



Planning,
Industry &
Environment

Tahmoor South Coal Project

IPC Public Hearing

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15 February 2021

Existing Tahmoor Coal Mine

- Underground longwall mine which has been operating since 1975
- Located within the declared Bargo Mine Subsidence District which was declared in 1975
- Located within Mining Leases originally granted in 1970 and more recently up until 2010.
- Operates under a number of development consents granted by Wollondilly Shire Council and the State government
- Produces approximately 3 million tonnes of coking coal each year
- Supplies 25% for domestic steel production (BlueScope & Whyalla steelworks) and 75% to the Port Kembla Coal Terminal for export.
- Currently employs 390 people – around 40% from the region
- Approved mining operations anticipated to be completed by 2022
- Located outside Special Catchment Areas for Sydney and Wollongong

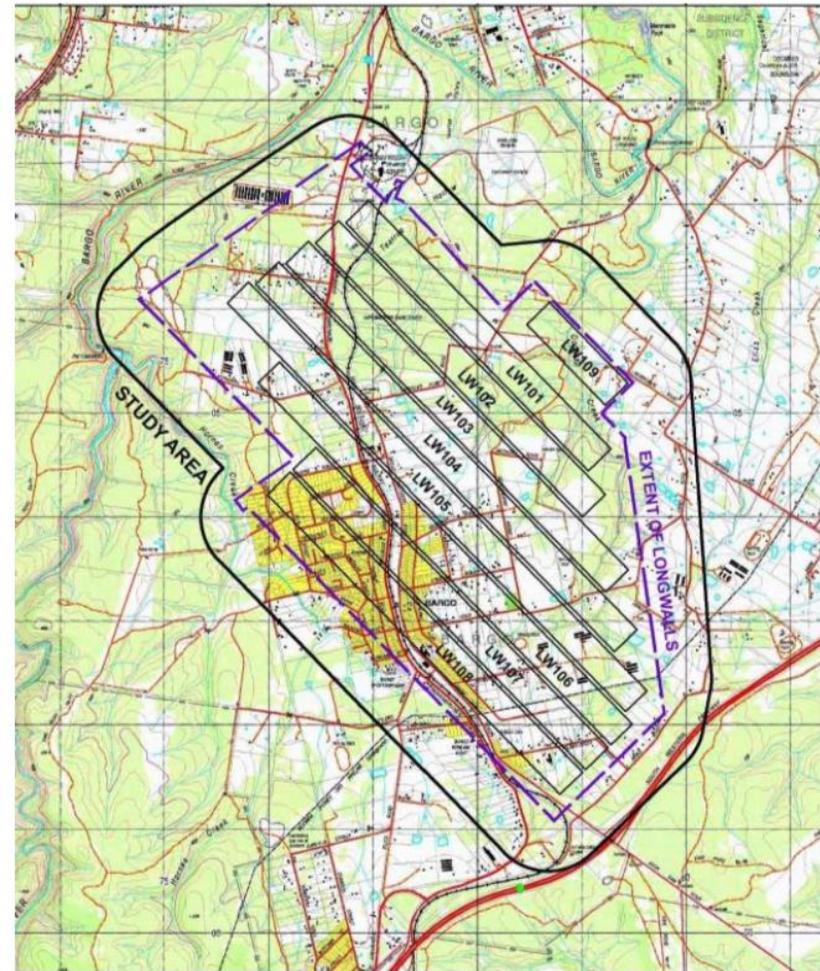
Tahmoor South Coal Project

- Located in the Bargo Mine Subsidence District and existing Mining Leases
- Original development application proposed extraction of up to 48 Mt of run-of-mine (ROM) coal from 9 longwalls panels over a 13-year mine life.
- Mine design subsequently revised on two occasions (in February and August 2020) to significantly reduce the extent and scale of subsidence impacts and minimise biodiversity and noise impacts.
- Department has recommended a further amendment to reduce the likelihood of impacts to stream features, Aboriginal heritage sites and cliffs.
- Amendments have resulted in an overall decrease in coal volume from 48 Mt to 33 Mt ROM (31% reduction in coal production) and shortened the life of the mine from 13 to 10 years.
- However, would result in significant benefits - with an 81% reduction in the number of houses undermined in Bargo.

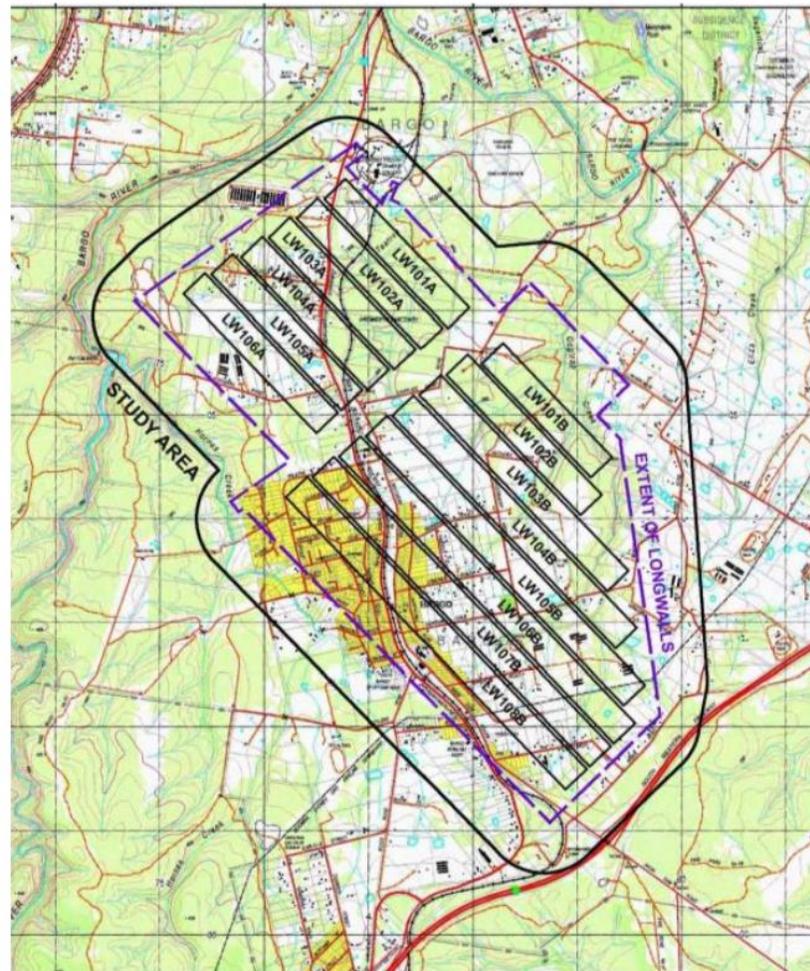
Tahmoor South Coal Project - Amendments

- Removal of two longwalls (LW107B and 108B) to significantly reduce subsidence impacts on houses and infrastructure in Bargo
- Removal of LW109 to avoid undermining a section of Dog Trap Creek
- Reduced width (from 305 to 285 m) and height (from 2.85 to 2.6 m) of longwalls to reduce overall level of subsidence
- Avoiding 43-hectare expansion of the Reject Emplacement Area (REA)
- No night-time operation of the REA to minimise noise impacts
- Department recommended reduced length (400 m) of LW103B to minimise impacts on stream features, Aboriginal heritage sites and a cliff line

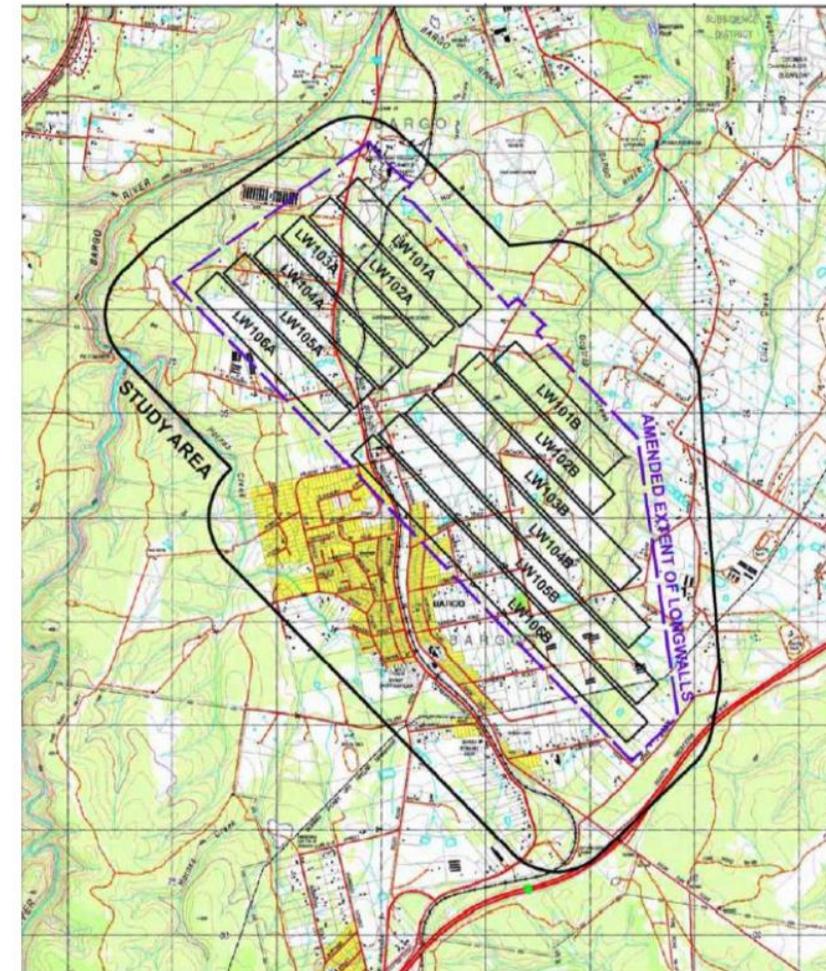




EIS Layout



PAR Layout



SPAR Layout



Government Agency/Expert Advice

Agency	Advice
Department of Planning, Industry and Environment	Biodiversity Conservation & Science Directorate – Biodiversity Water Group – Groundwater, surface water, water licensing (Water licences under Water Management Act)
Environment Protection Authority	Air, noise, water pollution, waste (Environment Protection Licence under Protection of the Environment Operations Act 1997)
Subsidence Advisory NSW	Subsidence and compensation (Approval for buildings/ infrastructure within Mine Subsidence Districts – Coal Mine Subsidence Compensation Act 2017, compensation process for subsidence impacts)
Department of Regional NSW	Resources Regulator - Rehabilitation Mining Exploration & Geoscience - Resource utilisation and royalties (Approvals under Mining Act 1992)
Water NSW	Drinking water catchment
NSW Rural Fire Service	Fire protection
DPI Fisheries	Fish and aquatic ecosystems
Heritage NSW	Historic and Aboriginal heritage
Transport for NSW	Traffic and roads (Approvals under Roads Act 1993)
DPIE Crown Lands	Crown Land
NSW Health	Human health

Expert Advice

- **Mine Design:**
 - Mr Jeremy Busfield (MineCraft Consulting Pty Ltd) - geotechnical engineering and mine plan design
- **Groundwater:**
 - Mr Hugh Middlemis (HydroGeologic Pty Ltd) - hydrogeologist and groundwater modelling
- **Economics:**
 - Oxford Economics – economics
- **Water Resources**
 - Commonwealth Independent Expert Scientific Committee (IESC) – joint referral NSW/ Commonwealth Bilateral Assessment Agreement (*Environmental Protection and Biodiversity Conservation Act 1999*)

Note: All advice from government and independent experts is attached to the Department's assessment report and available on our website.

Key Issues Raised by the Community

- Community Submissions
 - Public Exhibition - 83 community and interest group submissions
 - 72 supported (87%), 9 objected (11%), 2 commented (2%)
 - Additional 134 representations received after formal exhibition period
 - 21 supported (16%), 113 objected (84%)
- Subsidence impacts on built features
 - Impacts on houses and built features in Bargo and surrounding rural residential areas
- Groundwater depressurisation
 - Drawdown and impacts to water supply levels, yield and quality of privately-owned bores
- Subsidence impacts on watercourses/ natural features:
 - Subsidence induced impacts to watercourses, key stream features (eg. pools), Aboriginal heritage
- Noise impacts
 - Noise from existing operations, ventilation shaft construction and proposed mitigation



Subsidence Impacts on Built Features – Houses

- 1,458 houses within wider subsidence study area, with 143 located directly above proposed longwalls
- As a result of amendments to the mine plan, the number of houses located directly above the proposed longwalls has reduced by approximately 81% (i.e. from 751 in the EIS, to 571 in the PAR to 143 identified in the SPAR).
- Significantly fewer houses directly undermined compared to Tahmoor North (1,259) and Bulli Seam Operations (928)
- Predicted impacts due to conventional and non-conventional subsidence based on Sth Coalfield/ Tahmoor monitoring:
 - Majority (90%) predicted nil to very minor repairs (Nil-R0 impact category)
 - 108 (7%) minor cosmetic repairs (R1 to R2 impact category)
 - 28 (2%) substantive serviceability and structural repairs (R3 to R4 impact category)
 - 7 (0.5%) rebuild (R5 impact category)
- Future residential development – coal resources considered under Wollondilly Shire’s Local *Strategic Planning Statement – Wollondilly 2040*, with focus on developing Wilton Growth Area as a priority, such that mining could be undertaken sequentially with residential development to occur after mining and subsidence impacts have stabilised.

House Repairs and Compensation

- *Coal Mine Subsidence Compensation Act 2017* provides for the assessment, management, repair and compensation of houses damaged by subsidence
- Process is well established and managed by Subsidence Advisory NSW (SA NSW)
- SA NSW recommended additional safeguards with acquisition to be offered to homeowners as an option for compensation, rather than repair when
 - Impact at R4-R5 category
 - Impact at R3 category and impacted by more than 2 longwalls
 - Tilt > 10 mm/m
- Conservatively estimated that up to 22 homeowners could be offered **property acquisition** as an option to repair or rebuild.
- Recognition that construction has occurred in the declared Bargo Mine Subsidence District with potential for mining to occur, SA NSW Guidelines for residential construction to manage/ minimise subsidence effects

Recommended Conditions

- Built infrastructure performance measures requiring features remain safe and serviceable, fully investigated, repaired at the cost of the Applicant
- Implementation of Extraction Plans, including Trigger-Action-Response-Plans (TARPs)
- Built Features Management Plans as part of required Extraction Plan for early detection, monitoring and managing of risks, prepared in consultation with asset owners and key government agencies regulating infrastructure (eg. EPA in case of Bargo Waste Facility)
- Establishment of Technical Committees for key public infrastructure, specific recommendation for the Bargo Waste Management Centre, also proposed for key State and local public infrastructure (Main Southern Railway, M31 Hume Highway, Moomba to Sydney Gas Pipeline, Gorodok Ethane Pipeline) to monitor, identify and manage subsidence impacts

Groundwater Resources and Bores

- Aquifers mainly within Hawkesbury Sandstone highly productive containing 980 registered groundwater bores in the region
- 46 bores predicted to experience drawdown >2m (above minimal impact considerations of the Aquifer Interference Policy (AIP)), including:
 - 22 with drawdown of 2-5m
 - 8 with drawdown of 5-10 m
 - 16 with drawdown of >10m
- 228 bores predicted to be impacted by cumulative drawdowns (mostly associated with BSO)
- Given majority of bores are relatively deep (>50m) and have large available drawdowns, it is predicted that only 10 bores out of the 46 have a 'high' risk of requiring 'make good' provision.
- This is supported by experience at Tahmoor North where 2 bores have required "make good" due to impacts on water supply, with around 72 bores predicted to exceed 2 m AIP trigger from historical mining operations
- Tahmoor Coal committed to enacting 'make good' provisions for bores adversely impacted, involving lowering pumps, providing an improved pump, deepening a bore or drilling a new bore, or providing an alternative water supply
- The Department accepts that the predictions of impact are conservative and that the impacts on bores could be suitably managed either through the CMSC Act (direct bore impacts) or the recommended consent conditions

Stream Features - Pools

- 63 pools located along watercourses above longwalls
- Based on past experience and modelling of non-conventional subsidence (valley closure/ upsidence), of these, around 15 pools (24%) are predicted to experience Type 3 impact (ie. fracturing in a rock bar or upstream pool resulting in reduction in standing water level)
- Due to depth of mining (around 400 m) - no seam to surface cracking/ depressurisation, separation of between 130-240 m between surface cracking zone and height of fracturing (HoF) above the extracted coal seam
- Stream remediation works effectively being implemented along Myrtle Creek and Redbank Creek at Tahmoor North. Remediation involved filling / injecting fractures and creating grout curtains
- Rehabilitation objective requiring watercourses damaged by subsidence impacts to be restored to pre-mining surface flow and pool holding capacity as soon as reasonably practicable.
- Watercourse Corrective Action Management Plans for watercourses damaged by subsidence
- Recommendation to reduce length of LW103B to reduce impacts on pools and other sensitive features (Aboriginal heritage/ cliffs) along Dog Trap Creek - avoid undermining 9 pools, reduced likelihood of impact on a further 8 pools

Recommended Conditions – Water Resources

- *Performance Measures* - comply with a range of water management and subsidence performance measures
- *Remediation and offsets* – requirements to remediate, monitor impacts and offsetting mechanisms
- *Groundwater Assessment* – model re-build and recalibration within 2 years, including Groundwater Model Plan prepared in consultation with DPIE Water/ NRAR prior to construction
- *Compensatory Water Supply* – bore census, owner notification, enact ‘make-good’ provisions and dispute resolution process
- *Water Licences and water supply* – must obtain all necessary water licences, ensure it has sufficient water supply for all stages of the development and adjust operations to match supply
- *Groundwater and Surface Water Monitoring* – existing and extended monitoring network
- *Water Management Plan* – baseline data and groundwater monitoring program (including for Thirlmere Lakes), TARP, Groundwater Modelling Plan in consultation with DPIE Water, water and salt balances, erosion and sediment control plan and surface water management plan and groundwater management plan in consultation with DPIE Water and the EPA
- *Long-term Water Management Strategy* – for Tahmoor Complex as a whole
- *Discharges* – via new Water Treatment Plant prior to secondary extraction and comply with discharge limits set in the EPL



Other Issues

- *Noise*
 - Noise mitigation works proposed to significantly reduce existing noise levels
 - Strict noise limits to apply during construction of ventilation shafts/ ongoing operations
 - Acquisition rights 1 receiver, mitigation rights 47 receivers
- *Biodiversity & Heritage*
 - clearing of 24 ha of native vegetation, including 10 ha of CEEC listed under both BC Act and EPBC Act
 - Biodiversity Management Plan & Offset Strategy to be implemented
 - Historic and Aboriginal heritage impacts from subsidence, State listed Wirrimbirra Sanctuary, managed through strict performance measures to ensure safe and serviceable fully compensated by Applicant
 - Avoid significant Aboriginal heritage sites along Dog Trap Creek through mine design
- *Traffic*
 - Additional 190 vehicle movements per weekday
 - Upgrade main vehicle access intersection
 - Monitoring and Traffic Management Plan
- *Air Quality & Greenhouse Gases*
 - 20-28Mt of CO₂-e Scope 1 and 2 GHGEs predicted to be generated over the life of the Project
 - Minimised through flaring and using methane gas for power generation
 - Air Quality and GHG Management Plan, requirements to minimise emissions

Benefits of the Project

- Employment
 - Ongoing employment of 390 people
 - Additional employment of 50-175 people during construction
- Economic
 - Net economic benefit to NSW of \$664.9 million (NPV)
 - Indirect economic benefits of \$450 million
 - Net economic benefit to Wollondilly area of \$137.5 million (NPV)
 - Royalties to the NSW Government of \$131.5 million (NPV)
- Coal Supply
 - 25% to domestic steel markets BlueScope & Whyalla Steelworks in SA



Summary

- The Department acknowledges the concerns of the local community about subsidence and environmental impacts of the proposed extension.
- In particular, it recognises the concerns about subsidence impacts on houses in Bargo and the delays to the potential rezoning and redevelopment of land above the longwalls.
- However, the Department notes that the proposed extension is located in a Mine Subsidence District and Mining Lease that have been in place for many years.
- It also considers that the impacts of the proposed extension are not significantly different to the current operations - and that with the significant changes made to the mine plan - the impacts can be managed in accordance with the recommended conditions of consent and in accordance with the existing statutory regimes to manage and compensate landowners affected by subsidence.
- If the mine does not proceed, it would also result in a significant loss of jobs and other economic benefits in the region. It would also result in fewer alternatives for coal supply to BlueScope with the recent refusal of the Dendrobium Extension Project.
- Given the above, the Department considers that the overall benefits of the Project outweigh its residual costs, and that the Project is in the public interest and is approvable, subject to the recommended strict conditions of consent.