Appendix A

Updated project description

This appendix provides a detailed description of the Project, as amended by the changes outlined in Chapter 3 of the *second amendment report*.

A.1 Overview

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 seeks to extend the life of underground mining at Tahmoor Mine for an additional 10 years until approximately 2032. Mining has been undertaken at Tahmoor since it first commenced in 1979. The location of Tahmoor Mine can be seen in Figure A.1.

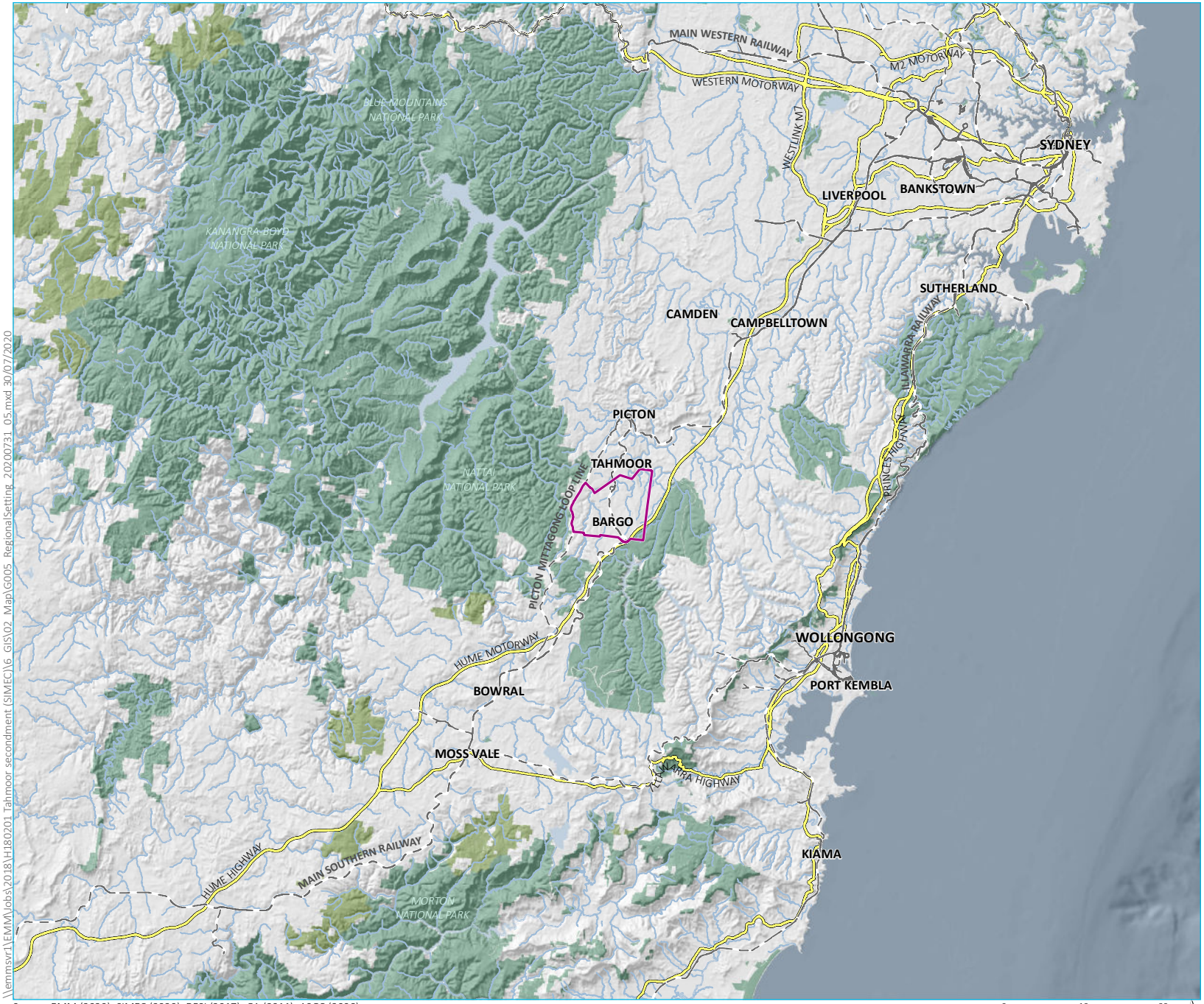
The Project would use longwall mining to extract coal from the Bulli seam within the bounds of Consolidated Coal Lease (CCL) 716 and CCL 747. Coal extraction of up to four (4) million tonnes of ROM coal per annum is proposed as part of the Project; with extraction of up to 33 Mt of ROM coal over the life of the project. The Project would consist of approximately:

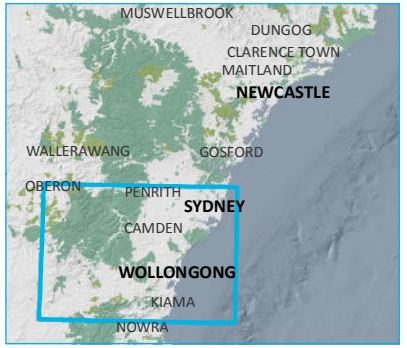
- 23 Mt coking coal product;
- 1.4 Mt thermal coal product; and
- 9.7 Mt rejects.

These approximate market mix volumes include moisture and are therefore an estimate only. 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. It would then be 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, to Newcastle for Australian and international markets. Up to 0.2 Mt per annum of either coal product or reject material is proposed to be transported to customers via road.

The components of the Project are shown on Figure A.2 to Figure A.4, and in summary comprise:

- longwall mining south of the existing Tahmoor Mine using the existing surface infrastructure at the Tahmoor Mine surface facilities area;
- mine development including underground redevelopment, ventilation shaft construction, pre-gas drainage and service connection;
- upgrades to the existing surface facilities area including:
    - upgrades to the CHPP;
    - increase in height of the existing REA;
    - upgrades to surface water management;
    - additions to the existing bathhouses and associated access ways; and
    - upgrades to onsite and offsite service infrastructure, including electrical supply;





KEY

- Project area
- Rail line
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Source: EMM (2020); SIMEC (2020); DFSI (2017); GA (2011); ASGC (2006)

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Regional context

Tahmoor South Project
Second amendment report
Figure A.1

SIMEC

EMM creating opportunities

- rail transport of product coal to Port Kembla and from time to time, Newcastle;
- up to 0.2 Mt per annum of either product coal or reject material is proposed to be transported to customers via road;
- mine closure and rehabilitation; and
- environmental management.

Each of the individual components of the Project, along with an overview of the proposed environmental management measures, is described in further detail below.

A.2 Underground mining operations

A.2.1 Mining Area

Coal from the Bulli Seam would be mined within CCL 747 and CCL 716 as part of the Project. The mining lease areas for the Project have been operationally divided up into different mining domains based on geological complexity and mining potential. The Project comprises mining in the Central Domain only. Further discussion on the other domains and alternatives considered is provided in Chapter 5 of the EIS (AECOM 2018).

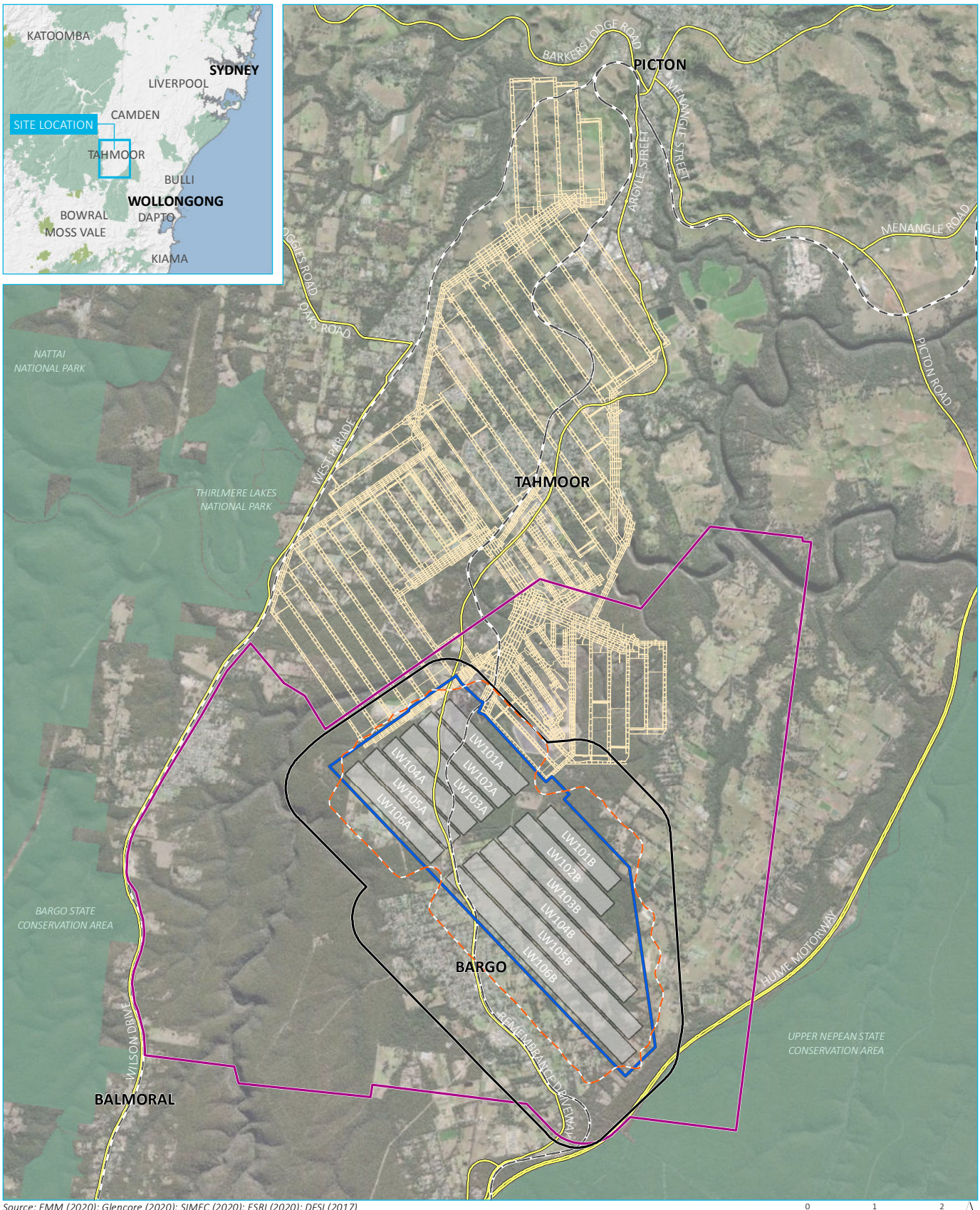
The Project seeks to undertake longwall mining of the Bulli seam within the Central Domain, at a depth of between approximately 365 m and 410 m below ground level. The Central Domain is bounded by known geological fault zones.

The indicative longwall panel layout is shown on Figure A.2. Longwalls in the Central Domain would be orientated in a south-east/north-west direction and would be located within the Bargo area.

The extent of longwalls shown on Figure A.2 defines the maximum extent of the footprint of the proposed longwall mining and consists of both first (roadways) and secondary (longwall) workings. The subsidence assessment focuses on the predicted SSA and assumes that longwall mining only occurs within the extent of longwalls, except for main development roadways (first workings).

The extent of longwalls provides for some flexibility for changes to mining development work and longwall layout during detailed design, subject to geological conditions. It is proposed that minor changes to the layout would be approved under the Extraction Plan (EP) approval process. The final detailed design of the longwall layouts would be subject to review and approval in consultation with the relevant authorities and to the satisfaction of the Secretary of the NSW Department of Planning, Industry and Environment (DPIE). Mining operations, which are proposed to be undertaken within the amended extent of longwalls include first workings; comprising main headings, gate roads and cut throughs, as well as the development of the longwall panels (secondary workings).

Subsidence predictions have been undertaken for surface infrastructure (eg residential, commercial and business structures, public infrastructure and public amenities, utility services such as water and gas mains, and other associated infrastructure) as part of a *subsidence assessment* (Appendix B of *second amendment report*). These predictions and potential impacts would be captured within an EP prior to longwall mining for the Project commencing.



Source: EMM (2020); Glencore (2020); SIMEC (2020); ESRI (2020); DFSI (2017)

0 1 2 km
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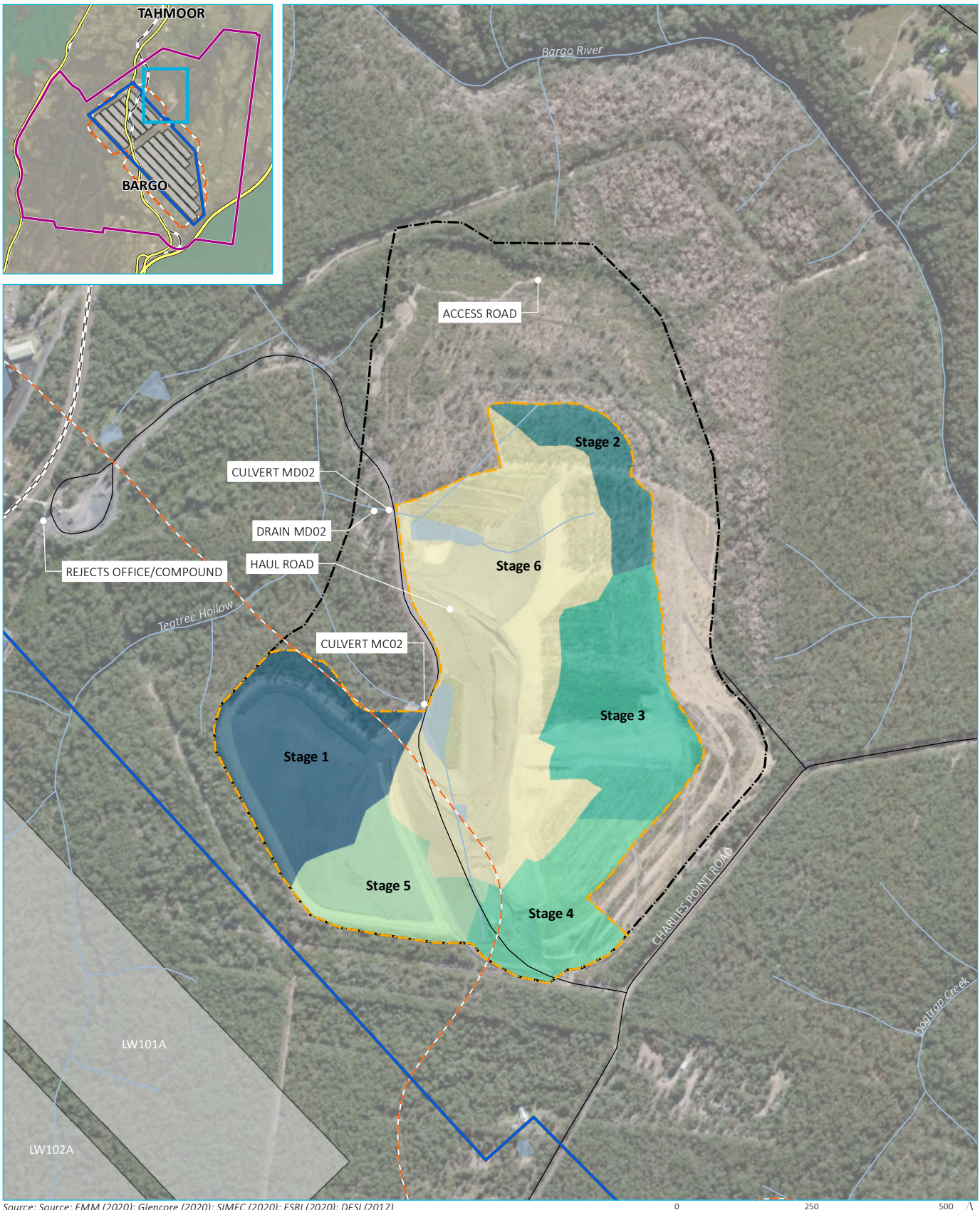
KEY

- Project area
- Extent of longwalls
- Longwall panel
- Subsidence study area
- Predicted 20 mm subsidence contour
- Approved Tahmoor North underground working
- Rail line
- Major road
- NPWS reserve
- State forest

Amended mine plan

Tahmoor South Project
Second amendment report
Figure A.2

SIMEC EMM creating opportunities



Source: Source: EMM (2020); Glencore (2020); SIMEC (2020); ESRI (2020); DFSI (2017)

0 250 500 m

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KEY

- Project area (refer to inset)
- Approved reject emplacement area footprint
- Amended reject emplacement extension area
- Predicted 20 mm subsidence contour
- Extent of longwalls
- Longwall panel

Amended reject emplacement extension staging area

- Stage 1
- Stage 2
- Stage 3
- Stage 4
- Stage 5
- Stage 6

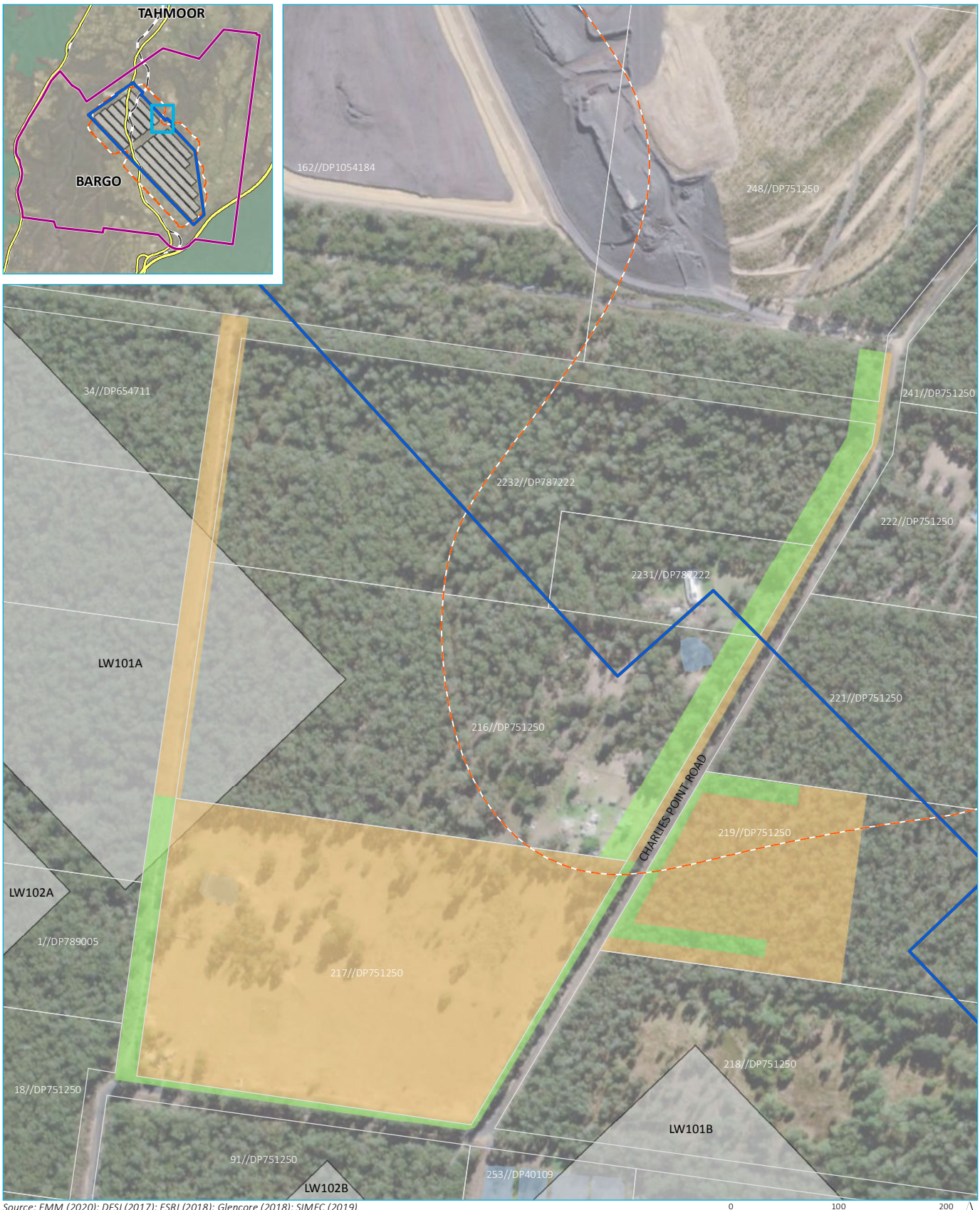
- Rail line
- Major road
- Minor road
- Watercourse / drainage line
- Waterbody
- NPWS reserve (refer to inset)

Amended reject emplacement area layout

Tahmoor South Project
Second amendment report
Figure A.3

SIMEC

EMM creating opportunities



Source: EMM (2020); DFSI (2017); ESRI (2018); Glencore (2018); SIMEC (2019)

0 100 200 m

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KEY

- Project area (refer to inset)
- Extent of longwalls
- Longwall panel
- Predicted 20 mm subsidence contour
- Vegetation to be cleared
- Vegetation to be retained
- Rail line (refer to inset)
- Major road (refer to inset)
- Cadastral boundary
- Waterbody
- NPWS reserve (refer to inset)

Vegetation clearing for ventilation shafts and associated transmission lines

Tahmoor South Project
Second amendment report
Figure A4

SIMEC

EMM creating opportunities

A.2.2 Mine development

To enable the continuation of mining to occur sequentially with the current mining operations in Tahmoor North, which are scheduled for completion during 2022, development works in anticipation of mining in the Tahmoor South project area commenced in the Tahmoor North mine area in 2019 under existing development consents. These pre-development activities include:

- recovery of existing underground development roadways;
- redevelopment of the underground pit bottom;
- pre-gas drainage;
- longwall development including establishment of gate roads;
- installation of electrical, water and gas management networks; and
- the purchase and installation of equipment.

The Project would provide additional employment opportunities, with the requirement for additional people estimated to be between 50 and 175 at various points in time. Additional site infrastructure, including additional onsite amenities and car parks would be required to accommodate the increased workforce during the transition period from mining operations at Tahmoor North and the Project's development works.

A.2.3 Mine ventilation

The Project would require the use of the existing T2 upcast ventilation shaft. Two additional ventilation shafts would also be required to provide a reliable and adequate supply of ventilation air to support personnel in the mine during operation, being:

- TSC1: an upcast ventilation shaft that would be located on Tahmoor Coal's Charlies Point Road property; and
- TSC2: a downcast ventilation shaft that would be located on Crown Land adjacent to Tahmoor Coal's Charlies Point Road property.

The locations of the ventilation shafts are shown on Figure A.4. Additionally, the power connection easement for ventilation shaft site TSC1 has been determined and is also shown on Figure A.4.

The existing upcast shaft (T2) will use one fan when operating once the new ventilation shafts and fans (TSC1 and TSC2) are in operation in Tahmoor South. The construction of the ventilation shafts would require a disturbance footprint of approximately 6.04 ha at TSC1 and 2.80 ha at TSC2.

Access to TSC1 and TSC2 would be from the existing road network.

Construction would involve the following:

- Construction of internal roads to allow access for construction and operational maintenance vehicles.
- Establishment of the construction site to allow enough space for stockpiling of ventilation shaft liners for TSC1 and TSC2, temporary spoil emplacement, water management, storage and safe movement on-site during construction activities. Establishment of each ventilation shaft site would involve:
    - installation of environmental controls such as silt fences, fencing and a lockable gate, as well as display of appropriate signage relating to restricted entry;

- clearing of vegetation and stripping of topsoil. Topsoil would be temporarily stockpiled for use in rehabilitation post construction;

- excavation and construction of a temporary hardstand area for operation of drilling equipment. The hardstand footprint would be determined by the size and number of liner pieces to be manufactured and excavated to a depth of approximately 0.2 m. The temporary hardstand areas would include:

    - road base surrounding the site compound area and drill rig slab for site facilities;

    - laydown areas and a levelled hardstand area for storage of the ventilation shaft liners;

    - a stable access way between the liner storage area and the ventilation shaft to facilitate transport of the cured liner segments on purpose-built trailers; and

    - a concrete pad approximately 20 m by 15 m is to be constructed around the top of the ventilation shaft as a foundation for the drill rig and to provide a clean work area.

- Connection of 66 kV electrical power along the easement and via tee-off from the 66 kV overhead power lines into the TSC1 site on new power poles and establishment of electrical substation at ventilation shaft site TSC1.

- Sinking of the ventilation shaft using blind boring methods (or similar method), and lining of the ventilation shafts using a composite concrete and steel liner (or similar method).

- Construction and installation of ventilation fans. The upcast shaft site fans would also incorporate a fan outlet stack, approximately 20 m high, to control odour discharge from the mine.

- Construction, installation and commissioning of the ventilation shafts and fans would occur 24 hours a day 7 days a week.

The ventilation shaft construction sites would incorporate water treatment controls, with water extracted from the ventilation shafts being treated and discharged via a licensed discharge point. The area immediately surrounding the ventilation shafts would be rehabilitated following the construction phase. The ventilation shafts and fans would operate for the life of the proposed development.

At the TSC1 ventilation shaft site, additional surface to seam boreholes would be constructed to provide power, communications, diesel fuel, gas drainage and water to the mine and service shafts constructed for ballast and concrete delivery into the mine. A service building housing an office and amenities would also be constructed together with a services compound for stockpiled ballast. A 30,000-litre self-bunded diesel fuel tank would also be located at the TSC1 ventilation shaft site to provide a fuel supply to underground equipment.

A.2.4 Gas drainage operations

No changes are proposed to gas drainage operations as described in the EIS (AECOM 2018).

Coal mines need to control underground gas concentration levels to below safe limits so that employees can work in a safe environment and mining operations can be undertaken as efficiently as possible.

The coal seams within the Southern Coalfield are generally known to be 'gassy', with CH_4 and CO_2 released from the goaf during mining. Gas in the underground workings would be managed by a series of gas drainage operations including:

- pre gas drainage, whereby gas would be extracted from the coal seam prior to longwall mining;

- post gas drainage, whereby gas would be extracted from the goaf; and
- gas extraction via the mine ventilation system, which would occur throughout mining.

Gas management would continue to use the existing infrastructure, including the Tahmoor Mine Gas Plant, Gas Plant Vent and Flare Plant, as well as the WCMG Power Plant. Some components of the existing gas management infrastructure may need to be upgraded throughout the life of the Project to increase the capacity of the systems, such as the installation of the additional vacuum pumps at the Gas Plant when required.

i Pre-gas drainage

The purpose of pre-gas drainage is to reduce gas volumes in the coal seams prior to mining, with the Bulli, Wongawilli and Balgownie seams targeted for pre-gas drainage at Tahmoor Mine. Pre-gas drainage of the gas levels in the seams is required to facilitate the timely commencement and progression of mining as well as to reduce the demands on the mine ventilation system for the purpose of gas dilution during operations.

Pre-gas drainage activities are mainly undertaken underground, via drilling and drainage from the roadways developed for longwall panels. Underground pre-gas drainage works at Tahmoor Mine would drain gas following development of the mine roadways and prior to longwall development. Gas would be drawn from the coal seam by vacuum and piped to the Gas Plant at the surface facilities area via the underground pipe network. Underground gas drainage of the coal seam would continue ahead of longwall development for the life of mining.

ii Post gas drainage

Post gas drainage would be required as strata relaxation caused by the retreating longwall face would liberate volumes of gas into the mine workings from the underlying Wongawilli seam and from overlying strata, released due to fracturing of the goaf. To capture this gas during the proposed development, cross-measure boreholes are proposed to be drilled from the mine workings into the Wongawilli seam. These boreholes would be designed to collect the gas at its source or to intercept gas before it migrates into the mine workings. At the conclusion of mining from each panel, the panel would be sealed, and gas drawn from the sealed areas as part of the post gas drainage operations. The gas collected from the in-seam and cross-measure boreholes would be drawn by vacuum via the underground pipe network to the Gas Plant located at the surface facilities area.

iii Gas in ventilation

The ventilation system would deliver fresh air into the mine from the existing and proposed downcast ventilation shafts and would extract stale air from the mine via the existing and proposed upcast ventilation shafts. Similar to the existing operations, the ventilation system would carry the remaining diluted gases out of the mine via the upcast mine ventilation shafts.

A.2.5 Mining method and equipment

Underground mining would be undertaken via the main roadway and longwall development using continuous miners. Longwall development refers to the mining of a series of roadways (gate roads) and cut-throughs, to form pillars of coal that would support the overlying strata during the extraction of coal. Longwalls would be up to approximately 285 m wide with a height of up to 2.6 m, which is similar to the longwall panels extracted in Tahmoor North. The gate roads would be approximately 5.2 m wide and have a height of up to 2.7 m.

Coal would be cut from the coal face by the longwall shearer, loaded onto the armoured face conveyor and transported to the surface facilities area via a series of underground conveyors. The longwall would retreat as coal is mined and the overlying rock strata would collapse into the void left by the coal extraction, forming the goaf.

Tahmoor Coal would continue to review and investigate improved or alternate mining methods and technology throughout the life of the Project. Improved methods would be utilised where available and found to be commercially viable to allow for the efficient and economically viable extraction of the coal resource. Tahmoor Coal would ensure that the resulting environmental and social impacts of improved or alternate methods are consistent with those predicted in this *second amendment report*.

A.2.6 Mine access

The Project would use the existing infrastructure at Tahmoor Mine for employee and material access to the mine. Access to the Central Domain would be via the existing Tahmoor Mine surface facilities area, the existing drift, and a travel lift for people and materials installed within the T3 downcast shaft. The T3 vertical travel lift has a capacity for 70 persons and approximately 12 t of materials.

A.2.7 Coal production and transport

Product coal would continue to be transported from Tahmoor Mine to Port Kembla, via the existing mine rail load out, rail loop, the Main Southern Railway and the Moss Vale to Unanderra Railway. Transport of product coal by rail from the Amended Project to Newcastle (Port Waratah) could also occur from time to time, if required.

Tahmoor Mine currently has four allocated train paths per day from ARTC for the rail network between the Tahmoor Mine and Port Kembla. This current allocation is equivalent to the transport of approximately 4.6 Mt of product coal per annum and is sufficient for the life of the Project (which is expected to generate up to 4 Mt of ROM coal per annum). The rail transport study undertaken for the EIS indicated that the existing rail capacity would be sufficient for the proposed transport of product coal to Port Kembla. The estimated maximum coal production would be reduced under the amended Project (compared to that assessed in the EIS (AECOM 2018)), and as such no increase in rail capacity between Tahmoor Mine and Port Kembla would be required. Existing rail infrastructure and the number of allowable daily train movements would remain unchanged (refer to Section 11.14.4 of the EIS (AECOM 2018) for further details).

The Project would also transport and receive the following by road transport:

- product coal to domestic end users where rail transport is unavailable;
- imported coal to blend with Tahmoor Coal for special blends to meet specific customer requirements; and
- reject material to potential domestic users where rail transport is unavailable and a market opportunity for beneficial use of rejects exists or is being investigated.

Transport of product coal rejects from the Tahmoor Mine and importation of coal would be restricted to a maximum of 0.2 Mt per annum and a maximum of 3,000 tonnes per day. Road transport would be generally on a campaign basis and during these transport campaign periods generate a maximum of eight truck movements per hour during the period between 6 am to 7 pm.

A.2.8 Mine dewatering

To maintain a safe and efficient underground mine environment, water entering the underground workings needs to be managed. Mine water is proposed to be collected in underground sumps and pumped from the mine to the existing water management system at the Surface Facilities Area for treatment. Treated mine water would be either reused underground for non-potable uses or discharged at the surface via the existing LDP1 to Tea Tree Hollow.

The inflow rates are predicted to increase over the first half of the operational life at Tahmoor South from about 2 ML/day to an average of 4.7 ML/d for the proposed life of Tahmoor South. The model used for impact assessment of the Project predicts that peak rates will be in the order of 7.5-8 ML/d, noting that these rates are quoted as ML/d

but averaged over model stress periods which are typically six months to a year. Higher inflows may occur over shorter periods. Empirically, these inflows are higher than expected, given that the historical inflows are 3-5 ML/d and the proposed longwall geometry is similar to that in recent Tahmoor North longwalls.

Surface water assessments indicate that simulated releases of treated water to Tea Tree Hollow via LDP1 over the life of the Project all comply with the current environment protection licence (EPL) daily volumetric limits. If discharge volumes were to increase beyond this estimate, an application would be made to vary the EPL.

A.2.9 Underground water storage

Mine dewatering from Tahmoor South will be transferred directly to the proposed Tahmoor North underground storage, rather than from dam M3 as proposed in the EIS (AECOM 2018). Water storage has been assessed and recommendations made for increasing the capacity of the upgraded Wastewater Treatment Plant (WWTP) in the future if required.

A.3 Surface facilities

The existing surface facilities and infrastructure at the Tahmoor Mine surface facilities area, operating within surface CCL 716 and Mining Lease 1642 (ML1642), would be utilised for the Project.

Upgrades to some aspects of the surface facilities area would be required and are associated with the increase in annual coal production for the Project.

Upgrades to existing surface infrastructure would be undertaken within the footprint of the existing Tahmoor Mine surface lease (Mining Lease 1642) and additional surface lease areas required for the Project.

A.3.1 Coal handling and preparation plant

The existing CHPP would be utilised for the Project. The existing CHPP would be modified for the purposes of noise mitigation in line with the recommendations of the noise and vibration impact assessment for the Project (Appendix G).

The existing ROM stockpile area would continue to be used for the Project. During peak production ROM coal may be transported by truck from the ROM stockpile to the coal product stockpiles and transported back to the ROM stockpile when required. Reject material generated from the coal washing process at the CHPP would be transported to the REA via the existing reject conveyor to the reject bin for disposal. It would then be transported by haul truck to the REA.

A.3.2 Rejects management

The existing approved REA has an area of approximately 87.4 ha and an approved capacity of about 13 Mt, of which about 2 Mt of capacity remains, which is expected to be used for the completion of the Tahmoor North operations.

To accommodate additional reject from the Project, the REA is proposed to be increased in height to RL 320 m. The REA would be undertaken in a staged approach (refer Figure A.3). The REA would be progressively rehabilitated over the life of the mine.

Construction and maintenance of new internal haul roads around and within the REA would be required to cater for the REA height extension. The existing stormwater infrastructure would be upgraded to include bunding, additional surface water drainage controls and sedimentation basins for the additional areas. While it is likely that these water management controls would be installed at the base of the REA, inside the approved footprint, these controls will be subject to a detailed design which would be undertaken and documented prior to the height of the REA exceeding its current height limit of RL 300 m.

Alternative uses for rejects would be investigated during the life of the Amended Project and to facilitate beneficial uses of reject material (where these become feasible).

A.3.3 Plant and equipment

The Project would use existing plant and equipment located at the Tahmoor Mine facilities area. It would also require:

- additional mobile plant for coal material handling at the surface facilities area; and
- ancillary equipment such as trucks, cranes and forklifts for use around the surface facilities area to manage product and equipment stores.

Tahmoor Coal would continue to investigate and utilise improved or alternate coal handling and preparation methods and technology throughout the life of the Project to allow for the efficient processing of coal and reject.

A.3.4 Site amenities and layout

While the existing site amenities at the Tahmoor Mine surface facilities area would be used for the Project, additional facilities would be required to accommodate the increased workforce. These would be constructed adjacent to the existing amenities and would consist of pre-fabricated modular buildings. The existing sewage treatment plant would be upgraded to accommodate the additional employees.

The Project would also require minor upgrades of the existing services such as onsite firefighting, water reticulation and power supply systems.

A.3.5 Infrastructure services upgrades

A range of infrastructure services including existing offsite electrical, telecommunications and water reticulation infrastructure currently servicing the Tahmoor Mine would continue to be used with some upgrades. In addition, the construction and commissioning of an extension to the existing 66 kV overhead power line from the REA along Charlies Point Road to the proposed ventilation shaft sites would be required.

A.3.6 Site access and improvements

The existing vehicular access arrangements to Tahmoor Mine's surface facilities area via Remembrance Driveway, approximately 3 km south of Tahmoor and 5 km north of Bargo would continue to provide access for employees, contractors and materials.

There is currently a passing lane northbound and a deceleration turning lane southbound on Remembrance Driveway at the turnoff to Tahmoor Mine. These lanes allow vehicles entering Tahmoor Mine from the south to turn into the Mine without impeding other traffic on Remembrance Driveway.

The existing intersection at the entry to Tahmoor Mine from Remembrance Driveway would be upgraded as part of the Project. The upgrade would provide a dedicated right-hand turning bay for vehicles entering the surface facilities area from the south; and extended acceleration and deceleration lanes for vehicles entering and exiting from the north and south. The intersection upgrade would accommodate additional traffic movements during the concurrent undertaking of pre-mining activities for the Project and the finalisation of longwall mining in Tahmoor North. The upgraded intersection would provide a Level of Service (LoS) of A/B, which is appropriate for the projected traffic along Remembrance Drive for the life of the Project.

A.4 Rehabilitation and mine closure

A Mine Closure Plan for the Project was included in Appendix V of the EIS (AECOM 2018). An amended Mine Closure Plan was prepared for the Amended Project and contained in the PAR (AECOM 2020b).

Rehabilitation of the Project would be undertaken using a staged approach comprising:

- progressive rehabilitation of the REA; and
- mine closure and rehabilitation of the surface facilities area and ventilation shafts.

In the EIS, the REA was proposed to be progressed in 15-stages throughout the life of the mine. Based on the amendments to the Project, the REA is now proposed to be progressed in six stages. Where practicable, each stage of the REA will be progressively rehabilitated. This process would involve capping the reject material with topsoil and establishing vegetation. Annual monitoring would be undertaken to determine the success of revegetation and to inform ongoing management of the rehabilitated areas.

There are several post mining land use options that may apply to the Project including passive recreation, native bushland conservation or employment lands such as light industrial uses. It is considered that the likely final land use option for most of the surface areas would be native bushland. However, final land use options would be confirmed in a detailed closure planning process, which involves undertaking a final land use analysis and consultation with relevant stakeholders.

A detailed Mine Closure Plan would be developed within five years of mine closure. In broad terms, rehabilitation of the surface facilities area and ventilation shafts would involve:

- removal of infrastructure and services;
- levelling, re-contouring and grading to achieve safely battered slopes and surfaces;
- applying topsoil for rehabilitation where required;
- establishing native bushland vegetation which would require minimal ongoing care and maintenance; and
- monitoring of rehabilitated areas to assess the success and inform the management of areas of re-established vegetation.

Infrastructure and facilities may be retained where compatible with the end land uses which would be identified in the detailed mine closure.

A.5 Project timeframe

The Project seeks to extend the life of underground mining at Tahmoor Mine beyond the predicted completion of mining at Tahmoor North in 2022, with this timing depending upon geological, mining and economic conditions.

Several pre-mining activities are required to be completed prior to commencement of longwall mining for the Tahmoor South Project. These pre-mining activities include:

- gas drainage;
- redevelopment of the pit bottom;
- longwall development including establishment of gate roads;

- installation of electrical, water and gas management networks; and
- the purchase and installation of equipment.

The Project's pre-mining activities are anticipated to take approximately three to four years to complete before longwall mining can commence in the Central Domain. Longwall mining is proposed to commence in the Central Domain once mining is completed at Tahmoor North mine, which is anticipated to be completed by 2022. Mining for the Project would be complete by approximately 2032, with surface works, rehabilitation and mine closure occurring after the completion of mining activities. Table A.1 provides an outline of the indicative schedule for mining.

Table A.1 Indicative mining schedule

Activity	Year
Pre mining activities - approved activities under the existing Tahmoor North lease, consents and approvals	Commenced in 2019
Central Domain development, some of which would be approved activities under the existing Tahmoor North lease and approvals	Approximately 2020
Mining of Tahmoor North complete	Approximately 2022
Central Domain longwall mining	Approximately 2022 to 2032

A.6 Workforce and hours of operation

A.6.1 Workforce

The Project would involve the ongoing employment of approximately 400 people in ongoing permanent and contract roles. In addition, there would be a period of concurrent operation up to four years, involving pre-mining activities for the proposed development and longwall mining in Tahmoor North, during which time approximately 50 to 175 additional people would be required to augment the current workforce requirements.

A.6.2 Hours of operation

The Project, including construction activities, would operate 24-hours a day, seven days per week, consistent with the working hours of the current operations at the Tahmoor Mine.

Construction of the ventilation shafts, upgrades and augmentation of the existing infrastructure, services and amenities at the surface facilities area, and upgrades to the intersection at the entrance to the surface facilities area would be generally undertaken between the hours of 7 am and 6 pm, seven days a week. During ventilation shaft construction (including the ventilation shaft drilling rig and ventilation shaft lining), fan construction and commissioning would operate continuously 24 hours a day, seven days a week.

A.7 Environmental management

Environmental management at Tahmoor Mine is currently governed by the *Environmental Management System Strategy and Framework*. The Project would be managed within this framework and in line with existing procedures. Where required, the existing procedures and management plans would be updated to reflect the specific details of the Amended Project.

In addition, a Mining Operations Plan (MOP) or Rehabilitation Management Plan (RMP) would be prepared to meet the requirements of the NWN *Mining Act 1992* and NSW *Mining Regulation 2016*. The NSW Resources Regulator would be consulted to ensure that the MOP or RMP is prepared in accordance with the current guidelines at the time.

A.7.1 Subsidence monitoring and management

Tahmoor Coal currently manages and monitors subsidence as part of the existing operations at Tahmoor North mine. The systems and programs currently in place to monitor and manage subsidence would continue during the Project and would be augmented to monitor the effects of mining within the Central Domain.

Specifically, subsidence would be managed through implementation of an EP in consultation with stakeholders. This plan would describe measures to be undertaken to monitor surface subsidence and physical changes that are predicted to occur during mining. Measures detailed in the management plans would include:

- the requirements for inspection regimes for natural and built surface features;
- the layout of monitoring points and parameters to be measured;
- monitoring methods and accuracy;
- the timing and frequency of surveys and inspections; and
- processes for recording and reporting of monitoring results.

The management and monitoring plans would be prepared and lodged with the NSW Resources Regulator prior to the commencement of mining.

A.7.2 Water management

Surface water runoff from operational areas and stockpiles would continue to be captured by the existing stormwater treatment dams at the surface facilities area. Following treatment, the water would continue to be discharged to Tea Tree Hollow at LDP1.

Potable water supply for use at the surface facilities area and underground would be drawn from the town water main, and non-potable supply sourced from the recycled water treatment plant at the Surface Facilities Area. Mine water would be treated and recycled for non-potable underground use or pass through the stormwater treatment dams and be discharged via the licensed discharge point (LDP1) and licensed wet weather licensed overflow points (LOPs). Surface water management including catchment drains to convey water to sediment basin S12 would be installed at the base of REA inside the Project footprint. As previously stated, these surface water management features will be subject to a detailed design.

i Licensed discharge point

The Project would collect water underground in sumps and pump this water via underground pipes to the surface. Similar to the existing operations at Tahmoor mine, the Project would continue to discharge a portion of the stormwater and treated mine water via LDP1 under EPL 1389.

ii Site water balance

The major components of the mine water balance for the Project would be:

- inflows from surface runoff, direct rainfall onto dam surfaces, potable water draw and groundwater inflows to the underground operations; and
- outflows including discharges to the Bargo River catchment via the LDP1 and LOPs to Tea Tree Hollow; evaporation from dam surfaces; and water loss to product coal and coarse rejects.

iii Site water management plan

Water management during operation of the Project would be governed by the water management plan currently in place at Tahmoor Mine. The water management plan would be updated to encompass the operations associated with the Project and would be implemented in line with the following objectives:

- utilise available surface water runoff for use as process water;
- minimise instances of licensed discharge;
- minimise the magnitude of licensed discharge; and
- the quality and quantity of water discharged to be in accordance with relevant water quality criteria.