



New South Wales Government
Independent Planning Commission

Narrabri Underground Mine Stage 3 Extension Project SSD 10269

Statement of Reasons for Decision

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Narrabri Underground Mine Stage 3 Extension SSD 10269 Final Report ©
State of New South Wales through the Independent Planning Commission 2022

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EXECUTIVE SUMMARY

Narrabri Mine is an existing underground coal mine located within the Narrabri Shire Local Government Area approximately 25 kilometres (km) south-east of Narrabri and approximately 60 km north-west of Gunnedah. Narrabri Coal Operations Pty Ltd is the operator of the Narrabri Mine and has sought development consent for the Narrabri Underground Mine Stage 3 Extension Project which involves the continuation of longwall mining in a new southern extension area until 2044. The Project seeks the continued use of existing underground and surface infrastructure and to maintain the annual extraction rate of 11 million tonnes per annum under the existing Stage 2 development consent (08_0144).

On 19 November 2021, the then Minister for Planning requested that the Independent Planning Commission conduct a Public Hearing into the Project and determine the State significant development application (SSD 10269). On 19 January 2022 the Department of Planning and Environment finalised its whole-of-government assessment of the Application. In accordance with section 4.5 of the *Environmental Planning & Assessment Act 1979*, the Minister for Planning is the consent authority for the Project. The Commission may determine the application as the Minister's delegate under an Instrument of Delegation signed by the then Minister for Planning on 28 September 2011.

Commissioners Professor Mary O'Kane (Panel Chair), Professor Chris Fell and Professor Snow Barlow constitute the Commission Panel in making the final decision. As part of its determination process, the Panel met with representatives of the Applicant, Department, Narrabri Shire Council, Gunnedah Shire Council, the Independent Advisory Panel for Underground Mining and also conducted a virtual site inspection.

The community raised concerns in submissions to the Commission regarding subsidence, water, greenhouse gas emissions, biodiversity, noise and Aboriginal cultural heritage. The Commission also received submissions in support of the Application, citing its positive social and economic benefits through the provision of employment for the local area and region.

Key issues which are the subject of findings in this Statement of Reasons include: subsidence, groundwater, greenhouse gas emissions, biodiversity, rehabilitation and mine closure, economics, social costs and benefits, noise, air quality, Aboriginal heritage, visual impacts and waste management.

After careful consideration of all the material, and having taken into account the community's views, the Commission has determined that development consent should be granted for the Application, subject to conditions. The Commission finds that, on balance, the Project would achieve an appropriate balance between relevant environmental, economic and social considerations and the likely benefits of the Project warrant the conclusion that an appropriately conditioned approval is in the public interest. The Commission has imposed strict conditions on its development consent which seek to prevent, minimise and/or offset adverse impacts and to ensure ongoing monitoring and appropriate management of the Site.

In imposing conditions on the approval, the Commission has set Greenhouse Gas (GHG) performance measures which the Applicant must not exceed during the life of the mine. Conditions also require the Applicant to develop and implement a Scope 1 Emissions Minimisation Plan aimed at achieving Scope 1 GHG emission intensities commensurate with the availability of new technologies and maintenance of the 2022-2031 predicted level of GHG emission intensities for the life of the mine.

Subject to the imposed conditions, the Commission is satisfied that the Project can achieve the requirements of the *SEPP (Resources and Energy) 2021* and the relevant strategic policy positions with respect to the reduction of fugitive emissions and the recognition of the importance of the continuation of the extraction and exportation of coal to the NSW economy.

The Commission's reasons for approval of the Applicant are set out in this Statement of Reasons for Decision.

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DEFINED TERMS

ABBREVIATION	DEFINITION
Additional Material	The Additional Material as set out at paragraph 68
Amendment Report	The Applicant's Amendment Report submitted 31 May 2021
Applicant	Narrabri Coal Operations Pty Ltd
Application	State Significant Development Application 10269
CAS	Climate and Science Branch within the NSW Department of Planning, Industry and Environment
CCPF	Climate Change Policy Framework
CH₄	Methane
CO₂	Carbon Dioxide
Commission	Independent Planning Commission of NSW
Council	Narrabri Shire Council
Department	Department of Planning and Environment
Department's AR	Department's Assessment Report dated January 2022
EIS	The Environmental Impact Statement titled <i>Narrabri Underground Mine Stage 3 Extension Project – Environmental Impact Statement</i> , prepared by Resource Strategies Pty Ltd on behalf of the Applicant
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
EPI	Environmental Planning Instrument
ESD	Ecologically Sustainable Development
Existing Approval	Stage 2 development consent (08_0144)
GSC	Gunnedah Shire Council
GHG	Greenhouse Gas
GWP	Global Warming Potential
IAPUM	Independent Advisory Panel for Underground Mining
IESC	Independent Expert Scientific Committee
LGA	Local Government Area
Mandatory Considerations	Relevant mandatory considerations, as provided in s 4.15(1) of the EP&A Act
Material	The material set out in section 3.1
Minister	Minister for Planning and Homes
NCOPL	Narrabri Coal Operations Pty Ltd (the Applicant)
NDC	Nationally Determined Contributions
Net Zero Plan	<i>NSW Net Zero Plan Stage 1: 2020-2030 and Net Zero Plan Stage 1: 2020-2030 Implementation Plan</i>
NGERS	National Greenhouse and Energy Reporting Scheme
NSC	Narrabri Shire Council
NSW Strategic Statement	<i>Strategic Statement on Coal Exploration and Mining in NSW</i>
Paris Agreement	<i>UNFCCC Paris Agreement 2015</i>
Planning Systems SEPP	<i>SEPP (Planning Systems) 2011</i>
Project	Narrabri Underground Mine Stage 3 Extension Project
Regulations	<i>Environmental Planning and Assessment Regulations 2000</i>
Resources SEPP	<i>SEPP (Resources and Energy) 2021</i>
ROM	Run-of-mine
SEPP	State Environmental Planning Policy
Site	Narrabri Mine
Stage 2	The Existing Approval (08_0144), granted in July 2010
Stage 3	SSD 10269 – Narrabri underground mine stage 3 extension project
SSD	State Significant Development
UNFCCC	United Nations Framework Convention on Climate Change
VPA	Voluntary planning agreement
WAL	Water access licence

1 INTRODUCTION

1. On 19 November 2021, the then Minister for Planning (**Minister**) made a request (**Minister's Request**) under section 2.9(1)(d) of the Environmental Planning and Assessment Act 1979 (**EP&A Act**) for the Commission to conduct a Public Hearing and determine State significant development application (**SSD 10269**) (**Application**) within 12 weeks of receiving the referral of the Department's Assessment Report (**Department's AR**).
2. On 19 January 2022, the Department referred the Application from Narrabri Coal Operations Pty Ltd (**Applicant**) to the Commission for determination. The Application seeks approval for the Narrabri Underground Mine Stage 3 Extension Project (the **Project**) located in the Narrabri Shire Council (**Council**) Local Government Area (**LGA**) under section 4.38 of the EP&A Act.
3. In accordance with section 4.5 of the EP&A Act, the Minister is the consent authority for the Application. The Commission may determine the Application as the Minister's delegate under an Instrument of Delegation signed by the then Minister for Planning on 14 September 2011.
4. Professor Mary O'Kane AC, Chair of the Commission, nominated herself (Chair), Professor Snow Barlow and Professor Chris Fell AO to constitute the Commission determining the Application.

2 THE APPLICATION

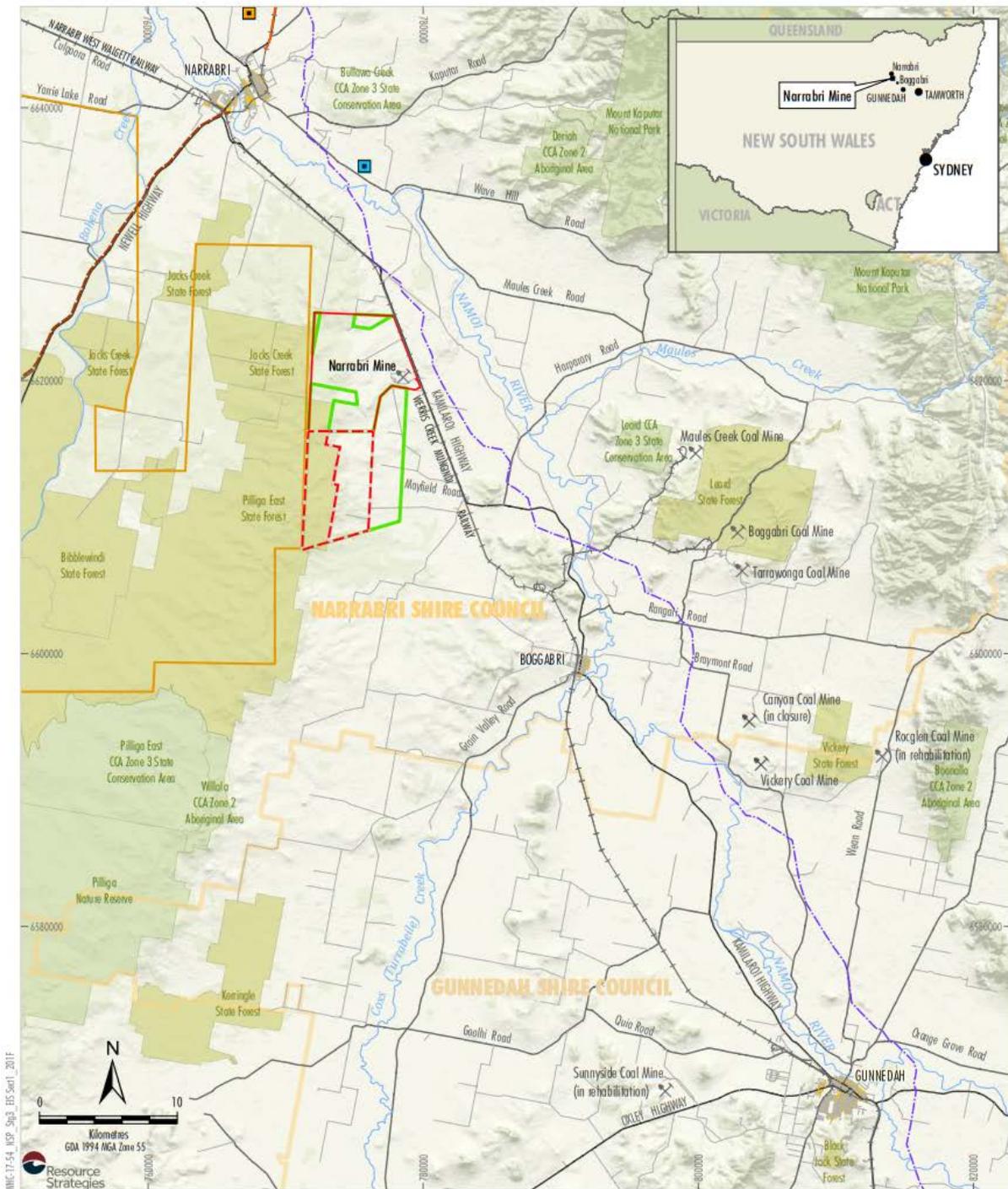
2.1 Site and Locality

5. The Applicant is the operator of the Narrabri Mine, an existing underground coal mine located approximately 25 km south-east of Narrabri and approximately 60 km north-west of Gunnedah (the **Site**). The mine is located within the Narrabri Shire LGA and in the North West Slopes and Plains region of NSW (AR para 1).
6. The regional context of the Site is illustrated in Figure 1, over page.

2.2 Existing Operations

7. Development consent was granted for Stage 1 of the existing mine in November 2007 and coal production using bord and pillar and partial pillar extraction commenced in 2010. Development consent was granted for Stage 2 operations (**Stage 2**) in July 2010 (08_0144) (**Existing Approval**) permitting coal to be extracted using longwall mining methods. Narrabri mine has been extracting coal by longwall methods since June 2012 (AR para 3).
8. The Existing Approval allows for the production and processing of up to 11 million tonnes per annum (**Mtpa**) of run-of-mine (**ROM**) coal until 26 July 2031. The approved mine comprises 20 longwall panels which extract coal from the Hoskissons Seam (AR para 5).
9. ROM coal is processed at the Coal Handling and Preparation Plant to produce thermal coal and smaller quantities of coal for pulverised injection. Product coal is transported from the site by train and reject coal is placed in a dedicated rejects emplacement area (AR para 6). The Pit Top Area incorporates the majority of the Narrabri Mine's surface infrastructure, including the box cut, Coal Handling and Preparation Plant, ROM and product coal stockpiles, rail loop and product coal load-out infrastructure (AR para 7).

Figure 1 - Regional Context Map (Source: Applicant's EIS)



MNC-17-54_HSP_Sup_EIS_Sect_1_2018

Resource Strategies

- LEGEND**
- Mine Site
 - Exploration Licence (EL 6243)
 - Mining Lease (ML 1609)
 - Provisional Mining Lease Application Area
 - Local Government Boundary
 - State Forest
 - State Conservation Area, Aboriginal Area

- Other Major Projects**
- Narrabri South Solar Farm
 - Proposed Silverleaf Solar Farm
 - Proposed Narrabri Gas Project (Santos NSW (Eastern) Pty Ltd)
 - Inland Rail (Narrabri to North Star - Phase 1)
 - Proposed Inland Rail (Narramine to Narrabri)
 - Queensland Hunter Gas Pipeline

Source: Geoscience Australia (2011); NSW Spatial Services (2019)

WHITEHAVEN COAL
NARRABRI STAGE 3 PROJECT
Regional Location

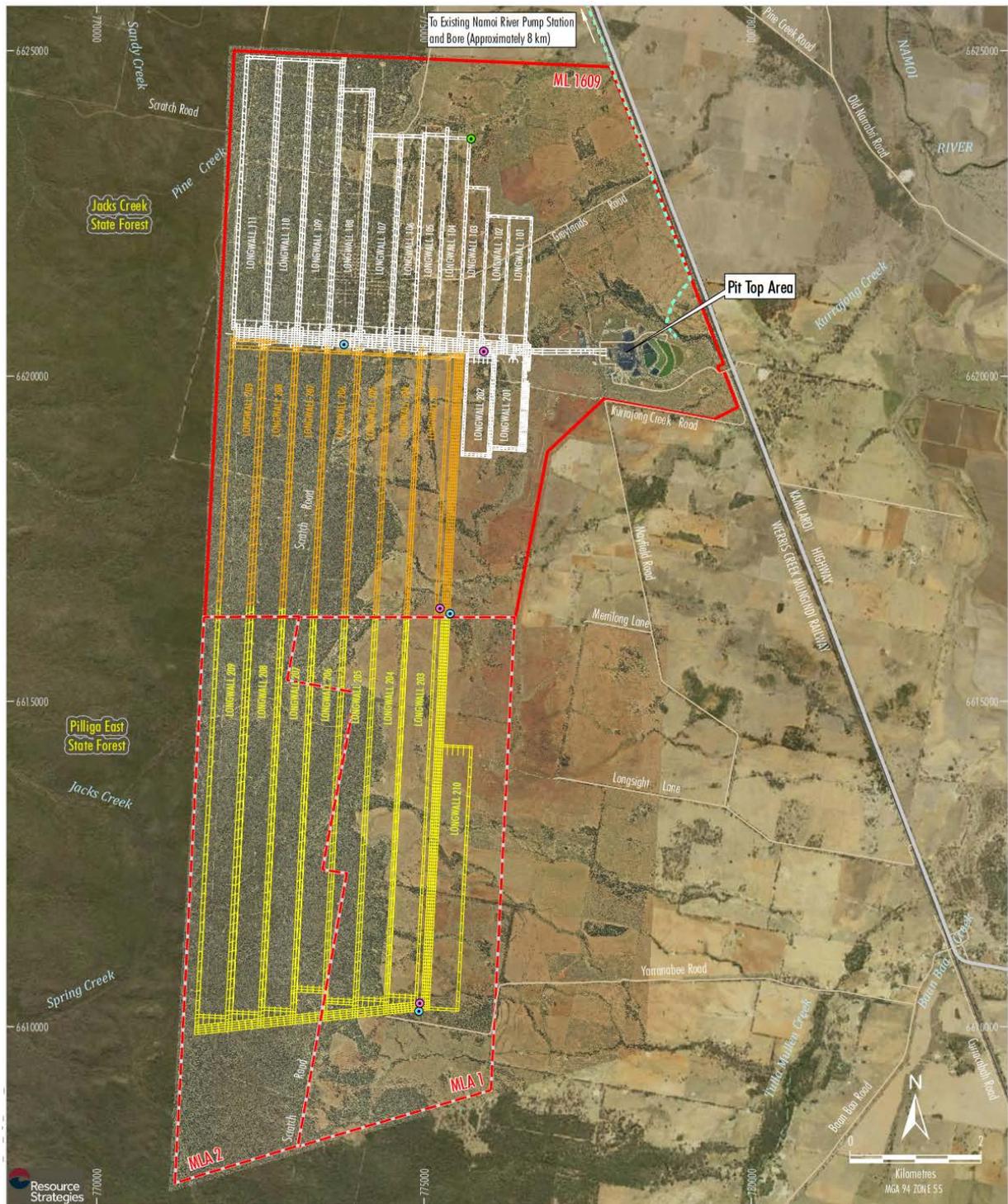
2.3 The Project

10. The Project involves the continued mining of existing longwalls and an extension of the underground mining area to the south (**Stage 3**). The Project involves the extensions of the existing approved Longwalls 203 to 209, and development of an additional longwall (Longwall 210). The Application seeks approval to extend the life of the mine from 2031 to 2044. While the Applicant currently has approval to mine until 2031, it is seeking approval for Stage 3 now as it would allow it to efficiently change the extraction sequence for the southern set of longwall panels by mining longer panels.
11. The Stage 3 extension would require additional surface infrastructure for access and support in the new mining area with an additional 609.5 ha of surface development footprint to support the underground mining (AR para 9 and Table 1).
12. The Application seeks to incorporate and replace the Existing Approval, which would be surrendered within 12 months of the commencement of development under this consent. The Applicant is seeking to maintain the Existing Approval's annual production rate of up to 11 Mtpa of ROM coal.
13. The key elements of the Project are described below and set out in Table 6 in Appendix A which provides a summary of the main components of the Application compared to operations under the Existing Approval.
14. The indicative underground mining layout and the location of the pit top area are illustrated in Figure 2, over page.

2.4 Amended Development Application

15. The Applicant amended the Application under Clause 55A of the *Environmental Planning and Assessment Regulation 2000 (EP&A Regulation)*, submitting an Amended Report for the Project to the Department 30 May 2021. A delegate of the Minister agreed to the amendment in a letter dated 25 October 2021 (AR para 24).
16. The Department stated that the three relatively minor but important amendments to the Project included:
 - *remove 31 ha of the indicative Surface Development Footprint that are no longer required under a refined Project design;*
 - *incorporate flaring of pre-mining drained gas in particular parts of the underground mining area. Due to the limited predicted occurrence of combustible mine gases, this would reduce total Scope 1 greenhouse gas (GHG) emissions by approximately 1%; and*
 - *relocate some components of the indicative Surface Development Footprint in order to reduce impacts on a threatened plant species (Coolabah Bertya) by 2.3 ha.*
17. The Department noted that these amendments would result in a small reduction in the Project's environmental impacts as set out in the Applicant's Environmental Impact Statement (**EIS**), dated October 2020. According to the Department: "*The amendments would lead to no change in the Project's total coal resource, mine life, workforce, peak production rate, hours of operation and longwall setback commitments*" (AR para 26).

Figure 2 - Project Indicative Underground Mining Layout (Source: Applicant's Amendment Report)



Source: NCOPL (2019); NSW Spatial Services (2019)

- LEGEND**
- Mining Lease (ML 1609)
 - Provisional Mining Lease Application Area
 - Existing Namoi River Pipeline (Buried)
 - Approved Underground Mining Layout
 - Indicative Underground Mining Layout to be Extended for Project
 - Indicative Underground Project Mining Layout
 - Indicative Ventilation Complex (Downcast)
 - Indicative Ventilation Complex (Upcast)
 - Indicative Ventilation Complex (Upcast - Decommissioned)

WHITEHAVEN COAL
NARRABRI STAGE 3 PROJECT
Project General Arrangement -
Indicative Underground Mining Layout

3 THE COMMISSION'S CONSIDERATION

3.1 Material Considered by the Commission

18. In this determination, the Commission has carefully considered the following material (**material**):
- the Applicant's EIS and supplementary information including the Applicant's Submissions Report, the Applicant's Amendment Report and Additional Information;
 - all public submissions on the EIS made to the Department during public exhibition;
 - all Government Agency advice to the Department;
 - the Department's AR, dated January 2022;
 - the Department's recommended conditions of consent, dated January 2022;
 - the Department's site inspection notes, dated 24 February 2021;
 - comments and presentation material at meetings with the Department, Applicant, Narrabri Shire Council (**NSC**), Gunnedah Shire Council (**GSC**) and the Independent Advisory Panel for Underground Mining (**IAPUM**), as referenced in Table 2;
 - the Applicant's submission to the Commission, dated 18 February 2022;
 - all speaker comments made to the Commission and material presented at the Public Hearing;
 - all written comments received by the Commission up until 5pm Friday 25 February 2022, including late submissions accepted by the Commission;
 - the Applicant's submission to the Commission, dated 25 February 2022
 - the Department's Response to the Commission, dated 28 February 2022 (**Department's Response**);
 - all written comments on the Additional Material received by the Commission between 1 March 2022 up until 5pm, 8 March 2022; and
 - the Department's comment (dated 26 March 2022) and the Applicant's comment (forward by the Department on 30 March 2022) on the feasibility and workability of proposed conditions.

3.2 Statutory Context

3.2.1 Permissibility

19. The Site is located with Narrabri LGA and Narrabri Local Environmental Plan 2012 (**Narrabri LEP**) is the applicable local environmental plan. Under the Narrabri LEP the Site is zoned RU1 Primary Production and RU3 Forestry. Underground mining is prohibited within both these zones and open cut mining is permissible with consent within zone RU1.
20. As per clause 2.6(1) of *State Environmental Planning Policy (Resources and Energy) 2021 (Resources SEPP)* the Resources SEPP prevails over other Environmental Planning Instruments (**EPIs**) made under the EP&A Act, including Narrabri LEP. Clause 2.9(1) of the Resources SEPP provides that 'underground mining carried out on any land' is permissible with development consent. That is, notwithstanding any prohibition in the Narrabri LEP, development for the purposes of underground mining may be carried out with consent. This permissibility extends to facilities for the processing and transportation of coal (AR para 63).
21. The Project is therefore permissible with consent.

3.2.2 Gateway Certificate

22. The Gateway Panel granted a conditional Gateway Certificate in respect of the Project on 4 June 2019, together with certain recommendations regarding the Applicant's EIS related to Biophysical Strategic Agricultural Land and water resources for the Project (AR para 73).
23. The Commission notes that Professor Barlow has a perceived conflict of interest, in that he chaired the Mining and Petroleum Gateway Panel (as a subcommittee of the Independent Planning Commission) that issued a Gateway Certificate in respect of this Project. As Chair of the Commission, Professor O'Kane has determined that Professor Barlow's conflict of interest does not preclude his appointment to the Panel.

3.2.3 Commonwealth Matters

24. On 30 September 2019, a delegate of the Commonwealth Minister for the Environment and Energy determined that the Project is a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* due to its potential impacts on Matters of National Environmental Significance. The Commission notes that under the current Bilateral Agreement between the Commonwealth and NSW governments, the Commonwealth has accredited the NSW assessment process under the EP&A Act for the controlled action (EPBC 2019/8427). The Commission also notes that the Commonwealth's decision-maker maintains a separate approval role, which will be exercised following the Commission's determination of this Application,
25. The Commission agrees with the Department and adopts the analysis of matters under the EPBC Act set out in Appendix I of the Department's AR. The Commission has given further consideration to biodiversity matters in section 5.6 below

3.2.4 IESC Advice

26. In response to a request from the Department, the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (**IESC**) provided advice on the Project, dated 15 December 2020. The Department's consideration of the IESC advice is set out in section 5.3, section 6 and Appendix I of the Department's AR.
27. The Commission agrees with the Department's assessment and is of the view that the IESC recommendations have been addressed by the Applicant and are capable of being addressed through conditions of consent.

3.2.5 Surrender of Consent

28. The Commission notes that the development consent for the Existing Approval is proposed to be surrendered under conditions A16 and A17 of the development consent for the Project. The development consent for the Project also provides for the continuation of development authorised by the consent for the Existing Approval. Section 4.63 of the EP&A Act therefore applies to the Application.
29. Section 4.63 of the EP&A Act states that the Commission is not required to re-assess the likely impact of the continued development to the extent that it could have been carried out but for the surrender of the consent. However, section 4.63 of the EP&A Act does not prohibit the Commission undertaking such an assessment. In this Statement of Reasons, the Commission has considered, where relevant, the cumulative impacts of the development under the Existing Approval and the Project.
30. For the reasons set out in this Statement of Reasons, the Commission has determined to approve the Project and has therefore imposed conditions A16 and A17 which require the Applicant to surrender the Existing Approval within 12 months of the date of commencement of development under the Project consent.

3.2.6 Integrated and other NSW Approvals

31. As per section 4.9 of the Department's AR, the Commission notes the Department has consulted with the relevant government authorities that are responsible for providing integrated and other approvals. The Commission acknowledges that the Applicant may also require other approvals which are not integrated into the SSD process, including those listed in paragraph 80 of the Department's AR.

3.3 Mandatory Considerations

32. In determining this application, the Commission is required by section 4.15(1) of the EP&A Act to take into consideration such of the following matters as are of relevance to the development the subject of the Application (**mandatory considerations**).
33. The mandatory considerations are not an exhaustive statement of the matters the Commission is permitted to consider in determining the Project. To the extent that any of the Material does not fall within the mandatory considerations, the Commission has considered that Material where it is permitted to do so, having regard to the subject matter, scope and purpose of the EP&A Act.

Table 1 - Mandatory Considerations

Mandatory Considerations	Commission's Comments
Relevant EPIs	<p>Per Appendix G.2 of the Department's AR, relevant EPI's include (in their present, consolidated form, noting the consolidation of several relevant EPIs after the preparation of the Department's AR):</p> <ul style="list-style-type: none"> • SEPP (Transport and Infrastructure) 2021; • Resources SEPP • SEPP (Resilience and Hazards) 2021; • SEPP (Biodiversity and Conservation) 2021; • SEPP (Planning Systems) 2021 (Planning Systems SEPP); and • Narrabri LEP 2012. <p>The Commission agrees with the Department's assessment of EPIs set out in Appendix G.2 of the Department's AR. The Commission therefore adopts the Department's assessment.</p>
Relevant DCPs	<p>Section 2.10 of the Planning Systems SEPP states that development control plans (DCP) do not apply to SSD. The Commission is therefore of the view that DCPs do not apply to the Project.</p>
Likely Impacts of the Development	<p>The likely impacts of the Project have been considered in section 5.</p>
Suitability of the Site for Development	<p>The Commission has considered the suitability of the Site and finds that the Site is suitable for the following reasons:</p> <ul style="list-style-type: none"> • the Application is permissible with consent; • the Project would enable a reasonable 'brownfield' extension of the existing underground coal mine, representing economic reuse of existing infrastructure; • the proposed extraction of coal is consistent with the orderly and economic use and development of land; • impacts to biodiversity have been suitably minimised or offset; • impacts on water resources would be minimised and mitigated; • impacts on surrounding land uses have been minimised and are capable of being further mitigated through conditions of consent; • the Site is capable of being rehabilitated in accordance with Government policy; and

	<ul style="list-style-type: none"> the extension of the life of the mine would provide social and economic benefits to the region and the state.
Objects of the EP&A Act	<p>In this determination, the Commission has carefully considered the Objects of the EP&A Act and is satisfied that the Application is consistent with the Objects of the EP&A Act.</p> <p>The Commission finds the Application has been assessed in accordance with relevant EPIs and can comply with the required mitigation measures to achieve consistency with the Objects of the EP&A Act.</p>
The Public Interest (Including Ecologically Sustainable Development (ESD))	<p>The Commission has considered whether the grant of consent to the Application is in the public interest. In doing so, the Commission has weighed the predicted benefits of the Application against its predicted negative impacts.</p> <p>Although not of determinative weight in and of itself, the Commission – which has no policy formulation role – accepts that NSW Government policy (including the <i>2020 Strategic Statement on Coal Exploration and Mining in NSW</i>) expressly supports responsible coal production – including the ‘government’s efforts to keep NSW open for business for coal production’.</p> <p>Without compliance with the conditions imposed by the Commission, the Commission considers that the predicted negative impacts of the Application would warrant refusal of the Application. Similarly, if the Application were for a materially similar Project in a greenfield location without an existing mine, it is possible that the Commission’s weighing of the relevant impacts would warrant refusal of such an application.</p> <p>Nonetheless, the present Application, subject – in particular – to unprecedented conditions requiring ongoing management and limitation of Scope 1 greenhouse gas (GHG) Emissions, represents a responsible application for continued coal production and an orderly extension of the existing Narrabri mine. The grant of consent to the Application facilitates and preserves economic and other benefits to the State and the region.</p> <p>The Commission’s consideration of the public interest has also been informed by consideration of the principles of ESD.</p> <p>The EP&A Act adopts the definition of ESD found in the <i>Protection of the Environment Administration Act 1991</i>, as follows:</p> <p><i>“ecological sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:</i></p> <ul style="list-style-type: none"> <i>(a) the precautionary principle;</i> <i>(b) inter-generational equity;</i> <i>(c) conservation of biological diversity and ecological integrity;</i> <i>and</i> <i>(d) improved valuation, pricing and incentive mechanisms.”</i> <p>The Commission has considered the principles of ESD in its determination as set out below.</p>

	<p>a) The precautionary principle The Commission finds that the precautionary principle has been applied throughout the assessment of the Application, with environmental consequences being appropriately avoided, mitigated, remediated or offset, as set out in the Application, the Department's AR and the recommended conditions of consent. The Commission has proposed additional measures as set out in this Statement of Reasons to further mitigate the impacts of the Project.</p> <p>b) inter-generational equity The Commission has considered inter-generational equity in its assessment of the potential environmental, social and economic impacts of the Project, including through imposing conditions seeking to leverage established and emerging technologies to significantly mitigate the potential long-term environmental impacts of the Project. The Commission finds that, subject to the imposed conditions, the Project would appropriately balance the environmental, social and economic impacts of the present generation with those of future generations.</p> <p>c) conservation of biological diversity and ecological integrity The Project's potential impacts on biodiversity, including land clearing and loss of habitat, have been a key consideration during the assessment of the Application. The Commission finds that any potential impacts would be reasonably mitigated and/or offset to enable acceptable long-term biodiversity outcomes to be achieved. The Commission finds that the conservation of biological diversity and ecological integrity can be achieved through avoiding, minimising and offsetting biodiversity impacts.</p> <p>d) improved valuation, pricing and incentive mechanisms The Department in its assessment, has proposed a mechanism by which GHG emissions per tonne of coal could be reduced. In its evaluation and conditions, the Commission has followed this approach. The Commission finds that, when considering the current policy framework, scope of the application and assessment of costs and benefits, the Project would produce net positive social and economic benefits to the local region and NSW.</p> <p>The Commission has given consideration to the principles of ESD in its assessment of each of the key issues, as set out in section 5. The Commission finds that, on balance, the Application is not inconsistent with ESD principles, and that the Project would achieve an appropriate balance between relevant environmental, economic and social considerations. The likely benefits of the Project warrant the conclusion that an appropriately conditioned approval is in the public interest.</p>
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3.4 Additional Considerations

34. In determining this application, the Commission has also considered:
- United Nations Framework Convention on Climate Change (**UNFCCC**) *Paris Agreement 2015 (Paris Agreement)*;
 - *Australia's Long-Term Emissions Reduction Plan (Emissions Reduction Plan)*
 - *NSW Noise Policy for Industry (NPfI)*;
 - *Interim Construction Noise Guideline (ICNG)*;
 - *NSW Road Noise Policy (RNP)*;
 - *NSW Rail Infrastructure Noise Guide (RING)*;

- *NSW Aquifer Interference Policy (AIP)*;
- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA, 2016) (Approved Methods)*;
- *Guidelines for the economic assessment of mining and coal seam gas proposals (NSW Government, 2015) (Economic Guidelines)*;
- *Social Impact Assessment Guideline for State Significant Mining, Petroleum Production and Extractive Industry Development (SIA Guideline)*; and
- *NSW Climate Change Policy Framework (CCPF)*;
- *NSW Net Zero Plan Stage 1: 2020-2030 and NSW Net Zero Plan Stage 1: 2020-2030 Implementation Plan (Net Zero Plan)*;
- *Memorandum of Understanding – NSW Energy Package (NSW Energy Package MOU)*;
- *Strategic Statement on Coal Exploration and Mining in NSW (NSW Strategic Statement)*; and
- *New England North West Regional Plan 2036 (Regional Plan)*.

3.5 The Commission's Meetings

35. As part of its proposal determination, the Commission met with various persons as set out in Table 2. All meeting material was made available on the Commission's website as was the recording of the Virtual Site Inspection and the Department's notes of its site visit. Site inspections conducted by the Commission are typically in person, however, as a precaution against COVID-19, the Commission did not conduct an in-person site inspection as part of its determination of the Application. The Commission instead undertook a virtual site inspection.

Table 2 – Commission's Meetings

Meeting	Date of Meeting	Transcript Available on
Virtual Site Inspection	2 February 2022	8 February 2022
Department	4 February 2022	10 February 2022
NSC	4 February 2022	10 February 2022
GSC	4 February 2022	11 February 2022
Applicant	4 February 2022	11 February 2022
IAPUM	11 February 2022	14 February 2022
Public Hearing Day 1	14 February 2022	17 February 2022
Public Hearing Day 2	18 February 2022	22 February 2022

3.5.1 Narrabri Shire Council Comments

36. The Commission met with representatives of NSC on 4 February 2022 to hear NSC's views on the Project. NSC stated that the Department's AR addressed the majority of NSC's concerns. However, NSC did raise three concerns in relation to waste management, traffic management and the voluntary planning agreement (VPA). NSC noted that waste management is becoming of increasing community concern and requested that the Commission consider imposing a requirement for a waste management plan should the Application be approved. NSC requested that the Commission consider changes to the recommended conditions which suggest that road maintenance agreements be entered into with NSC (conditions B68 and B69). NSC was of the view that these conditions should be tied to the Traffic Management Plan. NSC also noted that VPA negotiations with the Applicant had taken place however had not progressed. NSC suggested a condition required where if the Applicant and Council don't enter into a planning agreement within a prescribed timeframe or a specific period, then a contribution is payable under section 7.12 of the EP&A Act.

3.5.2 Gunnedah Shire Council Comments

37. The Commission met with representatives of GSC on 4 February to hear GSC's views on the Project. GSC raised concerns regarding the VPA stating that irrespective of figures, GSC is of the view that the VPA should reflect the impact on the community both in total quantum and how it is distributed. GSC also advised that they had commissioned an independent analysis of impacts of roads based on information provided by the Applicant and sought support in its position that the VPA component for the community of Gunnedah should be \$3.6 million and not \$1.43 million as offered by the Applicant. GSC stated that based on the Applicant's own worker domicile data, the split should be 49% to GSC and 51% to NSC.

3.6 Public Comments

38. Section 4 of this report sets out the matters raised in the submissions made to, and considered by, the Commission. Consideration has been given to these submissions in the Commission's assessment of the Project as set out in the Key Issues section of this report. For the reasons set out in this Statement of Reasons, the Commission considers that the matters raised in submissions do not preclude the grant of development consent and that the matters can be satisfactorily addressed by the conditions of consent imposed by the Commission.

4 COMMUNITY PARTICIPATION & PUBLIC SUBMISSIONS

4.1 Community Group Attendance at the Virtual Site Inspection

39. On 2 February 2022, the Commission conducted a Virtual Site Inspection of the Project Site. The Commission invited representatives from community groups to attend and observe at the Virtual Site Inspection. The following groups accepted the invitation:

- East Pilliga Landholders Group
- Leard Forest Research Node

4.2 Public Hearing

40. The Commission conducted a Public Hearing over two days on 14 and 18 February. The Public Hearing was held electronically with registered speakers presenting to the Commission Panel via telephone or video conference. The Public Hearing was streamed live on the Commission's website.

41. The Commission heard from the Department, the Applicant, various community group representatives and individual community members. In total, 63 speakers presented to the Commission during the Public Hearing.
42. Presentations made at the Public Hearing have been considered by the Commission as submissions and are referenced below in section 4.3.

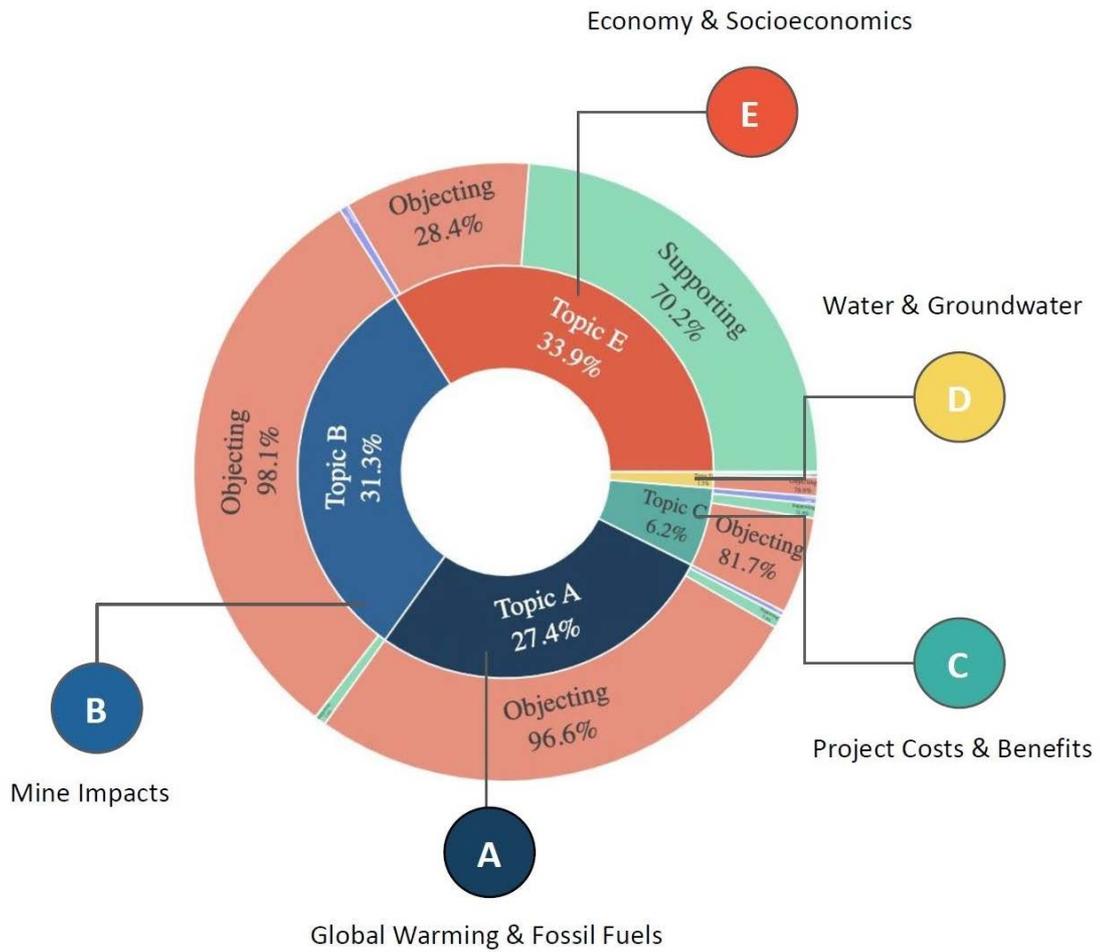
4.3 Public Submissions

43. As part of the Commission's consideration of the Project, all persons were offered the opportunity to make written submissions to the Commission until 5pm AEDT 25 February 2022. Five submissions were also received on the business day after the deadline and were considered by the Commission.
44. The Commission received a total of 1,775 written submissions on the Application comprising:
 - 552 submissions in support;
 - 1,205 objections; and
 - 18 comments.

4.3.1 Topic Analysis

45. An analysis of submissions found that the majority of submissions received by the Commission were unique submissions, with only 6% of submissions providing an identical response. In addition to reviewing the text of written submissions, a supplementary analysis of those submissions was undertaken to identify the key themes raised.
46. Key themes raised in submissions are illustrated in Figure 3 which breaks down each issue by way of support, objection, and comment. The majority of submissions to the Commission relate to three key topics, namely, global warming and fossil fuels, (27.4%), mine impacts (31.3%) and economy and socioeconomic impacts (33.9%).
47. The Commission observes that the majority of objections were made in relation to global warming and fossil fuels impacts (Topic A) and mine impacts (Topic B) while the majority of support for the Application was in relation to economy and socioeconomic issues (Topic E) as set out in Figure 3 below.

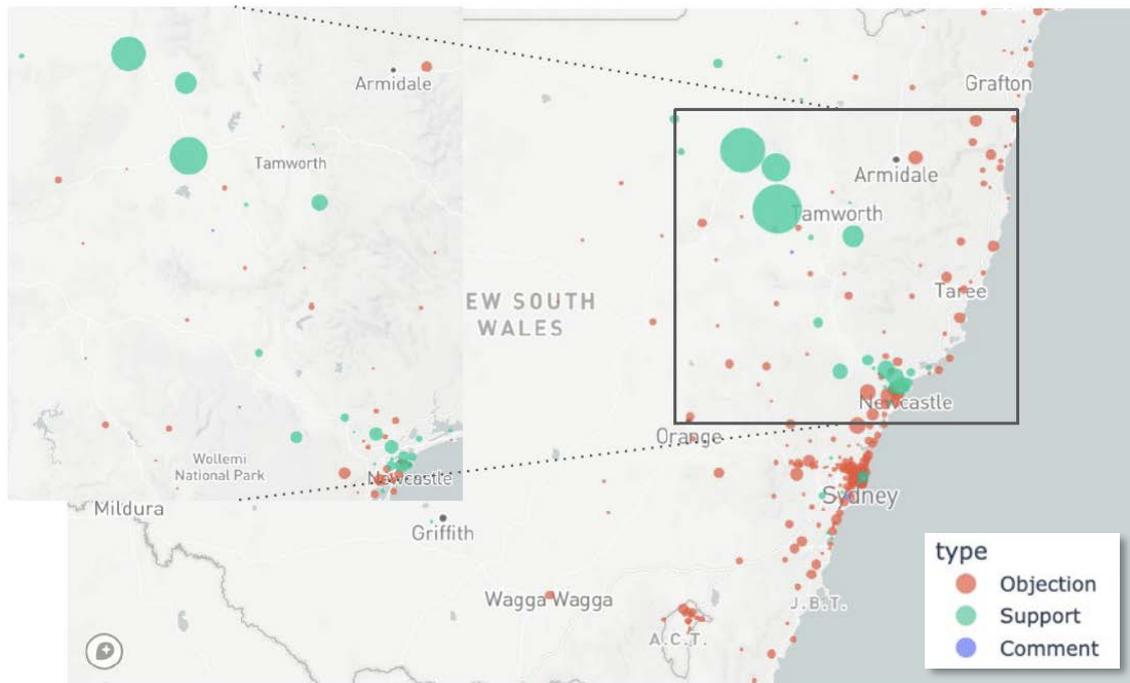
Figure 3 – Topic Modelling (Source: Online Gravity, 2022)



4.3.2 Geographic Distribution

48. A geographic analysis was undertaken on the submissions received by the Commission. Figure 4 illustrates the submissions received in support, comments and objections to the Application throughout NSW, with the size of the circle indicating the relative number of submissions in that area. The Commission observes that the majority of submissions from the local area and wider region were in support of the Application. The Commission also observes that the majority of objections were from Greater Sydney, Canberra and north-eastern NSW.

Figure 4 – Geographic Analysis (Source: Online Gravity, 2022)



4.3.3 Key Issues Raised

49. The submissions referred to below are not an exhaustive report of the submissions considered by the Commission – they reflect and illustrate common themes and key issues raised in the submissions.

Greenhouse gas emissions and climate change

50. Submissions to the Commission raised GHG emissions, the cumulative impact the expansion of the mine would have on climate change and the effect this would have on current and future generations. Of the submissions which raised this issue, 96.6% objected to the Project. Objections stated that the mine would be the second most polluting mine in NSW and argued that approval of the Application is not in line the NSW Government’s emission reduction targets for 2030 and 2050.
51. The Commission received submissions that were supportive of the Project, contending that the high quality of the coal results in increased efficiency and comparably lower GHG emissions, when compared to a lower quality coal. Some submissions acknowledged that while “*many people believe that the coal industry is not required in the future, there will still be a transition period where coal is critical to maintaining Australia’s standard of living.*”

Water and groundwater

52. Concerns were raised to the Commission at the Public Hearing and in written submissions in relation to the potential impacts of the Application on water resources within the region. Submissions emphasised the cumulative impact of the Project along with other projects in the region, raising specific concerns regarding damage to groundwater reserves and contamination of the local water supply.
53. The Commission received submissions stating that impacts on groundwater are a threat to agricultural activity. Submissions drew attention to the nine stock and domestic bores which will be affected by groundwater draw down predicted to be worse than the impact criteria of the AIP, highlighting that these bores are crucial for watering stock with local farmers being affected.
54. Submissions raised concern regarding contamination of the local water supply through surface run off and pollution of the groundwater supply. The Commission notes that Leard Forest Research node provided aerial photography and video footage of gas drainage operations as part of its submission, highlighting the risks of drill cuttings and open drilling waste sumps to surface water and groundwater.
55. At the Public Hearing a hydrogeologist stated that the Applicant's numerical model underpinning the Project's predictions cut off below the Pambula Formation. This concern was also raised in written submissions made to the Commission.

Biodiversity and rehabilitation

56. Submissions to the Commission raised concern regarding the impacts the Application would have on biodiversity and the Pilliga Forest. Submissions outlined that clearing of woodland would result in a loss of mature trees and the fragmentation of land, affecting threatened species whose survival requires large mature trees where hollows have formed.
57. The Commission also received submissions expressing concern in relation to rehabilitation of the Site, particularly in relation to the clearing of land, with some submissions stating that rehabilitation after the event is too late.

Socio-economic

58. The Commission received submissions which were both supportive of and objected to the social and economic costs and benefits of the Application. Submissions in objection to the Application criticised the economic analysis provided by the Applicant. The Lock the Gate Alliance (**LTG**) wrote to the Commission on 24 January 2022, requesting that the Commission obtain an independent economic review of the Project, with particular attention to the carbon costs of the projected Scope 1 and Scope 2 GHG emissions. The Commission wrote to the Department seeking advice as to whether an independent economic assessment of the nature described by LTG is warranted (see paragraph 65 below). The Department provided a response which is further discussed at section 4.3.4 below.
59. A number of submissions were made to the Commission, both in writing and via presentation at the Public Hearing, commenting on the economic benefits approval of the Application would generate. People employed at the mine as well as local business owners highlighted that approval of the Project would provide continued employment for locals. The importance of job security in regional areas was raised, with submissions outlining that the economic certainty provides opportunities for locals to remain in the area, remaining close to family and raising families of their own.

60. During the Public Hearing, the Applicant stated that 9% of the Applicant's total workforce identify themselves as being of Indigenous heritage. The Applicant also highlighted their female workforce initiatives noting that approximately 12.4% of their workforce is female.
61. Submissions objecting to the application highlighted the detrimental economic impacts on the local farming industry, stating that the mine expansion would affect productive farmland including through impacts to the underground water supply.

Aboriginal and Cultural Heritage

62. A number of submissions to the Commission raised objection to the application based on the destruction of environment and cultural heritage. Submissions highlighted that the Pilliga is Gomeroi country and stated that "*the importance of the Pilliga and its creeks for Gomeroi people is reflected in the large number of artefacts found*". The Commission notes that submissions called attention to the grinding grooves sites and the impact that subsidence induced cracking could have on them.
63. At the Public Hearing, a representative from Wahgunyah (Housing) Aboriginal Corporation presented to the Commission, stating that the Applicant has worked with Wahgunyah over the past four years, with Wahgunyah providing an indigenous site monitor to monitor any clearing or digging that takes place on the Whitehaven site.

Noise Impacts

64. The Commission heard from speakers at the Public Hearing and received written submissions raising concerns regarding the noise impacts. Specific concerns were raised in relation to the adverse noise impacts from ventilation infrastructure for properties located south of the Stage 3 extension area.

4.3.4 Public Submissions on Additional Material

65. The Commission received a letter from LTG, dated 24 January 2022, requesting that the Commission engage an independent expert to undertake an economic review of the Project. On 25 January 2022, the Commission wrote to the Department, requesting advice as to why, in the circumstances of the assessment of this Project, the Department considers that an independent economic assessment of the nature described by LTG is unwarranted.
66. On 11 February 2022, LTG provided a submission to the Commission with 16 questions (**LTG Questions**) directed to the Department, Applicant and Commission in relation to social impacts, water impacts, GHG emissions, economic benefits and costs, subsidence and make good provisions. At the Public Hearing, the Commission requested the Department and Applicant provide a response to these matters.
67. On 28 February, the Department provided a response to the Commission's letter dated 25 January 2022 and a response to the LTG Questions discussion at the Public Hearing. The Applicant, in its submission to the Commission dated 25 February 2022, provided a response to the LTG questions. The submission also provided a response to queries raised at the Public Hearing including a submission on GHG emissions and climate change.
68. The Commission considered that it would be assisted by further public comment and opened up public submission on the following **Additional Material**:
 - the Applicant's Submission to the Commission, dated 25 February 2022;
 - the Department's Response to the Commission, dated 28 February 2022.
69. In accordance with the Commission's 'Additional Material' policy, the Commission re-opened public comments on this Additional Material (with submissions permitted by email) between Tuesday, 1 March 2022 and 5pm AEDT Tuesday, 8 March 2022.

70. The Commission received a total of 47 submissions on the Additional Material comprising:
- 43 objections;
 - 3 submission in support; and
 - 1 comment.
71. A summary of these submissions is provided below. The submissions referred to below are not an exhaustive report of submissions considered by the Commission.

4.3.5 Public Comments on Additional Material

72. Concerns were raised in submissions regarding the impacts of the Project's GHG emissions. Specific concerns were raised regarding the Project's fugitive emissions. There was general concern in submissions regarding the impact of the Project on anthropogenic climate change with submissions noting that reducing our reliance on coal is an urgent global priority. Submissions raised concerns that there was a lack of action by Australia and NSW in meeting its international climate commitments and that the Project was inconsistent with the NSW Government emission reduction targets for 2030 and 2050. A submission made by the Australia Conservation Foundation stated that Scope 3 emissions do need to be considered as an impact of the Project. A submission made on behalf of LTG stated that "*a contribution to climate change caused by a project remains a contribution to climate change (and an impact on the environment of NSW) whether or not the GHG emissions of the project are scope 1 emissions of another country*".
73. Submissions in support noted that in their view, the Additional Material did not change their position and they maintained their support for the Application, noting that water contamination and GHG emissions are not an issue and that they can be carefully managed.
74. Concerns were raised in submissions regarding the Project's adverse impacts on groundwater and aquifers in the Great Artesian Basin. A submission reiterated the concerns heard at the Public Hearing that the Applicant's numerical model underpinning the Project's predictions was cut off below the Pambula Formation. Submissions also maintained concern regarding the predicted drawdown and impact on stock and domestic bores. Submissions raised a lack of confidence in the make good provisions and the ability of the Applicant to address water loss through these requirements. Submissions highlighted the importance of water to the local farming community noting that any impact to water would diminish the long-term capacity and productivity.
75. Submissions were of the view that the Project should not be primarily justified because "*it can potentially create economic benefit*". Submissions had conflicting views with the Applicant's economic assessment and cost benefit analysis noting that it cannot be considered in isolation to the wider effects on the community and environment, notably the impacts associated with GHG emissions.
76. Concerns were also raised in submission regarding the impacts of subsidence, impacts on biodiversity and agricultural land. Submissions also disagreed with the Department's categorisation of the Project as a 'brownfield' development and were of the view that the extension would cause new substantial damage including loss of vegetation and habitat. Submissions were also of the view that the Precautionary Principle should apply and that intergenerational equity needs to be considered in the assessment of the Application.

5 KEY ISSUES

5.1 Mining

77. In June 2020 the NSW Government released the *Strategic Statement on Coal Exploration and Mining in NSW (NSW Strategic Statement)*, which recognises the ongoing demand for coal, particularly the export market to Asia. To support the intentions of the Statement, the NSW Government has identified a portion of the State's coal regions where mining is not supported and/or is prohibited, and areas considered for proactive release for coal exploration. The NSW Strategic Statement also states that the NSW Government will “*recognise existing industry investment by continuing to consider responsible applications to extend the life of current coal mines, and by streamlining the process for exploring new areas and areas adjacent to current mining operations to deliver a better economic return to NSW*”.
78. The Net Zero Plan acknowledges that NSW's \$36 billion mining sector is one of the biggest NSW economic contributors and that “*Mining will continue to be an important part of the economy into the future and it is important that the State's action on climate change does not undermine those businesses and the jobs and communities they support*”.
79. The *New England North West Regional Plan 2036 (Regional Plan)* sets out the broader strategic policy framework to inform future land use plans, development applications and infrastructure funding decisions. The Regional Plan recognises the mineral energy exploration and production potential provided by the region's geology and the opportunities this can provide to the region. The Regional Plan also acknowledges that “*mining activities need to be undertaken sensitively to minimise negative impacts on the environment...*”.
80. The Commission recognises that at this stage there is an ongoing demand for coal and that in line with the NSW Strategic Statement, the Project would not be located in any of these ‘no-go’ areas, but would be located in an area where coal exploration and mining titles already exist. The Commission acknowledges that mining plays an important part of the NSW economy into the future and that mining needs to be undertaken sensitively to minimise impacts on the environment.

5.2 Subsidence

81. The EIS contained a Subsidence Assessment prepared by Ditton Geotechnical Services. The Subsidence Assessment was peer reviewed by Professor Bruce Hebblewhite (**Subsidence Peer Review**). The IAPUM also reviewed the Subsidence Assessment and the Subsidence Peer Review. The IAPUM in its advice to the Department, dated September 2021, endorsed the findings in the Subsidence Peer Review both in respect of subsurface and surface subsidence.
82. The Commission notes that the longwalls proposed by the Applicant would be some of the longest (10 km) and widest (400 metres) in Australia. The proposed longwall layout is illustrated in Figure 2, which can be found in section 2 of this Statement of Reasons. According to the Department, the longwall width and length leads to relatively high levels of subsidence, a highly fractured zone above the mine workings, and associated impacts on water resources (AR para 126). The Commission notes that a number of submissions raised concern in regard to the anticipated subsidence induced impacts, including damage to the identified grinding groove sites and the subsequent impact to cultural heritage, as well as loss of water and the impacts on biodiversity.

83. In response to questions by the Commission, the IAPUM indicated that lengthy longwalls were used overseas. The notional mine plan provided allowed for a later decision by the Applicant to split the longwall length. The Commission understands that this would be a matter for the Resources Regulator to assess when a detailed Extraction Plan was submitted.

Landscape Features

84. The Commission notes that due to the nature and scale of coal extraction proposed by the Project, there are likely to be subsidence impacts on landscape features, groundwater, surface water and heritage features. The Commission has given consideration to impacts of subsidence below and has also given consideration to the impacts of subsidence on groundwater, surface water and Aboriginal heritage in Sections 0, 5.4 and 5.13, respectively.
85. The Project's key subsidence parameters and maximum predicted subsidence effects after the extraction of each of the proposed longwall series are set out in Table 3 below.

Table 3 - Maximum Total Conventional Subsidence, Tilt and Curvature
(Source: Applicant's EIS, Table 6-6)

Longwall	Maximum Predicted Total Subsidence (m)	Maximum Predicted Total Tilt ¹ (mm/m)	Maximum Predicted Strain ² (Tensile) (mm/m)	Maximum Predicted Strain ³ (Compressive) (mm/m)
203	2.80	53	32	34
204	2.80	47	16	28
205	2.80	40	21	22
206	2.80	33	16	17
207	2.80	28	13	14
208	2.80	27	12	13
209	2.80	25	11	12
210	2.79	58	38	40

86. The Commission notes that the Department has previously established the following performance measures for Existing Operations to limit the consequences of subsidence to a minor level and protect natural landform features:

Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders, collapse of overhangs, and fracturing) that in total do not impact more than 3% of the total face area of cliffs, 5% of minor cliffs and cliff terraces, 7% of rock face features, and 7% of steep slopes.

87. Over the life of the Project, the subsidence is predicted to cause surface cracking and minor rockfalls for between 0.3% to 0.7% of the steep slopes, 0.3% to 4.4% of the rock face features, and 0.6% to 1.4% of the minor cliff faces. The Commission notes that there is an increase in the number of features in the extension area compared to the area covered by the Existing Approval (AR para 141).

¹ The rate of change of subsidence between two points (A and B), measured at set distances apart (usually 10 m). Tilt is plotted at the mid-point between the points and is a measure of the amount of differential subsidence.

² An increase in the distance between two points on the surface. This is likely to cause cracking at the surface if > 2 mm/m. Tensile strains are usually associated with convex (hogging) curvatures near the sides (or ends) of the panels.

³ A decrease in the distance between two points on the surface. This Strain can cause shear cracking or steps at the surface if > 3 millimetres per metre (mm/m).

88. The Commission acknowledges that the predicted levels of impact are well within the standard performance measure referenced in paragraph 86 above, noting that this performance measure has been successfully applied for roughly a decade to protect such features (AR para 142). To ensure that this existing performance measure is met, the Applicant has committed to specific subsidence mitigation measures set out in paragraph 143 of the Department's AR.
89. The IAPUM in its written advice to the Department, dated September 2021, stated:
- In respect of subsidence impacts on the surface, the Panel agrees with DPIE that the subsidence assessment does not present any particular difficulties or uncertainties in relation to surface subsidence impacts.*
90. In response to questioning from the Commission, the IAPUM provided an overview of the factors determining subsidence and the steps taken in the industry and at the Approved mine to minimise its impacts. The IAPUM stated: "*in terms of length [of the longwall] ... length has nothing to do with subsidence...*" (IAPUM Transcript p.5).
91. The Commission agrees with the IAPUM above and the Department that based on the subsidence predictions and proposed mitigation measures, the potential impacts on cliffs, rock face features and steep slopes can be appropriately minimised and mitigated (AR para 144). The Commission has therefore imposed condition C1 which states that the Applicant must ensure that the development does not cause any exceedances of specific performance measures. No subsidence impact or environmental consequence greater than predicted in the EIS (set out in Table 3 above) can occur for watercourses, biodiversity and landform features. Should the Applicant exceed these measures, the Commission has imposed conditions C3 and C4 which require the Applicant to provide a suitable offset to compensate for the subsidence impact or environmental consequence if it is not reasonable or feasible to remediate the subsidence impact. The Commission has also imposed Condition C5 which sets subsidence impact performance measures for built features to ensure public safety and the protection of public and private infrastructure.

Connective Fracturing

92. The Commission acknowledges that the 'height of connective fracturing' above underground mine workings has emerged as an important issue in assessing subsidence impacts as stated by the Department (AR para 146).
93. The Subsidence Assessment relied on predictions made using two related methods. A summary of subsurface fracture model predictions is set out in Table 5 of the Department's AR. The IAPUM considered these predictions and, in its advice to the Department dated September 2021, concluded that the height of connective fracturing was not a key issue for the Project, given the regional climate, the nature of the overlying surface environment, and the subsurface geology.
94. The Commission acknowledges that the Project will result in high levels of subsidence and a highly fractured zone above the mine workings as stated by the Department. However, the Commission agrees with the IAPUM and the Department's assessment that "*connective fracturing is generally not a major concern given the semi-arid climate, the nature of the surface environment and the subsurface geology*" (AR para 153). The Commission has given consideration to the impacts of subsidence on groundwater and surface water in the following sections.

5.3 Groundwater

Groundwater Modelling

95. The EIS contained a Groundwater Assessment, dated 12 October 2020 prepared by Australasian Groundwater and Environmental Consultants. The Groundwater Assessment was peer reviewed by Jacobs (**Groundwater Peer Review**).
96. According to the Department's AR, the IAPUM had concerns over the groundwater model's ability to predict (with sufficient certainty) impacts on localised features of interest. However, these concerns were not such as to prevent the IAPUM from endorsing the model for assessment purposes (AR para 162 and 163). Following advice from DPE-Water, the Department stated in its assessment: "*the groundwater model is fit for purpose, appropriately conservative and can be relied upon for the assessment of the Project*" (AR para 164).
97. The IAPUM in its advice to the Department also stated:

The Applicant's plan to update the model 2 years after the commencement of the proposed mining and every 5 years thereafter is appropriate subject to no unexpected differences between observed behaviour and modelled behaviour. If significant impacts on groundwater above the mine are identified, then the Panel recommends reducing the period from 5 years to 3 years for at least the second update to capture the new knowledge acquired. (page 12)
98. The Commission agrees with the IAPUM above and the Department's endorsement of this recommendation (AR para 166). The Commission has therefore imposed condition B36(iv) which gives effect to this requirement.

Aquifers

99. The Department states that there are two important aquifers which could be affected by the Project – the 'Namoi Alluvium' and the 'Pilliga Sandstone' (AR para 167). The Commission notes that the AIP establishes rules for 'highly productive groundwater sources', which include the Namoi Alluvium and Pilliga Sandstone (AR para 168).
100. The Groundwater Assessment concluded that the Project would meet the AIP's minimal impact requirements for the two highly productive groundwater sources, i.e. Namoi Alluvium and Pilliga Sandstone (AR para 172).
101. However, DPE Water in its advice to the Department, dated 11 August 2021 stated the:

predicted maximum drawdown provides no margin for error. The establishment of demonstrably reliable early-warning monitoring systems and mitigation measures is therefore crucial for this project.
102. The Project involves the re-injection of waste brine into the longwall goaf at the conclusion of mining operations. DPE Water, in its advice dated 15 January 2020, stated that the Applicant needed to clarify the estimated volumes and salinity of remaining brine to be re-injected into the mine goaf. DPE Water, in its advice dated 11 August 2021, noted that previous inconsistent estimates of brine volumes and salinity for reinjection had been clarified and did not raise any further concerns.
103. The IAPUM in its advice, stated that it is "*reasonable to consider that any brine reinjected into the goaf at the mining depth will effectively be trapped in the mine with little prospect for contaminating any of the surrounding shallow aquifer systems*". The IAPUM, in its meeting with the Commission, when questioned, did not raise any long-term groundwater concerns regarding reinjection of brine into the longwall goaf.

104. Based on the advice of the IAPUM and State agencies, the Department concluded that *“the potential water quantity and quality impacts on regionally important groundwater aquifers would not be significant and, importantly, would not exceed the ‘minimal harm’ test under the AIP”*.
105. The Commission agrees with the Department’s conclusion above that potential water quantity and quality impacts on regionally important groundwater aquifers as a result of brine re-injection would not be significant. The Commission has imposed a specific requirement under condition B36(iv) to ensure that impacts of brine re-injection into the goaf on the salt concentrations in surrounding aquifers are monitored post mining.

Private Bores

106. The Applicant’s Submissions Report contained a Groundwater Assessment Addendum which incorporates the findings of recent bore census and bore appraisal activities conducted for the Project. Overall, drawdown of more than 2m is predicted at nine privately owned bores which are used for stock and domestic purposes. Impairment of supply is only expected at six of these nine bores since the predicted drawdown represents a relatively minor proportion of the standing water column observed in the other three bores. According to the Department *“Due to the slow rates of anticipated groundwater drawdown, many of these impacts are not expected to occur for decades – in many cases beyond the expected life of the Project”*.
107. The Commission notes that for all private bores predicted to be drawn down by more than 2m, the Applicant has committed to (AR para 185):
 - *conduct a groundwater yield test;*
 - *monitor any drawdown as it develops; and*
 - *implement ‘make good’ measures, which may include:*
 - *deepening the affected groundwater bore;*
 - *constructing a new groundwater bore; and/or*
 - *providing an alternative water supply of suitable quality and quantity.*
108. In addition to the above, the Applicant has also committed to make good measures at any other privately owned bore where the AIP’s 2m minimal impact criterion is exceeded (AR para 186).
109. The Commission acknowledges that concerns were raised in the Public Hearing and in written submissions to the Commission regarding drawdown at privately owned bores used for stock and domestic purposes. The Commission notes that most of these landholders drew their water from aquifers physically close to the Hoskissons Seam. The Commission also notes that these bores are not located in the highly productive Namoi and Pilliga aquifers but rather in the less productive and more saline Napperby formation.
110. The Commission is of the view that should any groundwater users be affected by the Project, the proposed make good provisions and contingency measures would then apply. The Commission agrees with the Department and accepts the AIP and its requirements as sound and established policy requiring appropriate compensation for groundwater users affected by new developments (Department’s Response to the Commission, page 14). The Commission is of the view that the make good provisions would be sufficient in adequately compensating affected groundwater users. The Commission acknowledges the commitments made by the Applicant (as detailed above) and has imposed conditions B27 – B30. Under these conditions, the Applicant must provide a compensatory water supply to any landowner of privately-owned land whose rightful water supply is adversely and directly affected. Compensatory water supply measures must also provide an alternative long-term supply of water that is equivalent, in quality and volume, to the loss attributable to the development.

111. The Commission recognises that concerns were also raised by local landholders during the Public Hearing and in written submissions. In response to concerns raised by local landholders during the Public Hearing and in written submissions, the Commission has imposed condition B31 which states that the Applicant must complete all compensatory water supply measures that it is required to undertake (conditions B27 – B30) within two years of the date of commencement of development under this consent. If there is a dispute about the implementation of these measures, then either party may refer the matter to the Planning Secretary for resolution under condition B32 imposed by the Commission.

Groundwater Licensing

112. The Groundwater Assessment provided predictions of total groundwater inflows to the mine during the mine's life. The Commission notes that the IESC, DPE Water and the IAPUM did not raise any concerns regarding the predicted groundwater inflows into the mine (AR para 189 and 191).
113. The Applicant holds sufficient water access licences (**WAL**) for the Project in three affected water sources: the *Southern Recharge Zone*, *Upper Namoi Zone 5* and the *Upper and Lower Namoi*. The Department's AR states that the WAL entitlements required for the *Gunnedah Oxley Basin MDB Groundwater Source* would be transferred from other nearby Whitehaven mines and those required for the *Lower Namoi Groundwater Source* would be purchased via the water licence trading market. DPE Water in its advice dated 11 August 2021 stated that the option to obtain required water entitlements in the Gunnedah-Oxley Basin groundwater source via trading with existing licences held by the Applicant is viable.
114. The Commission agrees with the Department that the predicted groundwater WAL entitlements for the Project have been appropriately modelled and that the Applicant should be able to obtain all necessary entitlements for the predicted groundwater take, which reaches a peak of 2.65 gigalitres per year (AR para 207). The Commission has therefore imposed condition B25 which states that the Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply. The Commission has also imposed Condition B26 which states that the Applicant must report on water take at the site each year (whether direct or indirect and whether licensable or exempt) in the Annual Review, including water taken under each water licence.

Groundwater Monitoring

115. The Applicant provided a revised groundwater monitoring regime in correspondence dated 21 July 2021. The Department's AR states that the revised groundwater monitoring regime includes (AR para 200):
- *continuing the existing groundwater monitoring of water levels and water quality, including continuous automated monitoring from a network of Vibrating Wire Piezometers (VWPs);*
 - *establishing six sets of shallow and deep monitoring bores at indicative locations in the vicinity of Pine, Kurrajong and Tulla Mullen Creeks;*
 - *establishing an additional subsidence calibration borehole (nominally above LW 203 or LW 204); and*
 - *implementing continuous monitoring of TDS, pH and temperature in groundwater inflows.*
116. The IAPUM in its advice recommended additional monitoring above the mine and that three multilevel vibrating wire piezometer monitoring sites should be prepared. The Department's AR states that DPE Water found the revised groundwater monitoring regime to be acceptable (AR para 201).

117. The Commission agrees with the Department that the Applicant's proposed groundwater monitoring regime for the Project is appropriate and sufficiently comprehensive. For the reasons set out above, the Commission has imposed conditions B35 - B38 which requires the Applicant to prepare and implement a Water Management Plan (**WMP**). As part of the WMP the Applicant must prepare a Site Water Balance, Erosion and Sediment Control Plan, Surface Water Management Plan (see section 5.4 below) and a Groundwater Management Plan (**GMP**). The Commission agrees with the IAPUM advice and has imposed a requirement to implement the IAPUM's recommendations concerning installation of multilevel piezometer nests above longwalls 111, 203 and 204 as part of the GMP in condition B36(iv). The Commission has also imposed under condition B36(iv) a requirement to include measures to identify details of any relationships between measured electrical conductivity and total dissolved solids in mine water and groundwater in the Hoskissons Seam and adjoining aquifers.

5.4 Surface water

118. The Applicant submitted a Surface Water Assessment, prepared by WRM Water & Environment Pty Ltd. The Surface Water Assessment was subject to a peer review by Emeritus Professor Tom McMahon. The Project's likely impacts on surface water are considered in relation to surface water loss and water quality impacts. The climate is semi-arid with a mean of c. 600mm annual rainfall and all creeks affected by the Project are ephemeral with minimal to no baseflow (AR para 212 & 213).

Surface Water Losses

119. The Surface Water Assessment did not include modelling of the surface water environment or the impacts of the Project on surface water flows, instead basing surface water loss predictions on the impacts of surface fracturing at the existing mine to date (AR para 215 & 215).

120. In its submission to the Department, the IESC raised that it found the absence of such modelling concerning. The IAPUM accepted the Applicant's position that, given the predicted streamflow losses are negligible, a very accurate and reliable stream gauge would be required to predict a change and this would not be practical for the local waterways. However, the IAPUM found that relying on anecdotal evidence of baseline flows is unsatisfactory, recommending that formal records of creek flow conditions be kept (IAPUM advice September 2021, p.16). The IAPUM concluded that the surface water assessment is high level with consideration of risk management appropriately being deferred to the consideration of an updated WMP (AR para 216 – 219).

121. Based on the Applicant's prediction methodology, the predicted annual surface water losses are (AR para 222):

- 3.5 ML for first/second order watercourses; and
- 0.7 ML for third order watercourses (i.e. Kurrajong Creek, Kurrajong Creek Tributary 1 and Tulla Mullen Tributary 1).

122. The Commission notes that the predicted annual surface water loss total is 4.2 ML/year. The Department finds this to be negligible when compared to the annual predicted runoff from the Project area of 5,524 ML/year (AR para 223).

123. The IAPUM in its written advice to the Department recommended:

*Formal records of creek flow conditions should be initiated at selected sites.
Alternatives to measuring or predicting creek flows should be proposed for purpose of supporting water take licensing.*

124. The Applicant has accepted the IAPUM's recommendations above and in paragraph 226 of the AR the Department has also stated that it is supportive of these recommendations.
125. The Commission, at its meeting with the IAPUM, queried the impact of ponding as a result of subsidence on surface water. The IAPUM responded as follows (IAPUM transcript p.20 – 21):
- there are a number of natural ponds on the streams in these areas and there will be new ponds due to the subsidence on the creeks and also extension in the length and the depth of the natural ponds. The ponds will cause a reduction in the surface runoff from the catchment overall because water will be stored in the ponds, additional water, and then some of that will be evaporated. So, as part of the EIS, they have done initial rudimentary calculations of the water courses which turn out to be around two to three per cent of the overall yield of the catchment in the mining area and the calculations are rudimentary, but I don't see any problem with these calculations. So, in terms of water loss, I can't imagine it's going to be a big problem.*
126. The Commission agrees with the Department that the predicted annual surface water loss based on surface fracturing is negligible when compared to the annual predicted runoff from the Project area. The Commission acknowledges that subsidence-induced ponding is unlikely to significantly affect the catchment. The Commission is of the view that the predicted surface water losses would not be significant and that there would be minimal cumulative impacts to downstream water users as a result of the Project.
127. In order to ensure adequate management of surface water impacts, the Commission has imposed condition B36(e)(iii) which requires the Applicant to prepare a Surface Water Management Plan. The Commission acknowledges the Applicant's and Department's support for the IAPUM's recommendations set out in paragraph 123 above. The Commission agrees with the IAPUM's advice and has imposed these recommendations via requirements of the Surface Water Management Plan.

Water Quality Impacts

128. The key potential impact in terms of runoff water quality is increased sediment loads in watercourses resulting from erosion (AR para 227). The Commission acknowledges that a number of submissions expressed concern regarding contamination of water sources, including nearby rivers.
129. The IESC and DPE Water raised concern in relation to erosion, particularly with respect to risks associated with changes of slope or fractures in watercourses. The IAPUM expressed concerns about how erosion was treated in the Surface Water Assessment, recommending it be an essential part of the updated Water Management Plan (AR para 231). The Department agreed with this position and stated: *"it is usual practice for erosion, ponding and sedimentation to be primarily controlled through the development and implementation of a series of operational management plans, particularly where the risks are relatively low"* (AR para 232).
130. In relation to uncontrolled discharges, the Application does not propose to change the catchment of the existing Pit Top Area's water management system, with wet weather discharges from licensed discharge points required to comply with the water quality limits in the existing EPL 12789 (AR para 233). The Surface Water Assessment modelling concludes that there is <1% chance of an uncontrolled release of runoff from the Pit Top Area and predicts no uncontrolled release of brines from the existing or proposed brine storage ponds (AR para 234). The EIS concluded that the Project would not adversely affect surface water quality in downstream receiving waters (AR para 235).

131. The Commission notes that the Environment Protection Authority (**EPA**) expressed no particular concern with the assessment. However, the IAPUM raised concern regarding the method of sampling from historical rainfall records undertaken in the Surface Water Assessment, finding that this method does not account for potential future water balance variability. The IAPUM in its advice to the Department recommended: *“Improved modelling of the likelihood of uncontrolled discharges should be included in future updates to the water balance model”*. The Applicant accepted this recommendation and it was also supported by the Department (AR para 238).
132. In its meeting with the IAPUM, the Commission queried the potential for overtopping of the brine storage ponds, particularly as the Surface Water Assessment was based on historical rain data. The IAPUM stated (IAPUM transcript p.22):
- They had used re-sampling of historical rainfall to produce a very large number of realisations, but these realisations don't necessarily reflect what may happen in the future.*
133. The IAPUM further clarified (IAPUM transcript p.30):
- The brine ponds shouldn't be collecting any of the catchment run off and, therefore, the risks of them overtopping due to climate conditions should be extremely low and should easily be managed by engineering or risk management measures. So as long as reasonable practice is followed, I wouldn't have any concerns about that.*
134. The Commission acknowledges the issues raised by the IAPUM and agrees with the Department's assessment referenced in paragraph 129 above. The Commission is of the view that the erosion impacts are unlikely to be significant and are capable of being managed and has imposed condition B36(e)(ii) which requires the Applicant to prepare an Erosion and Sediment Control Plan consistent with the requirements of *Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book* (Landcom, 2004) and *Volume 2E: Mines and Quarries* (DECC, 2008).
135. The Commission acknowledges that the EPA did not express any particular concerns with the Applicant's assessment in relation to uncontrolled discharges. The Commission accepts the findings of the Applicant's Surface Water Assessment and is of the view that surface water impacts are capable of being managed through the Surface Water Management Plan imposed by the Commission as referenced in paragraph 127 above. The Commission has also imposed condition B36(e)(i) which requires the Applicant to prepare a Site Water Balance. The Commission agrees with the IAPUM's recommendation in paragraph 131 above and requires the Applicant to include a program to regularly review modelling of the likelihood of uncontrolled discharges from the Site as part of the Site Water Balance.
136. The Commission accepts the IAPUM's advice that risks associated with overtopping of the brine storage ponds would be extremely low. The Commission is of the view that these risks are capable of being managed under the Site Water Balance and the Surface Water Management Plan imposed by the Commission above.

5.5 Greenhouse Gas Emissions

137. GHG emissions are categorised into three different types:
- Scope 1: direct emissions from owned or controlled sources of an organisation/development;
 - Scope 2: indirect emissions from the generation of purchased energy electricity, heat and steam used by an organisation/development; and
 - Scope 3: all other upstream and downstream emissions related to an

organisation/development.

International

138. Australia is a signatory to the UNFCCC Paris Agreement, which requires signatories to identify actions to cut emissions, and under this agreement Australia has committed to reduce national GHG emissions by 2030. These actions are referred to as a Nationally Determined Contribution (**NDC**). The UNFCCC and related articles specify that all emissions associated with an activity within Australia's border count towards Australia's total emissions. The Commission notes that the Project's Scope 3 emissions will be accounted for in the consumer countries' GHG emissions accounts. The Commission notes that with the adoption of the Paris Agreement, almost all countries have committed to track their progress with the aim to reduce global GHG emissions. As noted by the Department, the national policy frameworks focus on broader economic adjustment and abatement measures to achieve GHG emissions reduction targets and "*do not seek to restrict private development in order to achieve Australia's commitments under the Paris Agreement*" (AR para 37).

National

139. The National Greenhouse and Energy Reporting Scheme (**NGERS**) is a national reporting framework for reporting on energy production, consumption and emissions reported by major emitters and State of origin and has been designed to support the Government's international reporting obligations. The Commission notes that NGERS does not require the reporting of Scope 3 emissions.
140. The Commonwealth Government has recently developed the Emissions Reduction Plan which is a whole-of-economy plan to achieve net zero GHG emissions by 2050. The Emissions Reduction Plan describes a "technology-led" plan that aims to "*reduce the cost of low emissions technologies, accelerate their deployment at scale, and position our economy to take advantage of new and traditional markets*". The Emissions Reduction Plan acknowledges that "*Reducing emissions across these sectors [industry, mining and manufacturing] will require a range of new and bespoke technologies*" and focuses on investing in technologies to help reduce and abate GHG emissions.

State

141. The Commission notes that national and State policy settings relating to climate change and GHG emissions are rapidly changing. Section 3.2 of the Department's AR identifies that there is now a range of climate change guidance relevant to the regulation of GHG emissions setting out NSW policy positions that are relevant, including:
- a target of net zero emissions by 2050;
 - a reduction of approximately 50% emissions by 2030 (against a 2005 baseline);
 - a push to generally 'ratchet down' emissions; and
 - a push to reduce fugitive emissions from coal mining (AR para 329).
142. The NSW Government's 2016 NSW Climate Change Policy Framework (**CCPF**) aims to "*Maximise the economic, social and environmental wellbeing of NSW in the context of a changing climate and current and emerging international and national policy settings and actions to address climate change*". Under the CCPF, the NSW Government's objective is to achieve net-zero emissions by 2050 and for NSW to be more resilient to a changing climate.

143. In January 2020, the NSW Government entered into a *Memorandum of Understanding – NSW Energy Package (NSW Energy Package MOU)* with the Commonwealth Government which aimed at, in part, achieving emissions reductions. The NSW Energy Package MOU sets out an agreement that the Commonwealth will contribute funds to certain initiatives, including the Emissions Intensity Reduction Fund aimed at transitioning to low emissions solutions.
144. In 2008 the NSW Government established the Coal Innovation Fund. *“The Fund’s purpose is to support research, development and the demonstration of low emissions coal technologies for future commercial application. It also aims to increase public awareness of the importance of low emissions coal technologies in reducing greenhouse gas emissions.”* (Regional NSW⁴).
145. In March 2020, the NSW Government released its *Net Zero Plan Stage 1: 2020-2030*, which was then updated in September 2021 with the *Net Zero Plan Stage 1: 2020-2030 Implementation Plan (Net Zero Plan)*. The Net Zero plan identifies priorities and actions proposed in order to achieve a reduction in GHG levels by 2030.
146. According to the EPA, fugitive emissions from coal and gas make up approximately 9% of NSW’s GHG emissions as of 2018-2019. Under the Net Zero Plan, limiting the fugitive emissions that come from coal mining is important to reduce the State’s emissions, including capturing and combusting those emissions. The Net Zero Plan states: *“Emissions reductions from the resources sector could provide a new revenue stream for mines, increase productivity, improve mine safety and improve air quality”*. The Net Zero Plan also acknowledges that methane released during coal mining is a potential energy source equal to the entire residential gas use in NSW each year. The Net Zero Plan states: *“Capturing some of the methane from underground mines and using it on-site or via the gas system could help offset emissions from gas used in homes and businesses across New South Wales”*.
147. In the NSW policy context, clause 2.20(1) of the Resources SEPP expressly requires the consent authority to consider:
- Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following—*
- (a) that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,*
 - (b) that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,*
 - (c) that greenhouse gas emissions are minimised to the greatest extent practicable.*
148. Clause 2.20(2) of the Resources SEPP also requires the consent authority to consider:

⁴ <https://www.regional.nsw.gov.au/meg/industry-support/coal-innovation>

Without limiting subsection (1), in determining a development application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions.

5.5.1 Project GHG Emissions

149. The Applicant's EIS was accompanied by an Air Quality and Greenhouse Gas Assessment, dated 24 August 2020 prepared by Jacobs Group (Australia) Pty Ltd (**Jacobs**) which included an assessment of the Project's predicted GHG emissions. The assessment was also supported by Additional Information which included a Greenhouse Gas Emission Forecast, dated 25 May 2021 prepared by Palaris Australia Pty Ltd (**Palaris**), Amended GHG Calculations, dated 31 May 2021 prepared by Jacobs and an Abatement Technology Assessment, dated 25 May 2021 prepared by Palaris. The Commission notes that the Applicant's assessment of GHG emissions applied a Global Warming Potential (**GWP**) factor of 25 for emissions of methane and that the Department's assessment was undertaken based on this GWP.
150. The Department stated that it was not satisfied with the Applicant's assessment of mitigation options in both the EIS and Amendment Report and, on 22 September 2021, requested further consideration of GHG abatement opportunities including to pre-mining gas drainage, goaf gas draining, risk of underground explosion, current and future technologies that could be applied to pre-drainage and flaring of drained goaf gas (AR para 363). The Applicant provided responses to the Department dated 15 October 2021 and 17 December 2021 which included a Post Mining and Decommissioning Gas Emission Estimate, dated 17 December 2021 prepared by Jacobs and a Project GHG Abatement Benchmarking Report (**Abatement Report**), dated 14 October 2021 prepared by Palaris.
151. The Department's AR sets out the estimated Scope 1, 2 and 3 emissions for the Project (AR para 340, 383 and 391) as shown in Table 4 below.

Table 4 – Estimated GHG Emissions from the Project (Source: Department's AR)

GHG	Annual Average Emissions (Mt CO ₂ -e)	Total Emissions (Mt CO ₂ -e)
Scope 1	1.36	31.19
Scope 2	0.12	2.79
Scope 3	19.81	455.62
Total	21.29	479.57

Scope 1 Emissions

152. Across the life of the Project the extraction of 201.5 Mt ROM coal is estimated to result in approximately 31.19 Mt carbon dioxide equivalent (**CO₂-e**) total Scope 1 GHG emissions averaging 1.36 Mt CO₂-e per year. The Commission understands that the majority of these emissions (approximately 85.7%) are from fugitive emissions from the extraction of the coal, including unmanaged gas drainage and direct venting. (AR para 340)

153. Gas from coal seams is predominantly composed of varying proportions of methane (**CH₄**) and carbon dioxide (**CO₂**). To date, gas at the current Narrabri Mine operations has been very rich in CO₂. However, there is a substantial increase in the CH₄ percentage of the gas in the Stage 3 mining area compared to the northern panels of the Stage 2 mining area (i.e. 30-40% of CH₄ across the western parts of the Project area, compared with 5-25% in the northern series). Beyond 2032 the proposed mine extension will see a significant increase in GHG emissions from current operations as a result of the longwalls being cut into an area where the coal seam has a higher CH₄ content. (AR para 341)
154. The Department's AR provides a comparison between the Project and other recently approved mines (AR Table 10). The Department assessment states: "*the emissions intensity of the Project is lower than many other underground coal mines around the State, particularly those in the southern coal field where the mines are consistently dominated by high methane content*" (AR para 338). However, the Department also notes that the total resource to be extracted is significantly greater than these mines, and therefore overall emissions are higher.

Table 5 - Predicted Scope 1 emissions intensity for three recent underground coal mining projects (Source: Department's AR)

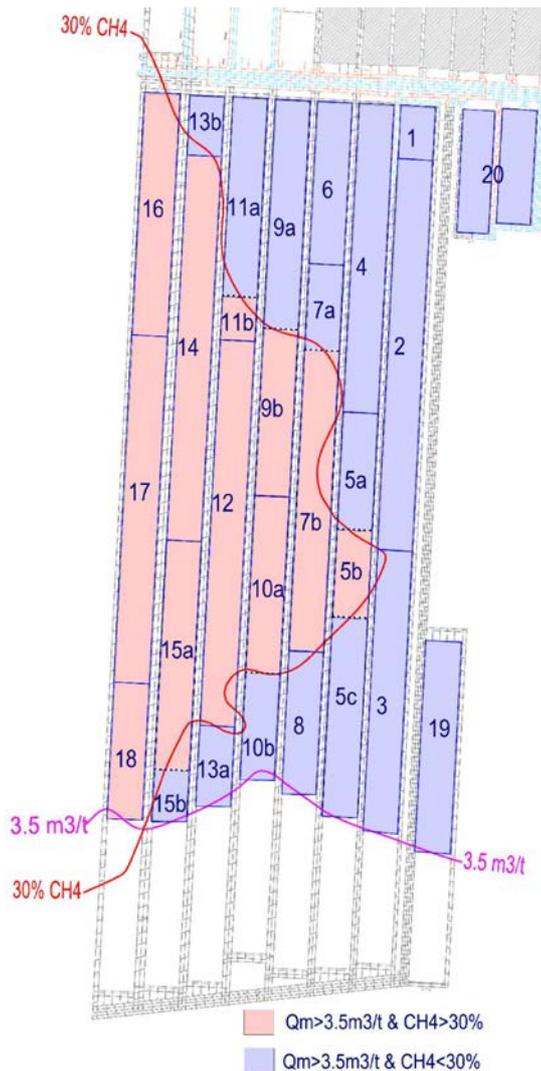
Project	Total Coal Resource (Mt ROM)	Max Annual Production (Mtpa)	Total Fugitive Emissions (Mt CO ₂ -e)	Emissions Intensity (t CO ₂ -e/t ROM)	Comments
Narrabri Stage 3	201.5	11.0	31.19	0.155 (abated) 0.156 (unabated)	Only 10-40% CH ₄
Dendrobium Extension	71.6	5.2	18.30	0.19 (abated) 0.24 (unabated)	Consistently dominated by CH ₄
Tahmoor South	~33.0	4.0	26.09	0.57 (abated) 0.79 (unabated)	Consistently dominated by CH ₄

155. The Department's assessment concluded:
- the Project's annual fugitive emissions would be approximately three times higher than historical levels at the mine (AR para 342);
 - the highest annual emissions will occur in approximately years 12 to 19 of the Project when longwall extraction would be occurring in the part of the coal seam with the highest CH₄ concentration (AR para 343); and
 - only very substantial mine design changes would be effective in reducing the overall fugitive emissions (AR para 344).
156. The Commission also notes that because the overall gas and CH₄ content across much of the Project area is low, the range of current abatement options is limited (AR para 338). The Department confirms that in cases where the proportion of CH₄ in the gas is too low, flaring may not be technically possible. The Department also noted that flaring may pose a safety risk if CH₄ occurs in the presence of significant quantities of oxygen because there is a risk of spontaneous combustion of the goaf. (AR para 347).
157. According to paragraph 349 of the Department's AR, the Applicant's Greenhouse Gas Emissions Forecast noted there are four separate sources of mine gas contributing to the overall total emissions, including:
- pre-mining drainage of the coal seam prior to extraction and/or roadway development using underground in-seam or surface to in-seam drilling (2.3%);
 - un-managed drainage from the gate roads (i.e. from the walls of first workings) during longwall development (30%);

- un-managed drainage during longwall extraction (53.9%); and
- post-mining goaf gas drainage (13.8%).

158. The Applicant on page 13 of the Amendment Report made the commitment to flaring pre-drainage gas when the gas stream from the pre-drainage has a CH₄ content of greater than 30%, and an oxygen content of less than 6%. The Applicant also stated that pre-drainage would only generally take place when the in-situ gas content of the Hoskissons Coal Seam is greater than 3.5 cubic metres per tonne of coal. This area is illustrated in Figure 5 below. The Commission notes that as a result of the proposed flaring of the pre-drainage gas, a reduction in Scope 1 GHG emissions of approximately 1% is predicted (Amendment Report, page 22).

Figure 5 – Pre-Drainage Gas Zones (Source: Applicant's Amendment Report)



159. In response to the Department's request referenced in paragraph 150 above, the Applicant's Abatement Report reviewed the viability of alternative GHG abatement measures including for Ventilation Air Methane. The Department stated the Applicant's preliminary conclusions were:

that a reduction of up to approximately 9.6% of total Scope 1 emissions could be achieved. However, the capital outlay (approximately \$190 million for the two units required for this level of abatement) and high operating costs (approximately \$9 million per unit per year) would make such proposals unviable.

160. The Application also considered the possibility of beneficial use of CH₄ for power generation, however concluded that the establishment costs of a power station could not be recouped (AR para 366).
161. The Applicant in the Amendment Report stated that given Scope 1 emissions are forecast to generally increase over the life of the Project, the Applicant would prepare and implement a Research Program for the Project to the satisfaction of the Secretary (**Research Program**) and allocate funds towards the implementation of the program. The Research Program would be directed at encouraging research into improving the abatement of direct Scope 1 emissions.
162. The Department in its assessment acknowledged that gas separation and enrichment technologies are not currently used in coal mines in Australia as they are considered too expensive by mining companies (AR para 369). The Department is of the view that these technologies (or other technology options) are likely to improve and reduce in cost over the life of the Project. The Department's (AR para 370) states:
- Given there are clear policy drivers to 'ratchet down' GHG emissions and reduce fugitive emissions over the coming decades, these emerging technologies and abatement options should therefore be considered for application in current and future long life underground coal mining operations.*
163. The Department has recommended conditions for the Project which required the Applicant to offset any Scope 1 (and Scope 2) emissions that exceed the predictions (AR para 374). The Department recommended performance measures, which may then be improved (i.e. ratcheted down) subject to the outcomes of a regular independent review regime (AR para 375). These performance measures are set out in paragraph 378 of the Department's AR.
164. In addition to the above, the Department has recommended a condition requiring the Application to prepare a three yearly Fugitive Emissions Minimisation Plan in consultation with NSW Department of Planning, Industry and Environment (**CAS**), the EPA and the IAPUM. The Fugitive Emissions Minimisation Plan must include:
- an updated assessment of options to flare and/or generate electricity from methane, including a review of abatement technologies deployed in Australia and around the world; detailed studies of membrane separation technologies; and a three-year action plan to investigate and implement best practice measures to minimise fugitive emissions.*
165. The IAPUM, in its meeting with the Commission noted that with respect to pre-drainage of the coal seam: "*where the industry is at is pretty much what you're reading. Is that the high gas content,, everything is piped. It's not mixed with the mine ventilation area. It's kept separate*". The Commission understands that for underground mines with high gas content, industry practice is to pipe recovered gas to the surface for flaring or beneficial use.

Scope 2 Emissions

166. The Commission notes that the EIS and the Amendment Report assessed Scope 2 emissions over the life of the Project as totalling 2.79 Mt CO₂-e, or an average of about 0.12 Mt CO₂-e per annum (AR para 383).
167. The Department states that although Scope 2 emissions are not a significant proportion of the Project's overall GHG emissions, additional measures should be considered to reduce these emissions, including the option of purchasing 'green energy' (i.e. electricity provided by renewables) from the grid (AR para 387). The Applicant, in its response to the Department dated 17 December 2021, stated that Narrabri Mine:

...has commenced receiving carbon neutral energy for all its electricity supply, which is a scheme where eligible carbon offset units are purchased and retired to offset the emissions associated with the generation and delivery of electricity. For the period where this arrangement is in place, all Scope 2 emissions would be offset by these projects, which are certified by Climate Active.

168. The Commission acknowledges that the Applicant has commenced receiving carbon neutral energy for all its electricity supply and would offset all emissions associated with the generation and delivery of electricity. The Commission has therefore imposed Condition B16 which requires the Applicant to minimise Scope 2 GHG emissions by using electricity generated by renewable or carbon neutral energy sources where reasonable and feasible.

Scope 3 Emissions

169. The Commission agrees with the Department and acknowledges that the mining of coal and its combustion is a major contributor to anthropogenic climate change, which has the potential to impact future generations. The Commission also agrees with the Department that the key areas for active management of GHG emissions within the development assessment and approval process for new projects in NSW are reductions in direct emissions and improved energy efficiency (Scope 1 and 2 emissions).
170. The Commission acknowledges that while the Project's Scope 3 emissions would contribute to anthropogenic climate change, they are more appropriately regulated and accounted for through broader national policies and international agreement (such as the Paris Agreement). The Commission notes that the GHG emissions associated with burning coal to produce energy are accounted for at the international powerplants where that combustion takes place. The Commission agrees with the Department that the fundamental principle of accounting is to avoid double counting and it must be noted that one entity's Scope 3 emissions are another entity's Scope 1 emissions. However, the Commission has considered all emissions associated with the Project (including Scope 3 emissions) in its assessment and determination.

Commission's Findings

171. The Commission notes that a number of submissions were received objecting to the proposal on the basis of GHG emissions and the cumulative impact the mine would have on climate change. The Commission acknowledges that submissions expressed that approval of the mine would be inconsistent with NSW Government emission reduction targets for 2030 and 2050.
172. The Commission has considered the matters in cl 2.20(1) and 2.20(2) of the Resources SEPP and finds that the Project's Scope 1 and Scope 2 emissions have been estimated using the recommended methodologies consistent with current national and NSW policy settings and commitments. In the absence of any clear policy guidance on performance criteria or offsets, the Commission is of the view that the Project is not inconsistent with the CCPF, the Net Zero Plan or Australia's current obligations under the Paris Agreement in respect of Australia's current NDCs.

173. The Commission notes there is a growing body of international, national and State policy concerning GHG that is aimed at reducing GHG emissions (see paragraphs 138 - 148 above) particularly those associated with fugitive methane. The Commission is required to have regard to such applicable policies at the national and State level (under clause 2.20 of the *State Environmental Planning Policy (Resources and Energy) 2021*). The Commission also notes that current national and State policy recognises the ongoing demand for coal and its importance to the NSW (and Australian) economy and the regions it is located in. The current strategic direction seeks to continue coal exploration, extraction and export. Instead of prescribing the refusal of development for projects such as the Project under consideration, the body of policy considered by the Commission (particularly the Commonwealth's *Australia's Long-Term Emissions Reduction Plan* and NSW's *Net Zero Plan Stage 1: 2020-2030*) instead indicates that the deployment of existing, emerging and future technologies to minimise and/or beneficially use fugitive methane is an important part of reducing GHG emissions from developments such as the Project.
174. With that in mind, the Commission has imposed conditions that are specifically targeted at Scope 1 emissions including, in particular fugitive methane emissions of the Project. These conditions require the Applicant not only to continuously investigate available technologies over the life of the Project, but also to implement and deploy technologies, to the satisfaction of appropriately qualified and independent experts, in order to continuously improve its performance in managing emissions of fugitive methane and other greenhouse gases. In addition to the beneficial impact on the environment of minimising the fugitive methane and other emissions of the Project, the conditions are intended to facilitate the Applicant benefitting from "new revenue streams to the mining sector" (NSW Net Zero Plan: Stage 1) that result from capturing and beneficially using fugitive methane emissions.
175. The Commission agrees that the Project is a gassy mine - particularly considering the substantially increased fugitive methane emissions anticipated in years 12 to 19 of the Project. A high percentage of the Scope 1 GHG emissions of the Project are associated with fugitive emissions of methane and the Commission considers that opportunities exist for the Applicant throughout the life of the Project to deploy existing, emerging and future technologies to both:
- a) improve its abatement of those emissions from the 1% abatement proposed through flaring; and
 - b) potentially derive a revenue stream from the deployment of those technologies, including through beneficial reuse of fugitive methane emissions.
176. The Commission and the Department agree that the imposition of conditions like B12(a)(iii), B18 – B20 will relevantly assist the Applicant in seizing those opportunities. The Commission does not intend to prescribe what technologies are to be deployed – this is a matter that requires ongoing work after the Commission's consent authority functions are discharged as well as being a matter that would benefit from condition B18 requiring oversight from appropriately qualified and independent experts - CAS, the EPA and the IAPUM. Nonetheless, the Commission is reinforced in its view of the practicality and reasonableness of these requirements by noting the availability and commercial readiness of these technologies, for example, new flaring technologies for biogas containing CH₄ and CO₂ that can successfully flare mixtures with a CH₄ content of 13%.

177. The Commission accepts the Applicant's estimated GHG emissions from the Project as described by the Department's AR (see paragraph 151 above) and as set out in Figure 5 above. The Commission has set specific GHG performance measures for Scope 1 and Scope 2 emissions (see paragraph 168 above) for the Project. Condition B16 imposed by the Commission requires the Applicant to comply with the following Scope 1 GHG emissions intensity for the life of the Project:
- less than 0.218 tonnes CO₂-e emitted from the development per tonne of ROM coal per calendar year; and
 - less than 0.160 tonnes CO₂-e emitted from the development per tonne of ROM coal.
178. In addition to the above, the Commission has imposed condition B18 – B20 which requires the Applicant to prepare within 12 months of the Project's commencement and implement within 3 years a Scope 1 Emissions Minimisation Plan, in consultation with CAS, the EPA and the IAPUM, to the satisfaction of the Planning Secretary. The Commission acknowledges the Applicant's commitment to prepare and implement a Research Program for the Project (see paragraph 161 above) directed at encouraging research into improving the abatement of direct Scope 1 emissions and has therefore imposed a requirement under condition B18(c) for the Applicant to investigate reasonable and feasible measures to minimise Scope 1 emissions from the development. Condition B18(c) requires the Applicant to include the following in its investigation:
- comprehensive monitoring of CH₄, CO₂ and oxygen concentrations in the pre-development coal seams, longwall development areas, longwall mining areas, goaf areas and ventilation air;
 - information on the permeability and gas saturation characteristics of the Hoskissons Seam to inform the optimisation of gas drainage;
 - an updated review of abatement measures and technologies (with a particular focus on CH₄) currently used or potentially available in NSW, Australia and internationally; and
 - a detailed review of capital and operational costs to implement the abatement measures and technologies, including analysis of cost per tonne of CO₂-e reduction and economic considerations for the development.
179. As a requirement of the Scope 1 Emissions Minimisation Plan, the Applicant must have regard to the outcomes of the investigations undertaken required by condition B18(c). In the Scope 1 Emissions Minimisation Plan, the Applicant must set out measures aimed at achieving, as soon as reasonably feasible but by 2030 at the latest, the following reduced Scope 1 emissions performance measures over the life of the Project:
- less than 0.165 tonnes CO₂-e emitted from the development per tonne of ROM coal in any single calendar year; and
 - less than 0.130 tonnes CO₂-e emitted from the development per tonne of ROM coal.

These figures are derived from maintenance of the emissions intensity of the Project for the years 2022-2031 or equivalently from a Departmental estimate of a likely reduction in emissions capable of being achieved by a more rigorous goaf drainage protocol.

180. Condition B19 imposed by the Commission states that every three years after commencing development under this consent, the Applicant must prepare an updated Scope 1 Emissions Minimisation Plan to the satisfaction of the Planning Secretary. As part of an Updated Scope 1 Emissions Minimisation Plan, the Applicant must include an assessment of the success of Scope 1 emissions reduction measures already implemented, provide updated investigations on opportunities to further reduce Scope 1 emissions and propose any revised Scope 1 emissions reduction levels.
181. Alternatively, or in combination with the operation of condition B18 above, the Applicant will always have the opportunity, over the entire life of the Project, to offset any GHG emissions over the prescribed limits in order to maintain compliance with the conditions. The Commission does not consider it reasonable or appropriate to require offsetting of all of the Project's GHG emissions – instead, the Applicant will retain the practical flexibility of choosing whether to:
- a) continuously implement and deploy appropriate technologies for the minimisation and/or beneficial reuse of fugitive methane and other emissions, being the outcome the conditions are intended to encourage; or
 - b) offset exceedances of the emission reduction levels prescribed under condition B18.
182. The Commission has also imposed condition B12 'Air Quality and Greenhouse Gas Operating Conditions' requiring the Applicant to take all reasonable steps to *“(a)(iii) improve energy efficiency and minimise Scope 1 and Scope 2 GHGs generated by the development”*. The Applicant must also minimise GHG emissions by using electricity generated by renewable or carbon neutral energy sources where reasonable and feasible as required by condition B16 imposed by the Commission.
183. For the reasons set out above, the Commission finds that the GHG emissions for the Project have been adequately assessed. Subject to the imposed conditions, the Commission is satisfied that the Project can achieve the requirements of the Resources SEPP and the relevant strategic policy positions with respect to the reduction of fugitive emissions and the recognition of the importance of the continuation of the extraction and exportation of coal to the NSW economy. The Commission recognises that at this stage there is an ongoing demand for coal and that in line with the NSW Strategic Statement, the Project would not be located in any of these 'no-go' areas, but would be located in an area where coal exploration and mining titles already exist. The Commission acknowledges the Project's positive economic contribution to the local area through the provision of jobs, indigenous employment, and flow on economic benefits to local business (paragraph 234 below). The Commission also acknowledges that mining plays an important part of the NSW economy into the future as set out in the Net Zero Plan and that mining needs to be undertaken sensitively to minimise impacts on the environment.

5.6 Biodiversity

184. The Project area consists of various ecological communities, including woodland vegetation, native vegetation, semi-cleared and relatively flat agricultural land, and rocky outcrops. The Project requires surface clearing for the installation of mine ventilation, services corridors, boreholes, pre-conditioning of resistant strata for mine safety, and water management infrastructure (AR para 262).

185. The Applicant's final Biodiversity Development Assessment Report, dated 16 September 2021 (**BDAR**), stated the total amount of direct clearing required for the Project is around 1,226 ha, including 616.4 hectares (**ha**) of surface disturbance previously approved under Stage 2 and 609.5 ha of surface disturbance under the current Application, of which 547 ha is classified as native vegetation (AR para 270). The BDAR also considered indirect impacts with 70 ha of native vegetation requiring offsetting as a result of indirect impacts.
186. Progressive rehabilitation is proposed to reduce the duration of the impacts of direct clearing of native vegetation during the Project life. The Commission notes that recent amendments to the *Mining Regulation 2016* have also introduced standard conditions for mining leases requiring that rehabilitation is to occur as soon as reasonably practicable following disturbance (AR para 266).
187. The BDAR contains a Biodiversity Offset Strategy (**BOS**) which outlines how the Applicant will offset the Project's impacts on biodiversity, in accordance with the NSW Biodiversity Offsets Scheme (**Offsets Scheme**), established under the *Biodiversity Conservation Act 2016* and its regulations (AR para 282). The BDAR assessed the Project's ecosystem credit requirements arising from both direct clearing and indirect impacts. Table 7, Table 8 and Table 9 in the AR list the ecosystem and species credit required due to impact by the development.
188. The Applicant proposes to stage the retirement of ecosystem and species credits. In its submission to the Department, dated 14 October 2021, Biodiversity, Conservation and Science Directorate of the Department (**BCS**) has indicated that it is satisfied with the BDAR and accepts the Applicant's proposal for the staged retirement of credits.
189. The Applicant has sought a reduction in biodiversity credits for the Project due to its commitment to no longer disturb 14.1 ha of native vegetation that it has approval to clear under the Existing Approval (AR para 291). In its advice, dated 14 October 2021, BCS states the following:
- Given that NCOPL have not demonstrated that the current total offset requirement for Narrabri Underground Stage 2 has been met and secured under an appropriate security mechanism BCS does not support requests by NCOPL for any potential reduction to the offset credit obligation for Stage 3.*
190. BCS has recommended that instead of a reduction in biodiversity credits, "*the request for a credit reduction should be reflected by a commensurate decrease to the area NCOPL is required to conduct mine rehabilitation and secure under a long-term security mechanism for Stage 2 in the project consent*". The Department agrees with BCS, recommending a reduction ratio of 2.6:1 as the offset requirement was first established at this ratio (AR para 293).
191. The Commission notes that BCS have provided comment on revisions to credit calculations for the Glossy Black-Cockatoo. The BDAR notes that the methodology for mapping a species polygon for the Glossy Black-Cockatoo was revised during the assessment process and the new methodology would result in reducing the number of credits required. The final credit obligation would therefore need to be revised. In its response to BCS advice, dated 29 October 2021, the Applicant stated that it expects that the possible change in credit obligation could be conditioned.

192. The Commission acknowledges that concerns were raised in submissions regarding the proposed clearing and subsequent loss of mature trees and the impact the Project would have on the Pilliga Forest. However, the Commission agrees with the Department that the impacts on biodiversity values from direct clearing and indirect impacts could be suitably avoided, mitigated and/or offset (AR para 319). To ensure that biodiversity impacts are appropriately managed, the Commission has imposed conditions B42 – B44 requiring preparation and implementation of a Biodiversity Management Plan (**BMP**). The BMP would be integrated with other management plans, including the Rehabilitation Strategy (referred to in condition B63) and the Rehabilitation Management Plan (referred to in condition B65), allowing for progressive rehabilitation.
193. With respect to biodiversity credits, the Commission has imposed conditions B39 – B41 which set out specific biodiversity credit requirements that must be retired by the Applicant. The Commission notes the conditions include allowance for revision to species credits for the Glossy Black-Cockatoo pending the undertaking of additional targeted surveys.
194. In regard to the request to reduce biodiversity credits in respect of the 14.1 ha of native vegetation clearing which was approved under the Existing Approval that is no longer being disturbed, the Commission agrees with BCS and the Department for the reasons set out above at paragraph 189 and 190 and is of the view that a reduction in biodiversity credits should not be granted. Instead of a reduction to biodiversity credits, the Commission imposes conditions B45 and B46 which reduce the area of land the Applicant is required to conduct mine site rehabilitation by 14.1ha.

5.7 Care and Maintenance, Rehabilitation and Mine Closure

195. The Commission notes that rehabilitation and mine closure is currently managed by conditions under the Existing Approval, conditions on the mining lease and regulations for mine site rehabilitation under the *Mining Act 1992*. Conditions of consent in the Existing Approval require the development and preparation of a Rehabilitation Management Plan and a Mine Closure Plan (AR Table 12).
196. The Department states that rehabilitation aims to “*reinstate the cover and connectivity of native woodland and re-establish agricultural land to a land capability comparable to the pre-disturbance environment*” (AR Table 12). As described at paragraph 186, progressive rehabilitation is proposed in order to reduce the impact of direct clearing of native vegetation.
197. The Commission acknowledges that concerns were raised in submissions regarding the proposed rehabilitation specifically that it occurs too late. However, the Commission is of the view that mine rehabilitation can be managed through conditions of consent and that the Site is capable of being progressively rehabilitated. The Commission has therefore imposed condition B61 which sets out specific rehabilitation objectives for the Project. Condition B62 imposed by the Commission requires the Applicant to rehabilitate the Narrabri Mine progressively. Conditions B63 and B64 imposed by the Commission require the Applicant to prepare and implement a Rehabilitation Strategy to the satisfaction of the Planning Secretary. The Commission has also imposed condition B65 which states that the Applicant must prepare a Rehabilitation Management Plan for the development, in accordance with the conditions imposed on the mining lease(s) associated with the Narrabri Mine under the Mining Act.

198. In the Commission's meeting with the Department, the Department provided overview of the process should the Project go into 'care and maintenance'. The Department stated that the Resources Regulator is the lead agency for mine rehabilitation and that "Under the Mining Act, the Minister must formally approve the suspension of mining operations". The Department also noted that 'care and maintenance' only relates to the extraction components of the Project and that the Applicant will still be required to comply with other mining lease conditions and prepare revised mine operation plans which include rehabilitation requirements.

5.8 Economics

Economic Benefits and Impacts

199. The Applicant's EIS was accompanied by an Economic Assessment prepared by AnalytEcon Pty Ltd with reference to the Economic Guidelines. The assessment included a cost benefit analysis (**CBA**) and a local-effects analysis (**LEA**).
200. The Applicant's CBA indicates that the Project would have an estimated net benefit over 23 years of \$599 million (NPV) to the NSW economy which includes (Economic Analysis, Table ES-1):
- royalties of \$259 million (NPV);
 - NSW residents' share of company tax of \$177 million (NPV); and
 - NSW shareholders' share of the net producer surplus of \$163 million (NPV).
201. The CBA does not include any allowance for economic benefits to NSW via suppliers of services to the Project. However, the Economic Assessment considers these benefits are likely to be significant.
202. The Project's operational workforce is based on its projected peak, which is 520 full time equivalent (**FTE**) personnel. However, the Economic Assessment projects that the Applicant would employ an average of 370 FTE personnel between 2022 and 2044. The Commission notes that the additional employment benefits of the Project are concentrated in the second half of the Project life. (AR para 409).
203. According to the Department, indirect costs were considered and appropriate allowances were included in the CBA. The Commission notes that examples of indirect costs include subsidence remediation works; purchasing water licences, undertaking make good works, costs associated with mitigating GHG emissions, and other environmental management and mitigation costs (AR para 408).
204. The Department's AR states: "*The cost benefit analysis included a sensitivity analysis which considered the estimated net benefits of the Project to be robust. The sensitivity analysis found that the estimated net benefits of the Project generally remained strongly positive under a variety of circumstances*" (AR para 410). The Applicant's Economic Assessment stated that analysis indicated that all coal prices over the life of the Project would need to be reduced by 62% to result in a net benefit to NSW of \$0.
205. Mining, Exploration and Geoscience (**MEG**), in its advice to the Department dated 4 December 2020, stated that the Project represents an efficient development and utilisation of coal resources which will foster significant social and economic benefits. MEG stated: "*MEG is satisfied that, should the operational outcomes be achieved, the proposed mine design and mining method submissions adequately recover resources and will provide an appropriate return to the state*". In its advice to the Department on the submissions and Amendment Report MEG raised no further issues.

Local Effects Analysis

206. The Applicant's LEA estimates that the Project, relative to the Reference Case for the local operation workforce, would lead to an increase in disposable income of \$55 million (NPV) for the local region and \$30 million (NPV) for the Moree-Narrabri Region (Economic Assessment, page 60).
207. The Applicant's LEA states that the Project, relative to the Reference Case, would lead to additional operating expenditures of \$65 million (NPV) in the local region and \$43 million (NPV) in the Moree-Narrabri Region (Economic Assessment page 62, AR para 418).
208. The Department states that local rates paid by the Applicant to NSC also represent a direct benefit to the local region. The Project would lead to local rate payments of \$3.9 million (NPV), \$1.8 million (NPV) higher than the Reference Case (AR para 419).
209. As set out above, the Project would employ an average of 370 FTE personnel between 2022 and 2044. This translates to 99 FTE workers from the local region, or an annual average of 51 in the Moree-Narrabri Region (AR para 421).
210. At the Public Hearing, the Applicant provided an overview of its sustainability highlights for the 2021 financial year and noted that in relation to indigenous employment, 9% of the Applicant's total workforce identify themselves as being of Indigenous heritage. The Commission heard from speakers at the Public Hearing and received written submissions highlighting the importance of increased employment opportunities for the indigenous community. The Applicant also stated at the Public Hearing that approximately 12.4% of its workforce is female and noted that they offer sustainable long-term rewarding career opportunities in regional Australia with a strong focus on creating pathways for young people to remain in the region.
211. The Commission also heard from speakers at the Public Hearing that emphasised the importance of the mine for the local economy through both direct employment and support of local businesses. The Commission acknowledges that submissions also raised the importance of having both mining and agriculture in maintaining a diverse regional economy.

Costing of GHG Emissions

212. The Applicant's Economic Assessment considered that the Project would lead to the emission of an additional 18.6 Mt CO₂-e. Based on the proportion of the NSW Gross Sales Product as a percentage of World Gross Domestic Product, the Economic Assessment calculated GHG emissions attributable to NSW as 0.06 Mt CO₂-e, with a corresponding environmental cost of \$0.86 million (NPV) (AR para 411 and 412).
213. The Department gave consideration to previous determinations made by the Commission and the Commission's views on the methodology used in calculating the cost of GHG emissions. The Department in its assessment concluded that the apportionment of the full GHG emission costs to NSW would substantially decrease the Economic Assessment's estimates of a direct benefit to NSW of \$599 million (AR para 415).
214. As set out in paragraph 65 above, the Commission wrote to the Department seeking advice as to why the Department considers that an independent economic assessment is unwarranted. The Commission in the Public Hearing also asked the Department to provide a response to the LTG questions as referenced in paragraph 66 above.

215. The Commission notes that the key guidelines for cost benefit analysis in NSW are the “*Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals, December 2015*” (Economic Guidelines) and the associated Technical Notes (April 2018). The Technical Notes include *Technical Note 9 (Greenhouse Gas Emissions)* which sets out the preferred approach for estimating and costing GHG emissions (Department’s Response, page 7).
216. The Department in its response to the Commission stated: “*A key requirement to the Economic Guideline and Technical Notes is that the CBA should apply the costs and benefits to NSW only – this is an important principle and applies in ensuring there is an equitable approach in assigning both costs and benefits on both sides of the CBA ledger*”.
217. Page 48 of Technical Note 9 states that proponents should provide an analysis of:
- *Their business as usual GHG emission output (central estimate) and the expected emissions profile of this central estimate (Scope 1 and Scope 2)*
 - *Estimate the economic impact of GHG emission output to NSW only*
 - *Undertake a sensitivity analysis on anticipated GHG emissions output (Scope 1 and 2) at carbon prices below and above the central estimate price*
- The value of the externality is limited to the impact on NSW, consistent with the Guidelines and how all other costs/ benefits are measured within the CBA. As noted in the Guidelines, the focus is on the costs and benefits of the project as they relate to the community of NSW.*
218. The Department stated: “*the Technical Notes identify that apportionment of GHG emissions from an individual development in NSW is appropriate, in line with the apportionment of benefits, as a fundamental approach in the CBA*” (Department’s Response, page 7).
219. The Commission notes that on 17 February 2022 the Applicant provided the Department (at the Department’s request) an Updated Economic Assessment, prepared by AnalytEcon Pty Ltd. The Updated Economic Assessment provides alternative apportionment by allocating full GHG emission costs to Australia and apportioning by population to NSW using a central, low and high carbon price. The updated information also incorporates post closure emissions and consideration of revisions to GWP.
220. Table 1 of the Updated Economic Assessment provides an alternative project emissions valuation. The Department’s Response provides the following summary: “*Under this approach under the central carbon price scenario the net benefit is reduced from \$598 to \$462 million, the high carbon price is reduced to \$341 million and the low carbon price is reduced to \$506 million – that is, under all scenarios a substantial net benefit is realised*” (Department’s Response, page 9).
221. The Department’s Response also examined an alternative scenario for apportioning all costs to NSW only, which on the data provided would lead to “*a net benefit of \$167 million for the central pricing scenario, \$307 million at a low carbon price, and negative \$212 million for the high carbon price*”.
222. The Department further stated: “*even with consideration of the range in net benefits due to applying sensitivity of key parameters and apportionment of GHG emissions, and applying the central carbon pricing scenario, the Project would provide substantial benefits to NSW*” (Department’s Response, page 9).

Commission's Findings

223. As set out above, the Commission notes that current NSW Government policy recognises the demand for coal and its importance to the NSW economy and the regions it is located in, and that the NSW Government's current strategic direction seeks to continue coal exploration, extraction and export. The Commission notes that in the NSW Strategic Statement, the NSW Government recognises the ongoing demand for coal, particularly in the Asian export market, where demand for Australian high quality thermal coal will continue because of its ability to be used in high efficiency coal-fired electricity-generating facilities. The Commission acknowledges that the Project proposes to sell coal products almost exclusively to the Asian market.
224. The NSW Strategic Statement also states that the NSW Government will recognise existing industry investment by continuing to consider responsible applications to extend the life of current coal mines. Although the NSW Strategic Statement is not prescriptive in binding the Commission, the Commission is nonetheless of the view that the Project represents a reasonable and responsible extension to the life of an existing coal mine that would enable the economic and beneficial reuse of existing infrastructure.
225. The Regional Plan acknowledges that mining activities need to be undertaken sensitively to minimise negative impacts on the environment. Speakers at the Public Hearing raised the importance of mining and agriculture working side by side. The Commission acknowledges that for underground mining projects such as this, agriculture and mining are capable of being compatible land uses. The Commission also recognises the economic benefits associated with having a diverse regional economy.
226. The Commission accepts – as submitted at the public hearing – that the Applicant's anticipated company tax contribution (attributed to NSW) of \$177M may be overstated. The Commission also accepts that a lower than anticipated company tax contribution would have consequences for the CBA calculations undertaken by the Applicant and the Department, particularly if that company tax contribution is nil.
227. Nonetheless, the Commission finds that limited weight should be given to consideration of company tax contributions in any event. The Applicant's management of its tax affairs is a matter for the Applicant and the Commonwealth and beyond the Commission's jurisdiction. Further, the development consent for the Project will run with the land and any successor to the present Applicant may have a different corporate structure with consequential differences in its company tax contributions. Accordingly, the Commission has proceeded on the basis that the company tax benefit for NSW realised from the Project could be a figure up to \$177M, with a possibility that those benefits could be considerably lower – or, indeed, higher than anticipated.
228. Although cost benefit analyses are not the sole indicator of the economic benefits to be derived from the Project, the Commission has been assisted in its consideration by the scenarios put to it by the Department, the Applicant and in public submissions.
229. The Commission notes that the Applicant and Department's CBA were the subject of public submissions to the effect that the cost allocated to Scope 1 and Scope 2 GHG emissions was understated and inconsistent with the Economic Guidelines.
230. The weight the Commission has given to its consideration of the CBA has been qualified by a number of factors, including:
 - a) the substantial discount of future benefits and costs if a high discount factor is used (particularly when a project extends over several decades and is subject to significant external influences, such as the high variability in coal prices);

- b) commercial decisions about the conduct of the Project (within the scope of the law and the conditions imposed by the Commission) being a matter for the Applicant;
 - c) differing interpretations of the Economic Guidelines, which – among other matters – are contested with respect to how the cost of GHG emissions should be apportioned to NSW (see paragraph 231 below);
 - d) the potential unreliability of any calculation of anticipated company tax benefits (see paragraph 227 above); and
 - e) the potential impact of the Commission’s imposition of GHG emission conditions (see paragraphs 176 - 182 above) on the calculation of GHG related costs of the Project.
231. Regarding the differing interpretations of the Economic Guidelines, the Commission notes the Applicant’s approach in the 17 February 2022 AnalytEcon Updated Economic Assessment. This approach provides for the apportionment of the global cost of Project GHG emissions to NSW on the basis of NSW’s share of world GDP. The Economic Guidelines are not legislation and are open to differing interpretations. The Panel of the Commission constituted for the present Application accepts that different interpretations may be adopted, including by other Panels of the Commission (equally, other Panels of the Commission have adopted the present Panel’s approach). Consequently, the Panel has also given consideration to other approaches to the cost benefit analysis put by the Department in the Department’s Response.
232. In the central and low cost carbon price scenarios provided by the Department, substantial net benefits to NSW are to be derived from the Project. The Commission notes that in the Department’s view a positive net benefit in the high carbon price scenario would be predicted by apportioning net surplus benefits to NSW shareholders (Department’s Response, page 9).
233. Even if the Commission accepted that the Application was likely to have a negative NPV, the Economic Guidelines acknowledge that such a project could be in the public interest if *“unquantified factors are positive”*. As the Commission does not accept that the Project is likely to have a negative NPV, detailed examination of such *“unquantified factors”* in this Statement of Reasons is unnecessary, but in such a case the Commission would give weight to the positive social benefits of the Project (see paragraph 241 - 242 below).
234. The Commission also finds that the Project will have a positive economic impact in relation to employment through the provision of up to an average of 370 FTE personnel between 2022 and 2044, translating to 99 FTE workers in the local region, or an annual average of 51 in the Moree-Narrabri Region. The Commission acknowledges the importance of indigenous employment in regional areas and recognises that the Project would also play a role in providing employment for women and in creating long term career opportunities for young people in the region.
235. Overall, the Commission finds that on balance and when weighed against the impacts, the Project is likely to generate net positive economic benefits for the local area, Moree-Narrabri region and to NSW more broadly through employment, royalties and tax revenue.

5.9 Social Costs and Benefits

236. The EIS was accompanied by a Social Impact Assessment (**SIA**), prepared by CDM Smith in accordance with the SIA Guidelines. The SIA noted that as the Narrabri Mine is an existing mine approved to operate until 2031, the Narrabri Mine (to 2031) is part of the existing social baseline. On that basis, the SIA analysed the impacts related to the Project, including the proposed mine life extension to 2044 and the geographic extension to the south of Existing Operations.

237. CDM Smith undertook a local community survey which identified that there is concern regarding the effects of mining on environmental and social values (AR para 432). The Commission heard presentations at the Public Hearing which expressed concern with the social impacts of the mine, stating that the mine does not listen to the local communities' concerns and has a history of infringements. Consultation also indicated that noise, dust, visual amenity and odour are of key concern to the local community in the vicinity of the Site (AR para 433).
238. The Project would involve no change to the maximum operational workforce at the Narrabri Mine (up to 520 FTE) with up to 20 additional workers required during construction of the Project over multiple short periods. The Department stated that the additional workforce would be unlikely to result in any significant change to population. (AR para 436). The Applicant's amendment report states that, given the Project would not materially change the existing workforce at the Narrabri Mine, impacts on the community and social infrastructure and services were found to be limited. The Department states that *"By continuing to provide a substantial number of employment opportunities between the period 2031 and 2044, which would also support retention of other employment, it is likely that the Project would support continued provision of important services for the broader community, particularly in the health and education sectors"*.
239. In relation to sense of place, the SIA states that the Project maintains a change in the community's sense of place from agricultural activities to extractive industries. The SIA also states that *"While this change has been underway for some years, the proposed 13-year mine life extension would contribute in a small way to an ongoing change to sense of place"*. The Department states that the Project would represent a confirmation of change in the local character, which has been taking place for many years.
240. As stated in paragraph 210 above, the Commission heard from speakers and the Public Hearing and received written submissions highlighting the importance of increased employment opportunities for the indigenous community. The Commission also acknowledges that 9% of the Applicant's total workforce identify themselves as being of Indigenous heritage as stated by the Applicant at the Public Hearing.
241. The Commission is of the view that the Applicant has assessed the social costs and benefits of the Project in significant and sufficient detail. The Commission agrees with the Department as quoted above and is of the view that the impact of the Project on the demand for local services would be very limited and the additional social costs of the Project are low and are outweighed by the social benefits associated with permanent and construction-related employment.
242. The Commission agrees with the Applicant that the Project would also continue to support community wellbeing through continued community contributions supporting positive social outcomes, social infrastructure investments and/or community resilience improvements (EIS page 6-122). The Commission also acknowledges that the Applicant would implement a variety of mitigation and adaptive management measures to limit, manage and monitor the social impacts of the Project.

5.10 Noise

243. The Applicant's EIS was accompanied by a Noise Assessment, dated June 2020. The Noise Assessment was undertaken in accordance with the NPfI and assessed the noise from the continued use of the existing surface facilities and new facilities. The EPA in its advice to the Department dated 8 December stated that the methodology and conclusions of the Noise Assessment were adequate.

244. Concerns were raised during the Public Hearing and in written submissions regarding the potential noise impacts at receivers to the south of the Site closest to the proposed ventilation infrastructure (see paragraph 63 above). The Commission notes that the Applicant proposes mitigation measures set out in Section 4.2 of the Noise Assessment. As part of these measures, ventilation fans are proposed to be banded when located in the vicinity of a receiver. The Applicant also proposes to install the ventilation fans 'off-axis' to the north-west to limit noise impacts on the south-eastern receivers (694a, 695a). (page 25, Noise Assessment).
245. According to the Department, the Noise Assessment indicates that, under adverse meteorological conditions, the Project would meet the PNTLs established in accordance with the NPfl at all nearby residential receivers, bar four. One receiver (601a) is subject to significant exceedances and would be entitled to both voluntary acquisition and voluntary noise mitigation measures under the VLAMP. The Commission notes that the Applicant has acquired this property. Marginal or moderate exceedances are predicted in the night period or both the evening and night periods for two receivers (670a and 675a). The Commission notes that the Applicant has entered into private agreements with the owners of both these residences such that they would accept these exceedances. The fourth receiver (687a), would experience noise levels 0-2 dBA above the PNTL during the night-time period. The Commission notes that exceedances of the PNTL by 1-2 dB(A) are deemed to be 'negligible' under the NPfl. (AR Table 12).
246. In relation to road noise, the Noise Assessment predicted that the road traffic noise levels resulting from Existing Operations and Project traffic movements would comply with relevant criteria set out in the RNP at all privately-owned receivers on the Kamilaroi Highway for all Project years. In relation to rail noise, the Noise Assessment stated that the Project would result in no change to peak or average daily train movements. In accordance with the RING, there would accordingly be no Project-related rail noise increase on the Werris Creek Mungindi Railway. (AR Table 12).
247. The Commission agrees with the EPA and the Department's assessment and is of the view that the methodology and conclusions set out in the Applicant's Noise Assessment are adequate. The Commission is of the view that the Applicant has reduced the Project's operation noise impacts where possible, through mine design and through the mitigation measures. The Commission has therefore imposed conditions B2 - B5 which require the Applicant to comply with specific noise criteria and operating conditions. Noise generated by construction must be managed in accordance with the requirements of the ICNG. The Commission has therefore imposed condition B1 which gives effect to this requirement. To ensure ongoing noise monitoring and management, the Commission has imposed conditions B6 – B8 which require the Applicant to prepare and implement a Noise Management Plan for the Project.

5.11 Air Quality

248. The Applicant's EIS was accompanied by an Air Quality and Greenhouse Gas Assessment which assessed of particulate matter emissions and other potential air quality impacts from the Project in accordance with the Approved Methods.

249. Potential sources of dust emissions include the Pit Top Area due to the handling of coal and wind erosion, upcast ventilation shafts, construction, roads, and ongoing and final rehabilitation. The modelling of future air quality impacts predicts “*the Project would not cause (or contribute to) any exceedance of any particulate matter criterion at any privately-owned receiver, including 24-hour average PM₁₀, 24-hour average PM_{2.5}, annual average PM₁₀, annual average PM_{2.5}, annual average total suspended particulates (TSP), or monthly and annual average dust deposition criteria.*” (AR Table 12).
250. The Application does not propose any changes to the existing mine’s rates of ROM coal production and transportation arrangements, with additional air impacts mostly expected from the new upcast ventilation shafts. As such, in addition to modelling future air quality impacts, existing background and mine modelling data has been assessed. Air quality monitors within the vicinity of the Project have collected data on dust deposition, TSP, PM₁₀ and PM_{2.5}. PM₁₀ concentrations are measured by two air samplers near the Pit Top Area and since 2014, the only exceedances of the 50 µg/m³ 24-hour average criterion recorded at these sites were in 2018 and 2019 and these recordings have been associated with either regional dust storms or bushfire events (AR Table 12).
251. The Applicant operates 11 dust deposition gauges in the vicinity of the Narrabri Mine and during the 2014 to 2019 period, there were no exceedances of the relevant criterion of 4 g/m²/month. In 2019 the mine recorded four complaints relating to odour from the Pit Top Area. The odour was found to have been the result of algal growth within some of the brine storage ponds, which the Applicant has since addressed. Spontaneous combustion of coal and coal wastes can lead to emissions of noxious gases and potentially unpleasant or offensive odours. While the coal and coal waste at Narrabri Mine does not have a high risk of spontaneous combustion, a number of spontaneous combustion events have occurred in the past (AR Table 12). The Department stated that any consent granted for the Project should include a requirement to prepare and implement a Spontaneous Combustion Management Plan.
252. The Commission agrees with the Department and is satisfied that the Narrabri Mine emits relatively low levels of particulate matter and other air pollutants and that the Project is unlikely to lead to any significant increase in these emissions (AR Table 20). The Commission is of the view that potential air quality impacts of the Project have been adequately assessed and has imposed conditions requiring mitigation and management of these impacts. The Commission has imposed conditions B10 – B12 which set specific air quality criteria and operating conditions for the Project. The Commission has also imposed conditions relating to air quality monitoring. Condition B12(d) required the Applicant to carry out regular air quality monitoring, that can differentiate between the incremental contribution of the project and that attributable to background contributions, to determine whether the development is complying with the relevant conditions of this consent. Condition B13 imposed by the Commission requires the Applicant to prepare and implement an Air Quality Management Plan in consultation with the EPA. The Applicant must implement the Air Quality Management Plan as required by condition B15.

253. The Commission acknowledges that risks associated with spontaneous combustion are low as referenced by the Department above (paragraph 251 above). The Commission agrees with the Department's assessment and has imposed conditions B21 – B23 which require the Applicant to prepare and implement a Spontaneous Combustion Management Plan. The Commission has also imposed a specific requirement in Condition B12(a)(ii) which states that the Applicant must take all reasonable and feasible avoidance and mitigation measures to eliminate or minimise the risk of spontaneous combustion.
254. The Commission also acknowledges that there have been previous complaints in relation to odour. The Commission has therefore imposed condition B9 which states that the Applicant must ensure that no offensive odours, as defined under the *Protection of the Environment Operations Act 1997* are emitted from the Site.

5.12 Traffic and Transport

Road Transport and Safety

255. According to the Department, the Kamilaroi Highway provides road access to the Narrabri Mine's Pit Top Area and the Project area. The Mine Access Road turns west from the Highway, and crosses both Kurrajong Creek Road and the Werris Creek - Mungindi Railway (at LX534) before reaching the Pit Top Area. The Commission notes that the Project would not change this general arrangement.
256. The Mine Access Road and its intersection with Kurrajong Creek Road and Kamilaroi Highway were constructed following approval of Stage 1 of the Narrabri Mine, in November 2007. Since this point, the number of employed staff and contractors at the mine has increased from a peak operational workforce of 113 employees to around 520 personnel (AR Table 12).
257. The EIS contained a Road Transport Assessment prepared by TTPP. According to the Department's AR (Table 12):
- *the levels of service experienced by drivers on the Kamilaroi Highway would remain good and drivers would experience little or no delay to their travel as a result of other vehicles;*
 - *the Project would not exacerbate existing road safety issues with the operation of the road network; and*
 - *no specific measures or upgrades are required to mitigate the impacts of the development on the capacity, safety and efficiency of the road network as a result of the changed road traffic conditions associated with the Project.*
258. TfNSW in its advice to the Department stated that, in both the southbound right-hand-turning storage lane and the northbound left-hand-turning storage lane, there is insufficient space to ensure that through traffic on the Highway is not presented with a safety hazard by stored vehicles extending into the through lanes, or vehicles rapidly decelerating to join the line of stored vehicles. TfNSW advised that any approval should be made contingent on further upgrade of the intersection, for road safety reasons. TfNSW and the Department accept that this road safety risk is likely to occur only occasionally – i.e. when peak mine-related traffic coincides with closure of the level crossing. This can occur during shift changeover times, if long, slow coal trains are either arriving or departing during those peak traffic periods. The Commission notes that the Applicant has accepted the agencies' position and has agreed to make a "*proportionate contribution*" to upgrade the intersection. (AR Table 12).

259. The Commission agrees with the Department and TfNSW that the intersection should be upgraded for road safety reasons. The Commission has therefore imposed conditions B67 and B68 which require the Applicant to maintain the intersection of the Mine Access Road with Kurrajong Creek Road and Kamilaroi Highway throughout the life and decommissioning of the development.
260. The Commission is of the view that traffic impacts can be appropriately managed for the duration of mining activities and has therefore imposed conditions B73 – B75 which require the Applicant to prepare and implement a Traffic Management Plan in consultation with NSC and the Community Consultative Committee, to the satisfaction of the Planning Secretary. To address the concerns raised by TfNSW referenced above, the Commission has imposed a requirement in the TMP to ensure that mine shift changeovers do not (so far as is reasonable and feasible) interact with use of the Kurrajong Creek Road railway level crossing by arriving and departing coal trains. The Commission has also imposed a requirement for the TMP to include a Drivers' Code of Conduct to ensure that the Applicant's employees and contractors working at the mine adhere to and implement safe driving practices.

Rail Transport

261. Under Existing Operations all coal from the mine is transported via the Werris Creek Mungindi Railway to the Port of Newcastle with the Existing Approval eliminating the need for transport of coal by road. The Project does not seek to change this and would not increase the number of coal train movements, either per day or per annum (AR Table 12). The Commission notes that Australian Rail Track Corporation has indicated that there is sufficient rail capacity to accommodate the Project until 2044 (Table 12). The Commission agrees with the Department that the Project would not change existing impacts relating to transport of product coal by rail. To ensure that coal is only transported from the Site by rail, the Commission has imposed condition A9.

5.13 Aboriginal Heritage

262. An Aboriginal Cultural Heritage Assessment (**ACHA**) was prepared for the Project which identified a total of 60 Aboriginal cultural heritage sites within the Project Area, comprising of 36 surface artefact scatters, 22 isolated artefacts and two grinding groove sites. Five of the sites (including one set of grinding grooves) were assessed as being of moderate scientific or archaeological significance with the remaining sites being assessed as being of low scientific significance. A total of 11 Aboriginal stakeholders registered an interest in the Project (**RAPs**) and were consulted in relation to the ACHAR process (AR para 454 and 455).

263. The Department notes that the indicative surface disturbance footprint would avoid all known Aboriginal cultural heritage sites, with the principal risk to cultural heritage sites being from subsidence (AR para 457). The Commission notes a number of submissions raised concern about impacts to the cultural heritage of the grinding groove sites. The grinding groove site 'Mayfield GG1', which is located above LW 205, is considered to be most at risk of subsidence-induced impacts (AR para 460). Mayfield G11 is a small site, containing at least 48 grinding grooves ranging in condition from deteriorated to good (AR para 461). The Department notes that the Applicant did not propose substantial protective (i.e. avoidance) measures due to the significant costs associated with this method. Instead, the Applicant proposed a reactive method, with mitigation measures including monitoring of surface cracking and surface collection or open salvage excavation (if feasible) (AR para 467). The Department states that it considers these measures reasonable, "*particularly given what its view of a 'limited likelihood of significant impacts' at the site, the assessed moderate scientific value of Mayfield GG1, and the very high costs of the only feasible avoidance strategy*" (AR para 468).
264. Heritage NSW in its advice to the Department stated that it accepts the ACHAR assessment findings and considers that the Project will have minimal impact to Aboriginal cultural heritage. Heritage NSW acknowledges that some objects may be harmed by infrastructure development but recognises that the proposed mitigation to reduce harm is adequate.
265. The Commission agrees with the Heritage NSW advice above and the Department's assessment that the Project's overall impacts on Aboriginal cultural heritage are unlikely to be significant or widespread. The Commission is of the view that Aboriginal cultural heritage can be managed over the life of the Project and has imposed a range of conditions. Condition B47 imposed by the Commission states that the Applicant must ensure that the Project does not cause any direct or indirect impact on any identified Aboriginal object located outside the approved disturbance areas. Condition B48 imposed by the Commission imposes a stop work requirement stating that if any previously unknown Aboriginal object or Aboriginal place is discovered on the Site, or suspected to be on the Site, then all work in the immediate vicinity of the object or place must cease immediately, the object or area must be cordoned off and Heritage NSW must be contacted immediately. The Commission has also imposed condition B51 which requires the Applicant to prepare an Aboriginal Cultural Heritage Management Plan in consultation with Heritage NSW and RAPS. The Applicant must implement this plan under condition B53.

5.14 Historic Heritage

266. The Applicant's EIS contained a Historic Heritage Assessment prepared by Niche Environment and Heritage. A review of heritage registers and a site inspection found no items of State or local heritage significance within or close to the Project area and found the area has no identifiable heritage values, with no areas of significance or archaeological potential identified. Due to significant disturbance of the ground surface from previous agricultural practices, the Historic Heritage Assessment considered it unlikely that any remains of historic value could be exposed or impacted during Project activities (AR para 471, 472 and 473).
267. The Department accepts the Applicant's conclusion that the Project would therefore have no direct or indirect impact on any items or areas of heritage significance and would not affect the heritage values of the Narrabri region (AR para 474). The Commission has therefore not imposed any conditions in respect of historic heritage.

5.15 Visual Impacts

268. The Applicant has considered the potential impacts of the Project in the context of modifications to existing visual elements of the mine and the extent to which viewers may have become accustomed to existing modifications (AR Table 12). Elements of the mine which have visual impact potential include the Pit Top Area, flares, night-lighting, ventilation complexes and other surface infrastructure.
269. The Department states that there were no community and special interest group objections relating to visual impacts (AR para 429) and no agency advice expressing concerns relating to predicted or potential visual impacts (AR Table 12). The Department describes visual impact management and mitigation measures including the existing amenity bund adjacent to the Pit Top Area; the rehabilitation of land following the progressive decommissioning of surface infrastructure; enclosed flaring which would reduce luminosity; and mitigation measures to reduce potential impacts of night-lighting (AR Table 12).
270. The Commission agrees with the Department that the visual impacts of the Project are very low, particularly given the Project is an extension to an existing underground mine. The Commission has therefore imposed condition B54 which sets out specific requirements for visual amenity and lighting. Under condition B54 the Applicant must take all reasonable and feasible steps to minimise the visual and off-site lighting impacts of the development.

5.16 VPA

271. The Commission notes that both NSC and GSC have requested that the Applicant enter into a VPA. In July 2021, the Applicant wrote to both NSC and GSC offering each a VPA, with the contribution based on a formula that considered the primary residence of the mine's workforce, vehicle movements from the mine, the location of the project, and the total amount to be shared between both councils (AR para 443).
272. The VPAs with both NSC and GSC are yet to be finalised. In its meeting with the Commission, NSC suggested a condition be included in the consent that would require the Applicant to make a contribution under section 7.12 of the EP&A Act if the Applicant and Council don't enter into a planning agreement within a specific timeframe. GSC, in its meeting with the Commission, also raised concerns regarding the VPA stating that irrespective of figures, GSC is of the view that the VPA reflects the impact on the community both in total quantum and how it is distributed.
273. The Commission notes the offers the Applicant has made to NSC and GSC. The Commission has imposed condition A18 requiring the Applicant to enter into Planning Agreements with NSC and GSC in accordance with the terms of the Applicant's aforementioned offer.

5.17 Waste

274. NSC in the meeting with the Commission on 4 February 2022 NSC noted that waste management is becoming of increasing community concern and requested that the Commission consider imposing a requirement for a waste management plan should the Application be approved. The Commission is of the view that Project waste is capable of being managed through conditions of consent and has imposed condition B55 which states that the Applicant must take all reasonable and feasible steps to minimise the waste (including coal rejects and tailings) generated by the development. All waste must be disposed of at appropriately licensed waste facilities. The Commission is of the view that this condition is sufficient and that a waste management plan is not required.

6 THE COMMISSION'S FINDINGS AND DETERMINATION

275. The views of the community were expressed through public submissions and comments received (as part of exhibition and as part of the Commission's determination process), as well as in oral presentations to the Commission at the Public Hearing. The Commission carefully considered all of these views as part of making its decision.
276. The Commission has considered the Material before it as set out in section 5 of this report. Based on its consideration of the Material, the Commission finds that the Project should be approved subject to stringent conditions of consent for the following reasons:
- impacts of subsidence and can be appropriately managed and mitigated;
 - the potential water quantity and quality impacts on regionally important groundwater aquifers as a result of mine operation and brine re-injection would not be significant and can be managed through conditions of consent;
 - the predicted surface water losses would not be significant and there would be minimal cumulative impacts to downstream water users as a result of the Project;
 - the make good provisions would be sufficient in adequately compensating affected groundwater users;
 - the predicted groundwater WAL entitlements for the Project have been appropriately modelled and the Applicant should be able to obtain all necessary entitlements for the predicted groundwater take;
 - including the requirement for further monitoring, the Applicant's proposed groundwater monitoring regime for the Project is appropriate and sufficiently comprehensive;
 - GHG emissions for the Project have been adequately estimated and are permissible in context of the current climate change policy framework;
 - opportunities exist for the Applicant throughout the life of the Project to deploy existing, emerging and future technologies to improve its abatement of fugitive emissions;
 - impacts on biodiversity values from direct clearing and indirect impacts could be suitably avoided, mitigated and/or offset;
 - mine rehabilitation can be managed through conditions of consent;
 - the Project represents a reasonable and responsible extension of to the life of an existing coal mine that would enable the economic and beneficial reuse of existing infrastructure. The Project is sufficiently likely to result in positive economic benefits;
 - the Project will have a net positive economic impact in relation to employment through the provision of up to an average of 370 FTE personnel between 2022 and 2044, translating to 99 FTE workers from the local region. The Project would provide long-term employment opportunities for indigenous workers, and for women and young people in the region;
 - on balance and when weighed against the impacts, the Project would generate net positive economic benefits for the local area, Moree-Narrabri region and NSW more broadly through employment, royalties and tax revenue;
 - the impact of the Project on the demand for local services would be very limited and the additional social costs of the Project are low and are outweighed by the social benefits associated with permanent and construction-related employment;
 - operational noise impacts have been reduced where possible, through mine

design and through mitigation measures. Noise generated by construction must be managed in accordance with the requirements of the ICNG;

- the Project is unlikely to lead to any significant increase in particulate matter and other air pollutants;
- traffic impacts can be appropriately managed for the duration of mining activities. There is no increase in the number of coal train movements, either per day or per annum and there is no change to existing impacts relating to transport of product coal by rail;
- the Project's overall impacts on Aboriginal cultural heritage are unlikely to be significant or widespread and can be managed over the life of the Project through conditions of consent;
- the Project would have no direct or indirect impact on any items or areas of heritage significance and would not affect the heritage values of the Narrabri region;
- visual impacts of the Project are very low and the Applicant must take all reasonable and feasible steps to minimise the visual and off-site lighting impacts of the development;
- the Project is a legal and appropriate use of land under the applicable EPIs;
- the Site is suitable for the development;
- the Project is in accordance with the Objects of the EP&A Act;
- the Project is not inconsistent with the ESD principles, because it would achieve an appropriate balance between the relevant environmental, economic and social considerations, and
- the Project is in the public interest.

277. For the reasons set out in paragraph 276, the Commission has determined that the consent should be granted subject to conditions. These conditions are designed to:

- prevent, minimise and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance
- require regular monitoring and reporting; and
- provide for the on-going environmental management of the development.

278. The reasons for the Decision are given in the Statement of Reasons for Decision dated 1 April 2022.



Mary O'Kane AC
Chair of the Commission



Chris Fell AO
Member of the Commission



Snow Barlow
Member of the Commission

APPENDIX A

Table 6 - Main Components of the Project compared with Existing Approved Operations
(Source: AR Table 1)

Aspect	Existing Mine	Proposed (SSD 10269)
Mine Life	Until 26 July 2031	Until 2044
Mining Method	Underground extraction using longwall mining methods	No change
Coal Resource	Mining of the Hoskissons Seam	No change, with seam dipping to the south west
Underground Mining Layout and Geometry	Twenty longwall panels (LW 101 - 111 and LW 201 - 209), with 295 metre (m) wide panels for LW 101 - 106; and approximately 400 m wide panels for LW 107 - 111 and LW 201 - 209	No change to LW 101 – 111, LW 201 and LW 202. Major extensions of LW 203 - 209 to the south, approximately 400-410 m wide and 6.2 km long (total longwall panel length with extension would be around 10.2 km) Additional longwall panel (LW 210), approximately 415 m wide and 3.93 km long
Annual Production	Handling and processing of up to 11 Mtpa of ROM coal	No change
Total Coal Resource to be Recovered	Approved total ROM coal production of approximately 170 Mt, however, expected actual production, based on current mine planning, is approximately 145 Mt	ROM coal production of approximately 252 Mt (additional 82 Mt).
Mining Leases	Mining operations within ML 1609	Continued mining operations within ML 1609 Mining operations within two new mining leases.
Surface Development Footprint	Approximately 616 hectares (ha) of surface disturbance	609.5 ha of additional Surface Development Footprint to support underground mining
Underground Mine Surface Infrastructure	Ventilation shafts, pre-drainage and post-drainage sites, 'pre-conditioning' sites, access roads and electricity transmission lines	Establishment of two additional ventilation complexes Extension of existing gas drainage, 'pre-conditioning', mine ventilation systems, services corridors and boreholes, access tracks and electricity transmission lines in the new mining area
Underground Mine Access	Via three drifts at the box cut at the Pit Top Area	No change
Site Access	Primary access from the Kamilaroi Highway via a sealed mine access road to the Pit Top Area	No change
Coal Washing	CHPP and secondary crusher/screen	Continued use of existing facilities, with replacement or upgrades of components as required
Coal Handling and Stockpiling	ROM coal stockpile capacity of	No change

	approximately 700,000 tonnes (t) Product coal stockpile capacity of approximately 500,000 t	
Management of Mining Waste	CHPP rejects placed in reject emplacement area	Continued disposal of coal rejects in the reject emplacement area. Disposal of exploration drilling waste in the reject emplacement area, including potential receipt and disposal of exploration drilling waste products from off-site
Product Coal Transport	Product coal transported from site by rail Average of four trains per day with a peak of eight trains per day	No change
Water Supply	Make-up water demand to be met from: <ul style="list-style-type: none"> • mine dewatering; • runoff recovered from operational areas; and • licensed extraction from Namoi River and Namoi Alluvium 	No change
Water Management	Conducted in accordance with the Water Management Plan (including discharge under the conditions of EPL 12789 and development consent 08_0144	Water management strategy generally unchanged Development of Southern Mine Water Storage to the south of the new mining area
Electricity	Permanent mains power supplied via a spur line from a 66 kV powerline located to the east of Kamilaroi Highway. Power converted from 66 kV to 11 kV on-site and reticulated, using progressively developed 11 kV powerlines.	No change to key power supply infrastructure, but demand for mains power would increase. Continued progressive development of electricity transmission lines to service the extended underground mining area and associated surface infrastructure