impact)
	Natural resource use	B	1	B1 (Moderate Impact)	B	1	B1 (Moderate Impact)
	Workforce	D	2	D2 (Low Impact)	D	2	D2 (Low Impact)
	Royalties	A	3	A3 (Extreme Benefit)	A	3	A3 (Extreme Benefit)
Culture	Aboriginal cultural	C	3	C3 (High Impact)	C	2	C2 (Moderate Impact)
	Historic Heritage	D	3	D3 (Moderate Impact)	D	2	D2 (Low Impact)

Impact Category		Likelihood	Consequence (Negative) or Scale of Benefit (Positive)	Rating (Before mitigation)	Likelihood	Consequence (Negative) or Scale of Benefit (Positive)	Rating (After mitigation)
Health and Well being	Subsidence	C	2	C2 (Moderate Impact)	D	2	D2 (Low Impact)
	Other environmental impacts	C	2	C2 (Moderate Impact)	D	2	D2 (Low Impact)
Other	Fears and Aspirations	C	1	C1 (Low Impact)	C	1	C1 (Low Impact)
	Personal and property rights	C	1	C1 (Low Impact)	D	1	D1 (Low Impact)
	Decision-Making Systems	C	1	C1 (Low Impact)	D	1	D1 (Low Impact)
Cumulative Impacts	Workforce	C	2	C2 (Moderate Benefit)	C	2	C2 (Moderate Benefit)
	Other mining operations	D	2	D2 (Low Impact)	D	2	D2 (Low Impact)
	Environmental impacts	B	3	B3 (High Impact)	B	2	(B2 (High Impact))

4.0 Assessment of issues raised

This chapter provides additional impact assessment of the issues raised in submissions, namely:

- Subsidence, including:
 - The psychological and other indirect impacts of subsidence including stress, anxiety, uncertainty, disturbance and hardship;
 - The timeframes and impacts from when a property owner begin to experience subsidence impacts to when those subsidence impacts conclude; and
 - The assessment of those impacts, the subsequent claims process and possible appeals.
- Social impacts on the Aboriginal community;
- Impacts to groundwater bore users; and
- Impacts on those with ties to surrounding natural features (especially Thirlmere Lakes).

The assessment provided in this section follows the risk rating impact assessment methodology outlined in Section 2.7 of the Tahmoor South Project SIA (Appendix Q of the EIS), generally in accordance with *Social impact assessment guideline for State significant mining, petroleum production and extractive industry development* (Department of Planning and Environment, 2017) (DPIE SIA Guideline).

4.1 Subsidence

4.1.1 Potential impacts

Longwall mining related subsidence impacts to private properties and structures (including farm infrastructure such as dams and fences) are recognised as a direct impact to people and their livelihoods, with associated psychological stress and anxiety. It is also recognised that the *prospect* of such impacts in the future, either real or perceived, may produce similar or sometimes worse psychological impacts. This includes anxiety, stress, uncertainty, disturbance and hardship in relation to the timing, duration and process for accessing any reparations for subsidence.

Importantly, the uncertainty and stress felt by a community member can occupy a far greater duration than the actual direct subsidence related damage, both before and afterwards. Community members/property owners identified to be located within the subsidence assessment area can be affected by anxiety and stress in relation to the prospect of future impacts. Anxiety and uncertainty (to different degrees) may be experienced by people from the time when a longwall mining proposal is announced (due becoming aware of the future potential impacts), through the commencement of longwall mining when direct impacts are manifested, and beyond until remediation works are complete (where required).

It should be noted that, to ensure conservative impact prediction, subsidence modelling typically identifies the maximum subsidence prediction for a given area, although it is acknowledged that unconventional subsidence can occur. As such, whilst the actual subsidence at a given property may be less than the maximum levels predicted for the area, a property owner may be subject to anxiety and uncertainty regarding potential and actual property impacts from the duration of impact prediction (e.g. EIS exhibition) until the commencement of longwall extraction of the specific longwalls that could affect the property including any time-lag of potential impacts (potentially a duration of multiple years).

The community members that may experience impacts are those that reside or work within the Subsidence Study Area (as defined by the predicted 20mm subsidence contour). Community members likely to be affected would include: existing residents (particularly those who have not previously experienced subsidence impacts and/or gone through the subsidence claims process) and new property owners/tenants to the area.

Hardship and other financial disturbance impacts may be felt by people who are experiencing direct subsidence damage whilst their claims are being processed and in relation to potential legal disputes. Legal disputes associated with claims are anticipated to be rare, as a process exists to enable consultation between affected parties and Tahmoor Mine, to avoid legal disputes. Where disputes cannot be resolved, a Secretary Review under *Coal Mine Subsidence Compensation Act 2017* would take place. However, even the prospect of potentially needing to engage in legal activities may cause anxiety for some residents.

Community members who would be particularly vulnerable include: the aged, disabled, low-income earning and people from non-English speaking backgrounds who may find interacting and understanding the regulatory/claims process difficult, and those already suffering from mental health issues which may be exacerbated by additional stresses. Additional anxiety and stress and potential (monetary) hardship could occur where the claims process is further complicated or extended through appeals or disputes.

It is noted that since the exhibition of the EIS, the Project mine plan was amended to reduce overall environmental impacts of the Tahmoor South project. This includes reductions to longwall panel width, extraction height and the layout of longwalls as described in **Section 2.1**. The revised Subsidence Assessment included in the Project Amendment Report (Section 7.1) identifies that these project amendments result in an overall reduction in the maximum predicted subsidence, tilt and curvature to the levels presented in the EIS by approximately 15%. Notwithstanding, the psychological and other indirect impacts of subsidence (such as stress, anxiety, uncertainty, disturbance and hardship) discussed above are anticipated for people living at properties predicted to experience subsidence impacts. These impacts would be mitigated through comprehensive consultation at the community and individual level.

4.1.2 Timing and extent of impacts

Approval is being sought to extend the life of underground mining at Tahmoor Mine for an additional 13 years, until approximately 2035. Social impacts during this period and immediately post mining will vary as mining progresses towards, and away from individual residences.

The amendments made to the Project have reduced the predicted impacts to houses. A summary comparison between the overall distribution of the assessed impacts at houses between the EIS mine plan and amended mine plan is shown in **Table 4-1**.

It can be seen from **Table 4-1** that the overall distribution of impacts under the amended mine plan has reduced compared to the assessments previously provided for the EIS mine plan. The longwall reduction is the result of the amended mining footprint; with 180 fewer houses now directly impacted. Most of these houses are located above previously proposed LWs 107 and 108 within the urban areas of Bargo township.

As the houses are generally predicted to experience less subsidence, tilt and curvature due to the amended mine plan compared to the EIS mine plan, it is expected that the overall frequency and severity of impacts would reduce. Whilst the predicted subsidence movements and assessed distribution of impacts are reduced for the amended mine plan, the recommendations for managing potential impacts to residential structures are unchanged from the EIS and impacts would be managed via an Extraction Plan process.

Table 4-1 Assessed impacts for houses resulting from the extraction of the EIS mine plan and amended mine plan

Mine plan	Group	Repair Category			
		No claim or R0	R1 or R2	R3 or R4	R5
Amended mine plan (MSEC1060)	All houses (total of 1,458)	1,118 (77 %)	234 (16 %)	86 (6 %)	20 (1 %)
	Directly above proposed longwalls (total of 571)	308 (54 %)	172 (30 %)	73 (13 %)	18 (3 %)
	Directly above solid coal (total of 887)	810 (91 %)	62 (7 %)	13 (1 %)	2 (< 0.5 %)
EIS mine plan (MSEC997)	All houses (total of 1,458)	1,019 (70 %)	296 (20 %)	115 (8 %)	28 (2%)
	Directly above proposed longwalls (total of 751)	391 (52 %)	234 (31 %)	100 (13 %)	26 (3%)
	Directly above solid coal (total of 707)	628 (89 %)	62 (9 %)	15 (2 %)	2 (<0.5%)

Community anxiety, stress and uncertainty impacts related to subsidence may commence when residents become aware of the Project and continue until after the longwall passes beneath, after subsidence movements have ceased and a until a property impact assessment and remediation works (where required) can be completed. It is acknowledged that this may be a lengthy period of uncertainty for residents to live through, particularly for those residents who would be mined beneath towards the end of the Project.

The mining, claims and consultation process is presented in **Figure 4-1**.

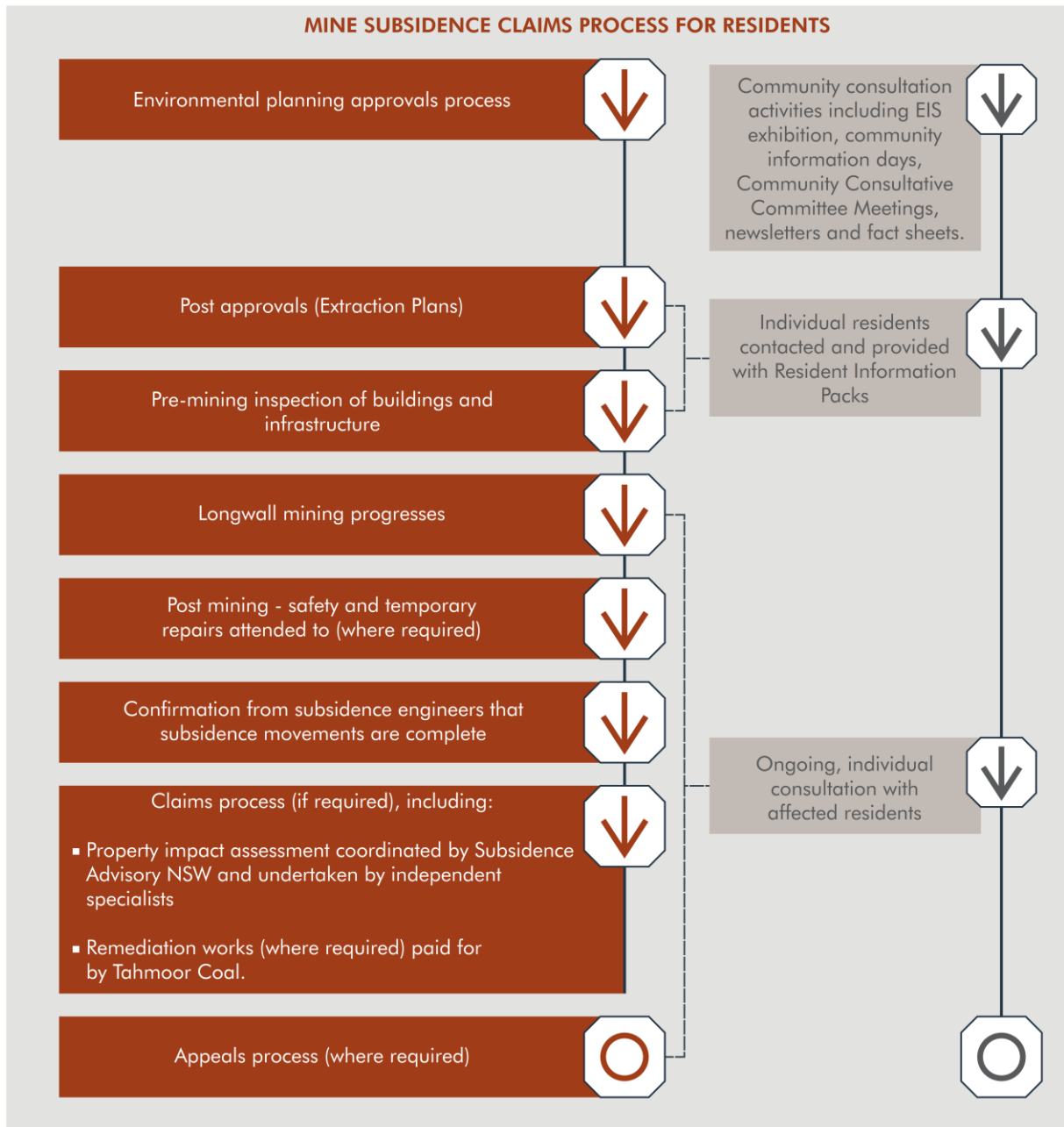


Figure 4-1 Claims and consultation process

4.1.3 Subsidence management process

Community anxiety, stress and uncertainty impacts are likely to be most prevalent where verified, consistent and experienced processes are not in place to deal with community concerns in a systematic and proficient manner.

Tahmoor Coal has extensive experience to-date in managing subsidence-related impacts from Tahmoor Mine, including in investigating and closing out subsidence claims in accordance with the requirements of Subsidence Advisory NSW. Since 2004, Tahmoor Mine has mined under the entire township of Tahmoor, safely and competently managing (and mitigating) subsidence impacts to approximately 1,890 residential dwellings and commercial premises and on major built infrastructure such as:

- The Main Southern Railway rail line;
- Tahmoor Town Centre shopping centre;
- Wollondilly Shire Council road, bridges;
- Gas, electricity, water, sewer and drainage infrastructure;
- A poultry processing plant;
- Aboriginal cultural heritage sites;
- European settlement heritage structures.

This provides surety to regulators and the community that Tahmoor Coal has extensive and well-tested processes in place to manage subsidence impacts to property and built infrastructure in accordance with regulatory requirements. Tahmoor Coal would apply the same process for the Project in consultation with people who are affected, with the aim of minimising stress and anxiety associated with the process as far as possible. These measures are further detailed below.

Extraction Plans

As discussed in Section 11.1.7 of the EIS (Subsidence Mitigation Measures), as part of an overarching Extraction Plan, sub-plans covering specific natural and/or built features would be prepared to address the management of subsidence impacts predicted at that feature. Features for which sub-plans would be prepared include:

- Natural features (such as waterways and cliffs);
- Heritage items;
- Built features, including:
 - Council-owned assets and infrastructure;
 - rail assets and infrastructure;
 - potable water assets and infrastructure;
 - sewer assets and infrastructure;
 - gas assets and infrastructure;
 - power assets and infrastructure;
 - communications assets and infrastructure; and
 - public, commercial and residential structures, which can also include specific sub-plans for large structures, such as bridges, retail complexes and industrial facilities.

The management plans for these features would include details such as:

- Proposed mining schedule and mine plan;
- Performance measures and criteria for each feature;
- Predictions and descriptions of impacts for each feature;

- Monitoring requirements for each feature; and
- Risk controls and Trigger Action Response Plan (TARP).

The detail of the sub-plans would be developed in consultation with stakeholders including the owners, occupants and managers of built features likely to be affected (such as landowners, commercial/business, Council, road and rail authorities and utility providers etc.). This would be done prior to the extraction of each longwall or series of longwalls with each sub-plan being informed by the experience and subsidence monitoring results from the previously extracted longwall.

Resident information packs

Prior to mining operations commencing for a new longwall, potentially affected residents would receive a Resident Information Pack which includes information such as:

- Longwall information including the overall indicative schedule and a link to Tahmoor Coal's website which provides updates on mining progress;
- An explanation of subsidence and the potential effect of subsidence on houses and other structures;
- Anticipated levels of subsidence relating to their property and its features;
- A description of property inspections, surveys and monitoring including how to access free pre-mining property inspections;
- A description of rights and responsibilities relevant to subsidence; and
- Contact details for emergency contacts, the Tahmoor South Community Relations Coordinator, and the Subsidence Advisory Board.

The Resident Information Packs would be distributed following approval of each Extraction Plan and would also include specific information on the role of Subsidence Advisory NSW in administering the *Coal Mine Subsidence Compensation Act 2017*, including contact details; the subsidence claims process where damage by subsidence is suspected; and access to free counselling services in relation to subsidence impacts. The new coal mine subsidence compensation scheme under the *Coal Mine Subsidence Compensation Act 2017* commenced in 2018 and enables subsidence damage arising from coal mines to be addressed via a more streamlined process including online lodgement of claims. These changes are outlined in the Response to Submissions Report (Section 5.15.17).

Resident Information Packs are issued as part of the existing Tahmoor Coal operations and this process would continue to be implemented for the Amended Project. While information packs for the Project would generally take the same form and structure of Resident Information Packs for existing operations they will be refined and improved where possible over time.

To provide property owners with ongoing, transparent and timely support in relation to mining impacts to their property, Tahmoor Coal has also committed to employing dedicated personnel (e.g. Bargo Community Relations Coordinator) to engage and support each property owner prior to, during, and after the active subsidence period. Tahmoor Coal would also continue to engage with the community through its existing Community Consultative Committee Meetings and other processes to address community concerns about subsidence and other matters. Consultation processes that are currently implemented in relation to subsidence management (and would continue to be applied for the Amended Project) are detailed in Section 3.8 and 11.1 of the EIS and Section 7 of the Response to Submissions Report (Revised Management Measures).

4.1.4 Impact evaluation

The likelihood of indirect impacts from subsidence (stress, anxiety, uncertainty, disturbance, hardship) is considered to be *almost certain* with *moderate* consequences on affected community members, resulting in a significance/risk rating of *extreme* (without mitigation).

With the implementation of support for affected community members through the subsidence management and claims process the likelihood rating can be reduced to *moderate*, with the consequence rating likely to remain at *moderate*. This would result in a residual post mitigation significance/ risk rating at *moderate*.

4.2 Social impacts on the Aboriginal community

Social impacts to the Aboriginal community relate primarily to potential impacts to culturally sensitive heritage sites as a result of subsidence and/or direct disturbance from surface infrastructure. It is recognised that Aboriginal communities also have inherent and broadscale connections to Country beyond individual heritage sites, including spiritual, social and cultural connections.

A revised Aboriginal Cultural Heritage Assessment (ACHA) was included in Section 7.6 of the Project Amendment Report assessing changes to the proposed mine plan as identified in **Section 2.0**. The revised ACHA identified three fewer Aboriginal cultural heritage sites within the 20 mm subsidence contour of the amended mine plan when compared to the 20 mm subsidence contour presented in the EIS. These comprised three stone artefact sites. In addition, the dreamtime story identified in the EIS is outside of the 20 mm subsidence contour for the Amended Project.

Under the Amended Project, no changes in impacts were predicted at identified artefact scatter, isolated finds, axe grinding grooves or scarred tree sites within the 20 mm subsidence contour. Subsidence impacts were predicted to four rock shelter sites of high significance rating (in comparison to three high rated sites in the EIS) under the Amended Project. In addition, one site (an open camp site) was identified to be located within the surface infrastructure footprint of the Project, however test excavations completed in 2019 identified no sub-surface deposits associated with this site that would be affected by the Project.

The revised ACHA completed for the Amended Project indicated minor changes to impacts compared to the impacts predicted in the EIS. Notwithstanding, all impacts to heritage items have significance for the Aboriginal community including social and cultural significance. Whilst residual impacts are identified, it is noted that the mine plan has been designed to avoid mining directly beneath archaeological heritage sites along Dog Trap Creek, which include rock shelter sites with artwork of high significance, so as to avoid potential impacts and preserve these cultural values for future generations.

Detailed consultation with Aboriginal heritage stakeholders was conducted during the original EIS and revised ACHA preparation, including in the drafting of recommended management and mitigation measures to ensure Aboriginal cultural input in decision making. The existing Aboriginal Heritage Management Plan for the mine includes provisions for ongoing consultation and engagement with Aboriginal stakeholders on decision making regarding potentially impacted heritage sites and this plan would be updated for the Amended Project to ensure continued engagement on cultural matters.

As with all development, the Project could result in impacts to Country beyond those to individual cultural sites, including residual changes to the landscape and natural features, all of which have deep social and cultural meaning to Aboriginal communities beyond the values assigned in a regulatory or impact assessment context. These changes add to the ongoing changes that have occurred to Country since European settlement, which have irrevocably changed Aboriginal people's relationship and connection to the land (social, cultural and spiritual).

Within an impact assessment framework, the EIS and Project Amendment Report identifies the measures undertaken to revise the Project mine plan and layout so as to avoid and minimise impacts to the natural environment, including sensitive features where possible (refer Section 5.0 of the EIS and the **Section 2.0** above). Residual impacts would be managed through environmental mitigation and consultation measures as identified in Section 7 of the Response to Submissions Report (Revised Management Measures). Consultation measures as part of the Aboriginal Heritage Management Plan and Community Consultative Committee process would provide the opportunity for community and Aboriginal stakeholders to input into decision making in relation to the ongoing management of natural resources affected by the Tahmoor South project.

Based on the above, the likelihood of social impacts to the Aboriginal community have been rated as *possible with moderate* consequences resulting in a significance/risk rating of *high* (without mitigation). With the implementation of cultural heritage management and consultation measures, the consequence of impacts can be reduced to *minor* resulting in a residual post-mitigation significance/risk rating of *moderate*.

4.3 Social Impacts on groundwater bore users

Potential social impacts to groundwater bore users are anticipated to be largely similar to the social impacts identified in relation to subsidence impacts (refer **Section 4.1**). That being potential stress, anxiety and uncertainty regarding the level and timing of impacts as well as hardship and stress associated with groundwater bore impacts (whilst a claim is being processed) and engaging in the claims process.

A revised Groundwater Assessment was carried out for the Amended Project and is included in the Project Amendment Report (Section 7.2). The revised assessment estimates that 46 registered bores would be affected in excess of the 2 m drawdown criterion of the Aquifer Interference Policy, as well as a further six registered bores that the model shows as already affected by historical mining. This would increase to up to 228 registered bores when considering the cumulative effects of all simulated mines.

Tahmoor Coal has committed to implementing 'make-good' provisions for affected groundwater users, with the 'make-good' plan to be finalised in consultation with the landowner. Relevant measures could include lowering pumps within groundwater bores or providing an improved pump, deepening a bore or drilling a new bore, or providing an alternative water supply. Pre-longwall mining bore census surveys would be undertaken to establish baseline conditions of bores predicted to be affected, so that 'make-good' measures can be implemented in the event that the bores are impacted (determined by monitoring pre, during and post longwall mining).

It is noted that since mining commenced in 1979, Tahmoor Coal has only been called upon to provide 'make-good' provisions at two groundwater bores, despite over 70 being predicted to be affected by the operation of Tahmoor North. This demonstrates the highly conservative nature of the groundwater modelling. Details of the proposed groundwater monitoring and management plan, as well as ongoing community consultation activities, are described in Section 7 of the Response to Submissions Report (Revised Management Measures) for the Amended Project. It is anticipated that with the implementation of these measures, indirect social impacts to groundwater bore users can be successfully managed.

The likelihood of indirect social impacts to groundwater bore users are considered to be *possible* with *moderate* consequences of impact without mitigation, resulting in a significance/ risk rating of *high* (without mitigation). With the implementation of groundwater management and consultation processes designed to make-good affected bore users and support their claims process, the consequence of impacts can be reduced to *minor* resulting in a residual post-mitigation significance/ risk rating of *moderate*.

4.4 Social Impacts on community with ties to surrounding natural features

Key community concerns raised in submissions related to potential impacts of the Project on important natural features in the area including Thirlmere Lakes, waterways, groundwater resources and ecological values. This demonstrates very strong ties between the local and broader community and the natural features of the area.

Physical impacts from the Project on natural features of the area (including from subsidence and direct disturbance) could result in the following social impacts to communities with strong ties to these natural features:

- Impacts to the local community's sense of place and identity, particularly on the value placed on the area's undisturbed/ natural characteristics;
- Anxiety, stress and uncertainty and sense of loss related to disturbance impacts including whether negative impacts (such as loss of flow from streams) can be rehabilitated, in particular linked to broader anxieties about environmental management and protection across the world more broadly. For example, the 2019-2020 bushfire season and the associated effect on natural systems, biodiversity and eco-tourism industries may exacerbate community anxieties regarding the need to protect remaining natural systems (including Thirlmere Lakes and other protected areas) from further human-induced changes, and reduce further cumulative changes to natural systems; and

- Hardship impacts where community livelihood is tied to natural values and nature-based tourism in the area (including potential for future ventures).

In recognition of the high social values placed on the area's natural features, mine planning for the Tahmoor South Project was carried out with specific consideration of the recommendations of the Southern Coalfield Inquiry, and based on the precautionary and robust assessment approach of identifying risk management zones (RMZs) so as to avoid impacts to significant features wherever possible. This has resulted in a mine plan which avoids significant features including Thirlmere Lakes, the Nepean and Bargo Rivers and associated gorges, Mermaid Pools, and the Metropolitan Special Area (water catchment) and associated Upper Nepean State Conservation Area. As identified in **Section 2.0**, further amendments to the Project since the exhibition of the EIS have resulted a mine layout which reduced overall subsidence levels as described in the EIS by 15% and reduces the REA extension footprint by 74%, resulting in significant reduction to biodiversity impacts as previously predicted (refer Section 7.4 of the Project Amendment Report).

Detailed management, mitigation and monitoring measures, including Trigger Action Response Plan (TARPs), have been proposed to minimise and manage residual impacts to natural features within the local area including remediation of waterways impacted by subsidence from the Project. Tahmoor Coal will continue to engage with community members through the mine community consultative committee and other mechanisms (including the mine website) to ensure accurate and up-to-date information on the project's environmental management and monitoring results are made available for public viewing and feedback. This process provides for transparent, robust and consultative environmental management.

Social impacts on community with ties to the natural environment are considered to be *possible* and *moderate* in consequence, resulting in a significance/risk rating of *high* (without mitigation). With the implementation of mitigation and consultation measures aimed at ensuring that the community has input and buy-in into decision making, it is considered that consequence rating would reduce to *minor* resulting in a post-mitigation risk rating of *moderate*.

5.0 Mitigation and conclusion

Together, the original SIA and this SIA Addendum provide a detailed local and regional context of the Project Area for the Project and identify a number of social impacts that are likely to arise as part of the Project. The key impacts of relevance largely include impacts of subsidence, noise and vibration, air quality, visual aesthetics, traffic, land use and community concerns regarding surface water environments.

Tahmoor Coal has sought to reduce these impacts by utilising the existing surface infrastructure facilities where reasonable and feasible, and amending the Project to further reduce impacts to the natural and built environment.

This SIA Addendum provides a review of the assessment of social impacts against the Project amendments. The overall conclusion of the review is that social impacts of the Amended Project are largely similar to those of the original Project as presented in the EIS, in that social impacts associated with the Project are likely to be consistent with those of the already operating mine. There may be impacts with regard to construction of the Project; however, these would be short term and temporary in nature.

During operation there may also be minor visual impacts from limited viewpoints, and operational noise, air quality, odour and traffic impacts. These impacts would be managed and minimised through the implementation of appropriate management and mitigation measures.

Mining-induced subsidence may result in structural and/or cosmetic damage to houses over and near the proposed longwalls. Impacts to bores as a result of the Project would potentially comprise impacts to their structural integrity, or from drawdown of the aquifer. These impacts as a result of the Project would be managed, monitored and remediated in accordance with the recommendations from the Southern Coalfields Inquiry. Affected property owners would be addressed through the repair, restoration and rehabilitation of these impacts in conjunction with Subsidence Advisory NSW.

In addition, this SIA Addendum has further considered the social impacts associated with the Project in relation to:

- Subsidence impacts;
- The Aboriginal community;
- Groundwater bore users; and
- Community with ties to surrounding natural features.

The management and mitigation measures identified in Chapter 7 of the Tahmoor South Project Response to Submissions Report, and outlined in the relevant sections above, are considered sufficient and adequate to address the above social impacts without the requirement for additional measures.

Tahmoor Coal has been a major employer in Wollondilly for over 40 years, employing approximately 400 people, with around half being local residents. Further, Tahmoor Coal has a long history of successful engagement with the local community in which it operates. This is reiterated through the overall strong support expressed in the majority of local community submissions (88%) during the exhibition period in favour of the Project.

Key benefits to local, Regional and State economies include continued provision of employment for Tahmoor Mine's workforce until 2035, as well as additional employment through the construction phase of the Project. It is predicted the Project would generate a net benefit of up to \$784 million over its life; \$162 million of which would flow through to the local Wollondilly region (in Net Present Value terms).

Without approval, completion of mining in the Tahmoor North mining area would result in closure of Tahmoor Mine by approximately 2022 prohibiting the extraction of a coal resource via existing infrastructure. Should the Project be approved the life of Tahmoor Mine would be prolonged, enabling the recovery of a greater proportion of the existing resource. This would in turn enable ongoing supply to existing contracts and direct employment of the existing 400 employees, as well as an additional 50 to 175 employees at peak employment.

It is considered that the social impacts identified in this report can be minimised and managed by Tahmoor Coal through the implementation of measures that have been informed by over 40 years of mining in the Southern coalfields as well as through substantial experience gained in successfully managing impacts in consultation with the community.

