APPENDIX H

Historic Heritage Assessment

Niche Environment and Heritage
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Excellence in your environment

11 February 2020

Ms Zina Ainsworth
Tahmoor South- Approvals Manager
SIMEC PTY LTD- Tahmoor Colliery
2975 Remembrance Drive
Tahmoor NSW 2573

Dear Ms Ainsworth,

Re: Amended Tahmoor South Project- Update of the Historic Heritage Assessment

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 proposed development seeks to extend the life of underground mining at Tahmoor Mine for an additional 13 years until approximately 2035.

In accordance with the requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act), an Environmental Impact Statement (EIS) was prepared to assess the potential environmental, economic and social impacts of the Project. 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)) from 23 January 2019 to 5 March 2019.

Key issues raised in submissions included concerns relating to the proposed extent of longwall mining, the magnitude of subsidence impacts and the extent of vegetation clearing required for the expansion of the reject emplacement area (REA). In response to these and other issues raised in Government agency, local Council, stakeholder and community submissions, and as a result of ongoing mine planning, several amendments have been made to the proposed development, so as to also further reduce the predicted environmental impacts of the Tahmoor South Project.

The key amendments to the Project since public exhibition of the EIS are:

- A revised mine plan, including:
  - an amended longwall panel layout and the removal of LW109;
  - a reduction in the height of extraction within the longwall panels from up to 2.85 metres (m) to up to 2.6 m; and
  - a reduction in the proposed longwall width, from up to 305 m to approximately 285 m.
- A reduction in the total amount of Run-of-Mine (ROM) coal to be extracted over the Project life, from approximately 48 million tonnes (Mt) to approximately 43 Mt of ROM coal, comprising;
  - 30 Mt of coking coal product (reduced from 35 Mt);
  - 2 Mt of thermal coal product (reduced from 3.5 Mt)
- A revised extended REA; including:
  - a reduction in the additional capacity required to accommodate the Project;
  - a reduction in the REA extension footprint, from 43 ha to 11 ha;
  - an increase in the final height of the REA (from RL 305 m to RL 310 m).
- Confirmation of the location and footprint of ancillary infrastructure associated with the ventilation shaft sites (e.g. the power connection easement for ventilation shaft site TSC1); and
- A continuation of the use of the existing upcast shaft (T2); although, 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.

No amendments have been made to other key aspects of the Project as presented in the EIS for which approval is sought, such as the proposed annual coal extraction rate, mining method, traffic movements and employee numbers. A detailed description of the amended development is provided in the Amended Project Report (AECOM 2020).

This letter has been prepared to assess the impacts of the amended project on Historical Heritage. The assessment considers and outlines the differences in impacts compared to the original project as presented in the EIS. In this way, it serves as an update to the 2018 assessment (Niche, 2018, Appendix L of the Tahmoor South EIS).

Table 1 (overleaf) is taken from the original Historic Heritage assessment and has been revised with the amended subsidence predictions prepared by MSEC (MSEC 2020, Table D.12). The original subsidence levels based on the mine plan proposed in the EIS are in black font in the table, whilst the revised predictions are highlighted in red.

As shown in Table 1, overall subsidence predictions associated with the amended mine plan have reduced at all identified heritage sites within the subsidence study area, with the exception of Item 10 (Cottage at 91 Hawthorn Road), where a minor increase in subsidence levels is predicted. A small increase in the predicted maximum subsidence is also predicted at a shed located within Wirrimbirra Sanctuary (from a range of 850-1150 mm to 900-1300 mm), although the predicted maximum tilt, final tilt, total hogging curvature and total sagging curvature within the property are predicted to be less. Notably, overall maximum subsidence across the property is predicted to be less than the predicted levels associated with the EIS mine plan.

Whilst a change in subsidence levels is predicted at historic heritage sites identified in the subsidence study area when compared to the levels associated with the EIS mine plan, given the minor nature of the changes, the predicted impacts to historic heritage items remains the same as that assessed in the original heritage assessment (Niche, 2018). Impacts are generally predicted to be nil to minor, as described in Table 1.

All recommended mitigation and management measures as outlined in Niche 2018 also remain the same.

Yours sincerely,

Renée Regal
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Table 1: Potential Impact of Subsidence on Identified Heritage Items and Recommended Mitigation / Management Strategy within Subsidence Study Area (Source: Niche, 2013 based on data provided by MSEC, 2020).

Site ID	Site Name	Significance	Closest Distance to Extent of LW Mining Area within the SSA	Predicted Total Subsidence (mm)	Predicted Final Tilt after any LW (mm/m)	Predicted Maximum Tilt after any LW (mm/m)	Predicted Total Hogging Curvature (1/km)	Predicted Total Sagging Curvature (1/km)	Likelihood	Potential Physical Impacts on Heritage Items	Recommended Mitigation / Management
1	Bargo Cemetery	Local	Directly above LW Mining Area	1900 1350-1650	12.0 8.7-10.5	12.0 0.13-0.16	0.19 0.23	0.33 0.28	Low likelihood of severe impacts if left untreated	Cracking to concrete surrounds Displacement of tombstones relative to graves	Pre-mining inspection, develop management plan, monitor during mining, restore if damage occurs
2	Kalinya Gardens and landscape	**Local**	Directly above LW Mining Area	1300 1150	6.0 5.0	8.5 5.0	0.14 0.04	0.03 0.06	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
3	Old Coomeroo Homestead, Silo, Shed	Local	Directly above LW Mining Area	1450 1100	6.0 3.0	8.5 3.0	0.09 0.07	0.08 0.03	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external timber slabs Cracking to brick chimneys Cracking to brick silo walls Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs

Site ID	Site Name	Significance	Closest Distance to Extent of LW Mining Area within the SSA	Predicted Total Subsidence (mm)	Predicted Final Tilt after any LW (mm/m)	Predicted Maximum Tilt after any LW (mm/m)	Predicted Total Hogging Curvature (1/km)	Predicted Total Sagging Curvature (1/km)	Likelihood	Potential Physical Impacts on Heritage Items	Recommended Mitigation / Management
4	Homestead (170 Great South Road)	Local	Directly above LW Mining Area	1550 1050	10.0 2.5	11.0 2.5	0.13 0.06	0.10 0.04	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Cracking to painted brick walls Cracking to brick chimneys Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
5	Bargo Post Office	Local	Directly above LW Mining Area	1550 500	10.0 6.5	10.0 6.5	0.09 0.11	0.32 0.02	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Impacts to awning structure and column supports Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
6	Bargo Hotel	Local	Directly above LW Mining Area	1150 225	12.0 1.5	12.0 1.5	0.12 0.02	0.05 <0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Cracking to painted brick walls Cracking to brick chimneys Impacts to awning, balcony and column supports Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs

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7	Bargo Rural Trading Building	Local	Directly above LW Mining Area	550 150	6.0 1.0	6.0 1.0	0.11 <0.01	0.02 <0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely :Cracking to internal linings Cracking to painted brick walls Impacts to suspended awning Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
8	Commercial Building	Local	Directly above LW Mining Area	425 150	4.0 0.5	4.0 0.5	0.07 <0.01	0.02 <0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Cracking to painted brick walls Cracking to brick chimney Impacts to awning and column supports Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
9	Bargo Public School	Local	Directly above LW Mining Area	500 150	5.5 1.0	5.5 1.0	0.10 <0.01	0.02 <0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Cracking to brick walls and concrete window lintels, or widening of existing cracks Cracking to brick chimneys Impacts to timber window frames Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, consultation with the Dept of Education and Communities, develop management plan, monitor during mining, restore if damage occurs

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10	Cottage (91 Hawthorne Road)	Local	Directly above LW Mining Area	1000 1250	3.0 3.0	3.5 3.0	0.09 0.07	0.04 0.13	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Cracking to brick chimney Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
11	House (118 Hawthorne Road)	Local	Directly above LW Mining Area	1400 275	12.0 2.5	12.0 2.5	0.12 0.04	0.19 0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Cracking to brick chimney Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
12	Bargo Public School Residence	Local	Directly above LW Mining Area	1350 275	12.0 2.5	12.0 2.5	0.12 0.03	0.17 0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs

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13	Railway Cottages	Local	Directly above LW Mining Area	1550 450	11.0 5.5	11.0 5.5	0.09 0.1	0.33 0.02	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Cracking to brick chimneys Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
14	Hawthorne	Local	Directly above LW Mining Area	1050 225	12.0 1.5	12.0 1.5	0.12 0.02	0.05 <0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Cracking to brick chimneys Damage to verandah Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
15	Bargo Railway Station Toilet Block	Local	Directly above LW Mining Area	475 125-150	5.0 0.5-1.0	5.0 1.5-1.0	0.09 <0.01	0.02 <0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Damage to face brickwork Damage to brick WC Platforms are more likely to slightly move apart from each other but there is a low chance that they will move closer	Pre-mining inspection, develop management plan, monitor during mining, restore if damage occurs

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										together. If they move substantially close together, it may encroach on platform clearances, which would result in removal of face brickwork.	
16	House (8 Noongah Street)	Local	130m from extent of LW Mining Area	150 70	1.0 <0.5	1.0 <0.5	<0.01 <0.01	<0.01 <0.01	Extremely low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Damage to verandah Severe impacts if left untreated	Pre-mining inspection, develop management plan, monitor during mining, restore if damage occurs
17	Bargo Surgery (74 Railside Ave)	Local	Directly above LW Mining Area	600 175	7.5 1.0	7.5 1.0	0.12 <0.01	0.03 <0.01	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Cracking to unpainted brick walls Cracking to brick chimney Impacts to awning, brick pilon supports and concrete verandah floor Severe impacts if left untreated	Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs

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18	Cottage (121 Railside Ave)	Local	80m from extent of LW Mining Area	200 90	1.0 <0.5	1.0 <0.5	0.01 <0.01	<0.01 <0.01	Extremely low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to internal linings Dislodgment of external weatherboards Cracking to brick chimney. Severe impacts if left untreated	Pre-mining inspection, develop management plan, monitor during mining, restore if damage occurs
19	Wirrimbirra Sanctuary	Local, State and National	Directly above LW Mining Area	850-1150 900-1300	2.5-7.0 2.0-3.5	3.0-8.0 3.0-3.5	0.08-0.10 0.05-0.07	0.02-0.04 0.03-0.19	Extremely unlikely impacts on foundations of stone hut and well. Extremely unlikely impacts on flora Likely fracturing of rock bed of Teatree Hollow, likely surface water flow diversion, draining of pools	Fracturing of rock bed of Teatree Hollow, surface water flow diversion and drainage of pools	Pre-mining inspection, develop management plan, consider mitigation measures, consultation with landowner and NSW Heritage Council, develop Site-Specific SoHI, monitor during mining, restore if damage occurs
20	Bargo Railway Bridge (South)	Local	100, from the extent of LW Mining Area	200 100	1.0 <0.5	1.0 <0.01	0.01 <0.01	0.01 <0.01	Extremely low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to brickwork Cracking to concrete arch	Prepare Site-Specific HMP; include: Pre-mining inspection

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										Mitigation measures are likely to result in change to bridge fabric	Consultation with RailCorp and Wollondilly Shire Council on mitigation measures (see MSEC 2014 for possible options) Undertake further assessment of heritage impacts once mitigation options have been defined Define a monitor process for impacts during mining Perform any restoration works if damage occurs due to subsidence
21	Bargo Railway Bridge (North)	Local	Directly above LW Mining Area	1650 1275	4.0 6.5	5.5 0.10	0.07 0.06	0.09 0.06	Low likelihood of severe impacts if left untreated	Nil or minor impacts most likely: Cracking to brickwork Cracking to concrete arch Mitigation measures are likely to result in change to bridge fabric	Prepare Site-Specific HMP; include: Pre-mining inspection Consultation with RailCorp and Wollondilly Shire Council on mitigation measures (see MSEC 2014 for possible options) Undertake further assessment of heritage impacts once mitigation options have been defined Define a monitor process for impacts during mining

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											Perform any restoration works if damage occurs due to subsidence
24	Tahmoor Colliery	Local	Centre of Surface Facilities. 500m from extent of LW Mining Area	Up to 1300 Up to 1650	Up to 10.0 Up to 10.5	Up to 10.0 Up to 0.16	Up to 0.1 Up to 0.28	Up to 0.3 Up to 0.28	No impacts expected.		Pre-mining inspection, consider mitigation measures, develop management plan, monitor during mining, restore if damage occurs
29	Great Southern Road, Bargo	Local	Directly above LW Mining Area	1900 Up to 1500	12.0 Up to 8.0	12.0 Up to 0.10	0.19 Up to 0.20	0.33 Up to 0.20	No impacts on alignment of road.		No impacts expected. No management measures proposed.