Wongawilli Colliery Modification 2 - North West Mains Development

Submissions Report

Prepared for Wollongong Coal Pty Ltd
September 2021

EMM Sydney
Ground floor, 20 Chandos Street
St Leonards NSW 2065

T 02 9493 9500
E info@emmconsulting.com.au

www.emmconsulting.com.au

Wongawilli Colliery Modification 2 - North West Mains Development

Submissions Report

Report Number

J200053 RP 1

Client

Wollongong Coal Pty Ltd

Date

21 September 2021

Version

v4 Final

Prepared by

Thomas Frankham
Senior Environmental Scientist
21 September 2021

Approved by

Paul Gibbons
Director
21 September 2021

Table of Contents

Appendices

Tables

Figures

1 Introduction

1.1 Overview

Wongawilli Colliery (the Colliery) is an underground coal mine located approximately 15 kilometres (km) south-west of Wollongong within the Wollongong and Wingecarribee local government areas (LGAs), see Figure 1.1. The Colliery is currently under care and maintenance having stopped production in July 2019. The site is owned and operated by Wollongong Coal Pty Limited (Wollongong Coal). Wollongong Coal is majority owned by Jindal Steel and Power Limited (JSPL).

The Colliery operates under Project Approval 09_0161 (PA 09_0161) originally approved in November 2011 and subsequently modified in December 2015 (MOD1).

The Colliery is seeking Modification 2 (MOD2) to PA 09_0161 under section 4.55(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). MOD2 seeks to extend the life of the Colliery by 5 years to enable Wollongong Coal to continue development of the approved North West Mains Development (NWMD). Furthermore, the modification largely seeks approval to extend the length of the approved NWMD alignment to access the existing Wongawilli Ventilation Shaft 1 and minor surface activities.

The scope of the proposed modification is described in detail in the Modification Report (EMM 2020) and is summarised as follows:

- Extend the life of the mine by five years to enable Wollongong Coal to continue development of the approved NWMD.

  It is noted the Modification Report sought approval to 31 December 2025, however given the time elapsed since submission of the Modification Report, Wollongong Coal seek to clarify that approval is sought for a 5 year period following approval.

- Additional driveage and underground mains heading of approximately 2.9 linear km to access the existing Wongawilli Ventilation Shaft 1.

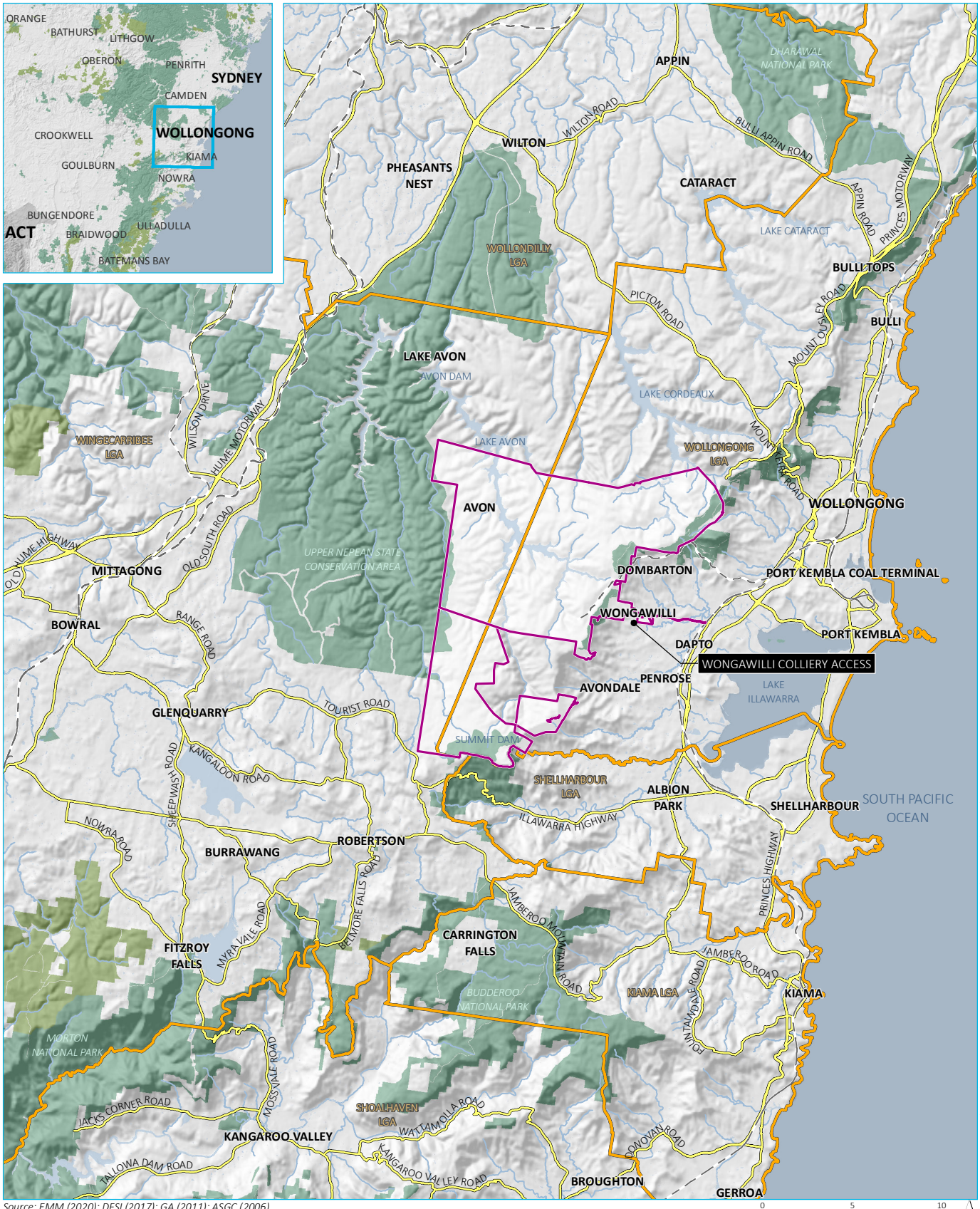
- Provide additional access to the NWMD to that currently approved via existing Portals W10 and W9.

- Minor alignment changes to the approved NWMD as ventilation infrastructure is no longer proposed at the western end of the approved NWMD alignment.

- Relocation of coal handling infrastructure including the crusher, sizer and screen from the Wongawilli lower pit top to underground.

- Construction of a new section of coal conveyor system, approximately 60 m in length, and coal storage bin at the Wongawilli upper pit top.

Figure 1.2 provides a conceptual layout of MOD2.



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

0 5 10 km

GDA 1994 MGA Zone 56

N

\\Emmsvr1\emm3\2020\J2000053 - Wongawilli Mod 2 NW Mains\GIS\02_Maps\MOD2\MOD001_RegionalLocation_20200921_01.mxd 21/09/2020

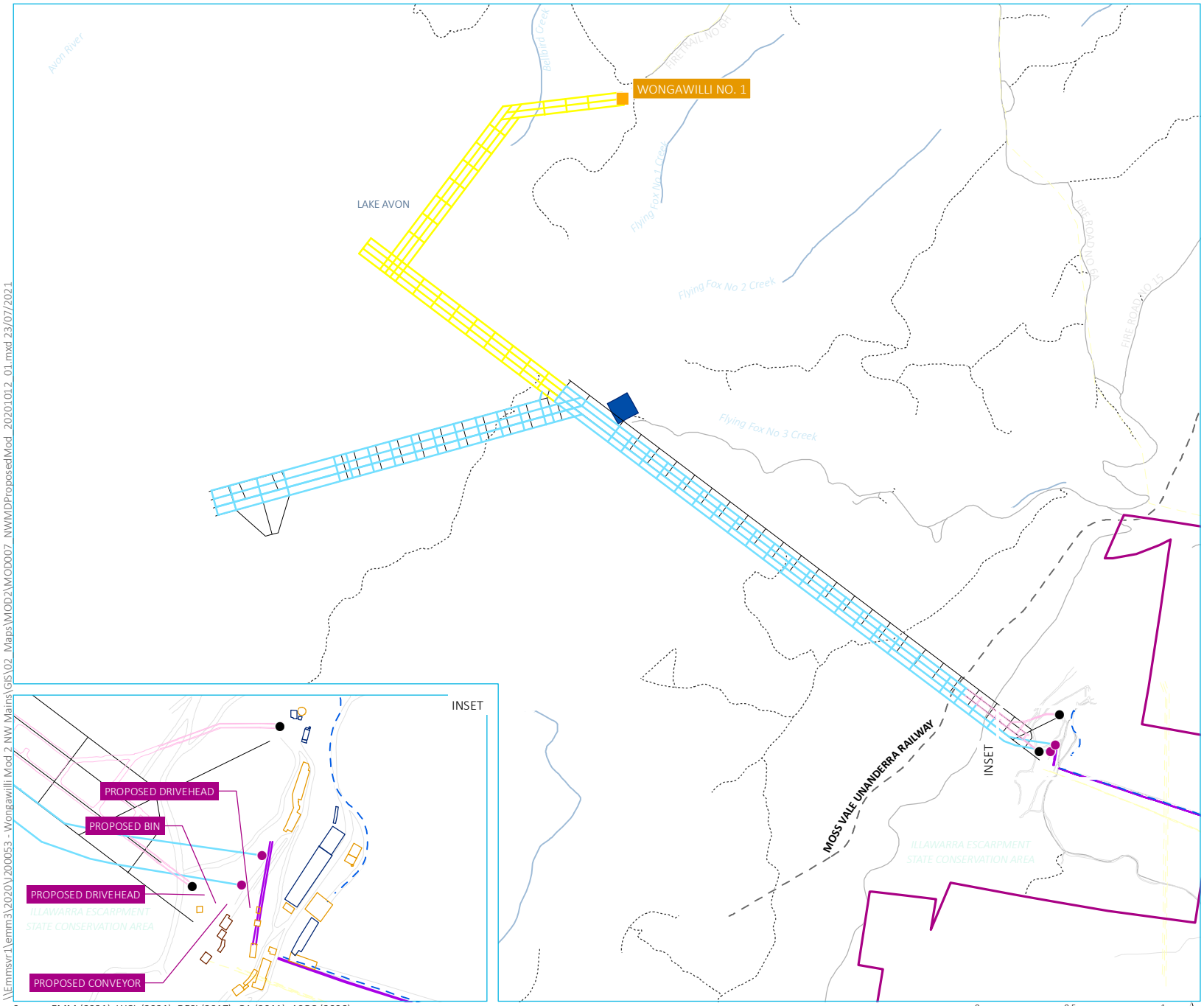
KEY

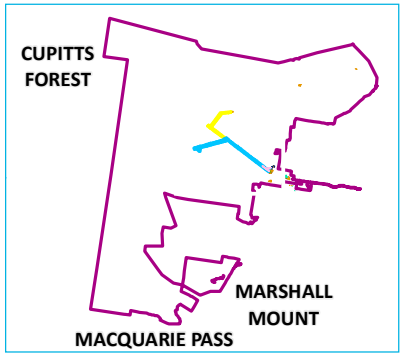
- Project application area
- Rail line
- Major road
- Named watercourse
- Waterbody
- Local government area
- NPWS reserve
- State forest

Regional location

Wollongong Coal Limited
Wongawilli submission report
PA09_0161 MOD 2 - North West Mains Development
Figure 1.1

EMM
creating opportunities





KEY

- Vent shaft
- Project application area
- Approved NWMD portal
- Additional NWMD access portal
- North West Mains Drivage completed workings
- Proposed additional drivage
- Proposed NWMD alignment
- Existing approved drivage
- Built infrastructure barrier
- Avon notification area
- Proposed surface infrastructure
- Existing surface infrastructure
- Site workshop/shed
- Historic mining infrastructure

Site infrastructure

- ETL - 33kV
- Access roads and tracks
- Conveyor belt
- Wongawilli Colliery rail

Existing environment

- Rail line
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve

Conceptual layout

Source: EMM (2021); WCL (2021); DFSI (2017); GA (2011); ASGC (2006)

\\Emmsvr1\emm3\2020\J200053 - Wongawilli Mod 2 NW Mains\GIS\02_Maps\MOD2\MOD007_NWMDProposedMod_20201012_01.mxd 23/07/2021

Wollongong Coal Limited
Wongawilli submission report
PA_0161 MOD 2 - North West Mains Development
Figure 1.2

[redacted]

1.2 Background

A Scoping Report was submitted to the NSW Department of Planning, Industry and Environment (DPIE) in March 2020. A response letter from DPIE dated 9 April 2020 confirmed that Department was satisfied with the issues identified in the Scoping Report to be addressed in the Modification Report (ie MOD2). A copy of the DPIE's correspondence regarding MOD2 was provided in Appendix A of the Modification Report.

The Modification Report seeks to modify PA 09_0161 (as modified) under Section 4.55(2) of the EP&A Act, as MOD2 is "substantially the same development" as that which was the subject of the Project Approval as modified by MOD1. Legal advice supporting this position was provided in Appendix B of Modification Report.

The Modification Report for MOD2 was submitted to the DPIE and then publicly exhibited for three weeks, from 11 February 2021 to 3 March 2021.

A total of 47 submissions were received during the public exhibition period, including 29 submissions from the community, 4 from organisations, and 14 from government agencies. A detailed analysis of the submissions, including matters raised, is provided in Chapter 2.

1.3 Purpose of this report

The DPIE requested Wollongong Coal prepare a Submissions Report (this report), detailing responses to issues raised during the public exhibition period, in correspondence to Wollongong Coal dated 8 March 2021.

This Submissions Report has been prepared pursuant to clause 82(2) of the NSW *Environmental Planning and Assessment Regulation 2000* and in accordance with the DPIE document *Guidance for State Significant Projects - Preparing a Submissions Report July 2021* (DPIE 2021).

The purpose of this report is to consider and respond to submissions made by various government agencies, organisations, and the community, in relation to the Modification Report for MOD2. This report also describes the additional activities undertaken by Wollongong Coal relating to MOD2 since exhibition of the Modification Report, including further technical studies undertaken, and stakeholder and community engagement activities carried out during the public exhibition period, and which the company continues to undertake.

All submission received in relation to MOD2 are responded to within this Submission Report. This Submissions Report has been prepared by EMM Consulting Pty Limited (EMM) and should be read in conjunction with the Modification Report (EMM 2020), which describes in full MOD2 for which approval is sought from DPIE.

1.4 Document structure

The Submissions Report consists of the main document and supporting appendices and is structured as follows:

- **Chapter 1 – Introduction**: Introduces MOD2, including providing an overview of the project, information about the project background, approval process, and the purpose and structure of this report.
- **Chapter 2 – Analysis of submissions**: Provides a detailed summary of the submissions received on MOD2, including from where the submissions were received, and the key issues raised.
- **Chapter 3 – Actions taken since public exhibition**: Describes the activities undertaken by Wollongong Coal since public exhibition of the Modification Report, including additional technical studies and stakeholder engagement activities.

- **Chapter 4 – Response to Government agency submissions**: Provides responses to matters raised by government agencies in their submissions on the Modification Report and the accompanying technical studies undertaken for the MOD2.

- **Chapters 5 – Response to organisation and community submissions**: Provides responses to matters raised by organisations and community members on the Modification Report and the accompanying technical studies undertaken for the project.

- **Chapter 6 – Updated evaluation of merits.**

- **Appendices**: The appendices to the Submissions Report which support the main document:

    - Appendix A – Submissions summary.

    - Appendix B – Register of submitters.

    - Appendix C – Updated proposed mitigation measures.

    - Appendix D – Revised Aboriginal Cultural Heritage Assessment Report.

    - Appendix E – Subsidence Letter Report.

    - Appendix F – Revised Statement of Heritage Impacts.

    - Appendix G – Updated Economics Letter Report.

    - Appendix H – Supplementary Groundwater Impact Assessment.

    - Appendix I – Supplementary Groundwater Impact Assessment Peer Review.

    - Appendix J – Surface Water Letter Report.

2 Analysis of this submissions

2.1 Public exhibition details

The Modification Report was publicly exhibited from 11 February 2021 to 3 March 2021.

2.2 Overview of submissions

Following the public exhibition of the Modification Report, 47 submissions were received by DPIE. Of these, 29 submissions were from the community (all of which were unique submissions), 4 from organisations, and 14 from government agencies. Approximately 24, or 83%, of the community submissions came from the Wollongong Local Government Area (LGA) where the mine development is located, and of these, 23 objected, with one submission providing support for MOD2.

Submissions are available to view on DPIE's website at the link below.

https://www.planningportal.nsw.gov.au/major-projects/project/31026

A breakdown of the submissions is provided in Table 2.1.

Table 2.1 Summary of submissions received

Source/type	Objects	Supports	Comment	Total
Government agencies	0	0	14[1]	14
Community (unique)	26	0	3[2]	29
Community (form letter)	0	0	0	0
Organisations	4	0	0	4
Total	**27**	**0**	**15**	**47**

The following NSW Government agencies provided submissions:

1. Wollongong City Council (WCC).
2. Crown Lands NSW (CLNSW).
3. Dams Safety NSW (DSNSW).
4. DPIE – Biodiversity and Conservation Division (BCD).
5. Heritage NSW (HNSW).
6. Heritage Council of NSW (HCNSW).
7. NSW DPIE - Mining Exploration and Geoscience (MEG).
8. NSW Resources Regulator (RR).

[1] Wollongong Coal notes that the submission lodged by TfNSW has been uploaded twice. Once under TfNSW then again under RMS.

[2] Wollongong Coal notes that one submission (Reference ID 775641) listed as comment by DPIE via the major project portal is likely misclassified. The submission notes support of MOD2. For the purposes of consistency Wollongong has accepted the allocation made by DPIE.

9. NSW Environment Protection Authority (EPA).
10. Roads and Maritime.
11. Subsidence Advisory NSW (SA).
12. DPIE Water.
13. Transport for NSW (TfNSW).
14. WaterNSW.

The following organisations provided submissions:

15. Oatley Flora and Fauna Conservation Society.
16. National Parks Association of NSW.
17. Sutherland Shire Environment Centre.
18. Lock the Gate Alliance.

2.3 Response methodology

All submissions received were collated and categorised based on who they were from, in accordance with the following categories:

- Government agency.
- Organisations.
- Community.

The submissions were reviewed, and the key matters raised in each submission identified. Matters raised in each submission were categorised by theme.

In accordance with DPIE's (2021) guideline, *Guidance for State Significant Projects - Preparing a Submissions Report July 2021*, each matter raised in submissions has been assigned to one of the following categories:

- The project (eg the site, the physical layout and design, uses and activities and timing).
- Procedural matters (eg level or quality of engagement, compliance Scoping Report requirements, identification of statutory requirements).
- The environmental, social or economic impacts of the project (eg noise, air quality, biodiversity, heritage, groundwater, surface water, Aboriginal heritage).
- The merits of the project (eg justification for the project, consistency with government plans, policies or guidelines).
- Issues that are beyond the scope of the project or not relevant to the project.

Each of these categories have been divided into sub-categories, which align with the content of MOD2 and technical assessments prepared as part of the Modification Report. Categories, subcategories and matters raised are shown in Table 2.2.

Table 2.2 List of matters raised in community, organisation and government agency submissions

Guideline category	Subcategory	Matter raised
The Project	Definition	Total extraction
		Life of mine and future mining activities
	Design (process / application)	Bushfire asset protection zones
		Mining application
		Clarification of conceptualisation of mining
		Approach to mine expansion
		Project should be considered as a new approval
		Consideration of total life of mine
	Design (technical element)	Mine expansion design
		Dyke intersection
		Mine Design
		Location of proposed mine works
		Mine shaft design
		Roadway design
		Hazards associated with the dyke intersection
		Operation
	Organisational	Wollongong Coal organisational reputation and financial history
		Compatibility with the community
		History of non-compliances
		Contribution to local area
	General	Revision of all mining leases and license
		Revision of draft conditionals of approval
		Development of Trigger Action Response Plans (TARPs)
		Development of Contingency Plan
Environmental, social or economic impacts of the project	Surface water	Surface water monitoring
		Threatened ecological community
		Stormwater run-off Section
		Impacts to drinking water catchment
		Mine water discharge
		Impacts to water security
		Impacts to water quality
		Impacts to surrounding dams
		Impacts to water levels
		Mining in areas of protected water catchment

Table 2.2 List of matters raised in community, organisation and government agency submissions

Guideline category	Subcategory	Matter raised
		Impacts to water security
		Impacts to Avon Reservoir
		Mine water discharge
		Official record of the cumulative impacts of mining on the Greater Sydney Water catchment and Lake Illawarra catchment
		Potential fracturing
	Groundwater	Monitoring and management
		Clarification of text and data in report
		Groundwater modelling
		Independent review
		Impact underwater catchment
		Impacts to groundwater levels
		Groundwater release into Lake Illawarra
		Groundwater depressurisation
		Impacts to Upland Swamp
		Amend groundwater report
	Air quality	Dust generation
	Greenhouse gas	Adequacy of air quality modelling inconsistent with NSW Government intention to reduce carbon emissions
		Contribution to GHG emissions
		Offsetting GHG emissions
	Climate change	Contribute to climate change
	Subsidence	Impacts to driveages in the Metropolitan Special Area
		Consideration of the NWMD and underlying old mine workings
		Monitoring and management post approval
		Potential impacts to Lake Avon
		Confirmation of subsidence uncertainties
		Future water infrastructure projects
	Noise	Modification considers the achievable noise levels
		Noise mitigation measures
		Construction noise impacts
		Noise impacts on residents
		Adequacy of noise impact assessment
	Traffic	Update of any traffic related agreements and approvals

Table 2.2 List of matters raised in community, organisation and government agency submissions

Guideline category	Subcategory	Matter raised
		Traffic volumes on road network
		Safety of road users
		Access road suitability for heavy vehicles
	Social	Impact to economy
		General social impacts
		Impact Illawarra's transition to sustainable industry and employment
		Withholding information from the Community Consultative Committee (CCC)
		Social impacts of mining under water catchment
	Heritage	Aboriginal community consultation
		Cumulative impacts on Aboriginal Heritage
		Amend Aboriginal Cultural Heritage Assessment Report (ACHAR)
		Prepare Aboriginal Heritage Management Plan
		Consideration of the Office of Environment and Heritage (OEH) guideline
	Biodiversity	Biodiversity offset
		Minimal to negligible impacts to aquatic biodiversity
		Impacts upland swamp
		Satisfactory Biodiversity Development Assessment Report (BDAR)
		Impacts on Endangered Ecological Community (EEC)
		Impacts to land and wildlife
	Economic	Economic return
		Incomplete economic assessment
		Carbon cost price
		Contribution to the economy
	Rehabilitation	Wollongong Coal has a history of not carrying out remedial environmental maintenance work
	General	Revision of management plans post approval
		Utilisation of resource
		Risks associated with the approval of the project
		Negative environmental consequences

Responses were prepared to each matter by Wollongong Coal and EMM, with input from technical specialists who prepared the relevant assessment for the MOD2. The Submissions Report study team was the same team that prepared Modification Report for MOD2.

2.4 Summary of matters raised in government agency submissions

2.4.1 Overview

Responses to the comments contained within the 15 respective state and local government agency submissions received are presented verbatim in Chapter 4, with each respective comment followed directly with a response.

2.4.2 Comments

A list of all the matters raised in the government agency submissions and the section of this report in which they are addressed is provided in Table 2.3.

Table 2.3 List of matters raised in government agency submissions

Guideline category	Subcategory	Matter raised	Where addressed in this Submission Report
The Project	Design (process / application)	Asset protection zones	Section 4.10.2
		Mining application	Section 4.10.2
		Clarification of conceptualisation of mining	Section 4.15
	Design (technical element)	Design	Section 4.10.3
		Operation	Section 4.6.2
	General	Revision of all mining leases and license	Section 4.13.1
		Revision of draft conditionals of approval	Section 4.13.1
		Development of TARPs	Section 4.6.3
		Development of contingency Plan	Section 4.6.3
Environmental, social or economic impacts of the project	Surface water	Surface water monitoring	Section 4.3.2
		Threatened ecological community	Section 4.10.1
		Stormwater run-off	Section 4.2.2
	Groundwater	Monitoring and management post approval	Section 4.7.3
		Clarification of text and data in report	Section 4.7.1
		Amend groundwater report	Section 4.7.2
		Groundwater modelling	Section 4.7.3
		Impacts to groundwater level	Section 4.15
		Independent review	Section 4.15
		Impacts to Upland Swamp	Section 4.10.3
	Subsidence	Inrush and Inundation risk assessment	Section 4.7.2
		Consideration of the NWMD and underlying old mine workings	Section 4.9

Table 2.3 List of matters raised in government agency submissions

Guideline category	Subcategory	Matter raised	Where addressed in this Submission Report
		Monitoring and management	Section 4.6.1 and Section 4.6.2
		Potential impacts to Lake Avon	Section 4.6.1 and Section 4.8
		Confirmation of subsidence uncertainties	Section 4.7.1
		Future water infrastructure projects	Section 4.7.1
	Noise	Modification considers the achievable noise levels	Section 4.2.1
		Noise mitigation measures	Section 4.2.1
		Construction noise impacts	Section 4.2.1
	Traffic	Update of any traffic related agreements and approvals	Section 4.4
	General	Revision of management plans post approval	Sections 4.2.3 and 4.8.3
		Utilisation of resource	Section 4.8.1
	Heritage	Aboriginal community consultation	Section 4.11.1
		Amend ACHAR	Section 4.11.1
		Prepare Aboriginal Heritage Management Plan	Section 4.11.1
		Consideration of the OEH guidelines	Section 4.10.2
		Cumulative impacts on Aboriginal Heritage	Section 4.10
	Biodiversity	Biodiversity offset	Section 4.8.1
		Impacts upland swamp	Section 4.10.3
		Satisfactory BDAR	Section 4.10.1
	Economic	Economic return	Section 4.8.2

2.5 Summary of matters raised in organisations submissions

2.5.1 Objections

A total of 11 different matters were raised within the organisation submissions objecting to the project. Where possible, a list of all matters raised within the organisation submissions and the section of this report in which they are addressed is provided in Table 2.4.

Table 2.4 List of matters raised in organisation submissions

Guideline category	Subcategory	Matter raised	Where addressed in this Submission Report
The project	Design (technical element)	Dyke intersection design	Section 5.9
		Mine expansion design	Section 5.9
	Design (process / application)	Piecemeal approach to mine expansion	Section 5.8

Table 2.4 List of matters raised in organisation submissions

Guideline category	Subcategory	Matter raised	Where addressed in this Submission Report
	Organisational	Wollongong Coal organisational reputation and financial history	Section 5.8
Environmental, social or economic impacts of the project	Surface water	Impacts to drinking water catchment	Section 5.7
		Mine water discharge	Section 5.7
		Impacts to water security	Section 5.7
		Impacts to water quality	Section 5.7
	Greenhouse gas	Contribution to GHG emissions	Section 5.1
		Offsetting GHG emissions	Section 5.1
	Economic	Incomplete economic assessment	Section 5.5
		Carbon cost price	Section 5.5
	Social	Impact to economy	Section 5.5

2.6 Summary of matters raised in community submissions

2.6.1 Origin of community submissions

The majority of community submission received were from within the Wollongong LGA, being approximately 83%. The remainder of the submissions, being approximately 17%, were received from the larger Sydney area. All submission received were unique in nature. No submissions were received from outside of New South Wales (NSW).

2.6.2 Overview

A total of 51 different matters were raised within the community submissions objecting to the project. Where possible, these matters were assigned to the relevant chapters of this report.

Matters raised in unique community submissions objecting to the project predominantly related to impacts to surface water and groundwater resources, reputational and financial history of Wollongong Coal, greenhouse gas (GHG) emissions, impacts on biodiversity and amenity-related impacts (including dust, noise and lifestyle).

2.6.3 Objections

A list of all matters raised within the community submissions and the section of this report in which they are addressed is provided in Table 2.5.

Table 2.5 List of matters raised in community submissions

Guideline category	Subcategory	Matter raised	Where addressed in this Submission Report)
The project	Definition	Total extraction of resource	Section 5.11
		Total life of mine and future mining activities	Section 5.11
	Design (Process / Application)	Project should be considered as a new approval	Section 5.10
		Consideration of total life of mine	Section 5.10
	Design (Technical Assessment)	Location of proposed mine works	Section 5.9
		Mine shaft design	Section 5.9
		Roadway design	Section 5.9
		Hazards associated with the dyke intersection	Section 5.9
		Mine expansion	Section 5.9
	Organisational	Wollongong Coals reputational history	Section 5.12
		Wollongong Coal financial history and stability	Section 5.12
		Compatibility with the community	Section 5.12
		History of non-compliances	Section 5.12
		Contribution to local area	Section 5.12
Environmental, social or economic impacts of the project	Surface water	Impacts to surrounding dams	Section 5.7
		Impacts to water catchment	Section 5.7
		Impacts to water levels	Section 5.7
		Mining in areas of protected water catchment	Section 5.7
		Impacts to water security	Section 5.7
		Impacts to Avon Reservoir	Section 5.7
		Mine water discharge	Section 5.7
		Official record of the cumulative impacts of mining on the Greater Sydney Water catchment and Lake Illawarra catchment	Section 5.7
		Potential fracturing	Section 5.7 and 5.9
	Groundwater	Impact underwater catchment	Section 5.7
		Impacts to groundwater levels	Section 5.7
		Groundwater release into Lake Illawarra	Section 5.7
		Groundwater depressurisation	Section 5.7
	Greenhouse gas	Contribution to GHG emissions	Section 5.1.2
		Offsetting GHG emissions	Section 5.1.2
		Adequacy of air quality modelling inconsistent with NSW Government intention to reduce carbon emissions	Sections 5.1
	Climate change	Contribute to climate change	Section 5.1.2

Table 2.5 List of matters raised in community submissions

Guideline category	Subcategory	Matter raised	Where addressed in this Submission Report)
	Air quality	Dust generation	Section 5.1.1
	Noise	Noise impacts on residents	Section 5.1.2
		Adequacy of noise impact assessment	Section 5.2.2
	Social	General social impacts	Section 5.6
		Impact Illawarra's transition to sustainable industry and employment	Section 5.6
		Withholding information from CCC	Section 5.6
		Social impacts of mining under water catchment	Section 5.2 and 5.7
		Impact the communities economy	Section 5.6
	Rehabilitation	Wollongong Coal has a history of not carrying out remedial environmental maintenance work	Section 5.12 and 5.13
	Biodiversity	Impacts on EEC	Section 5.4.1
		Impacts to land and wildlife	Section 5.4.1
	Economic	Contribution to the economy	Section 5.5
		Low carbon cost	Section 5.5
		Incomplete economic assessment	Section 5.5
		Local economic growth Economic viability	Section 5.5
	Traffic	Traffic volumes on road network	Section 5.3.1
		Safety of road users	Section 5.3.1
		Access road suitability for heavy vehicles	Section 5.3.1
	General	Risks associated with the approval of the project	Section 5.10 and 5.11
		Negative environmental consequences	Section 5

2.6.4 Comments

MOD2 received 1 comment, requesting further information regarding the accuracy of the predicted noise levels. This comment and a response has been addressed in Section 5.14.

2.6.5 Support

MOD2 received one community submission, identified as a comment, in support of the project, with regard to Wollongong Coal's effort to mitigate noise impacts from the existing mining activities and providing a safe working place for their employees.

3 Actions taken since submission of the Modification Report

3.1 Stakeholder Engagement

3.1.1 Introduction

Wollongong Coal has been actively engaging with stakeholders throughout the planning and approvals process of MOD2.

The purpose of the engagement has been to inform and to obtain feedback about MOD2 and the existing Colliery and has continued throughout the preparation of the modification report, into the public exhibition period and remains ongoing. Wollongong Coals' stakeholder engagement has been comprehensive to date and reflects the importance Wollongong Coal places on this aspect of its business and MOD2.

This section describes the additional consultation that has taken place since the public exhibition of the modification report.

3.1.2 Community Engagement

Wollongong Coal has actively sought to keep the local community informed and address possible concerns through a number of ways:

- Wollongong Coal has maintained a project website which provides a platform to communicate MOD2 updates whilst providing a platform for the community to engage with Wollongong Coal. The project website is inclusive of an interactive map in which community members can leave comments and queries for Wollongong Coal to respond to. A total of 10 comments have been received to date on the project website which have been responded to by Wollongong Coal representatives.

- Wollongong Coal has communicated MOD2 updates to the local community via the established CCC. The CCC has facilitated opportunities for community participation in MOD2, as well as the further development of productive working relationships between Wollongong Coal and the local community and stakeholder groups.

  The CCC generally meets quarterly and minutes from these meetings are published on the Wollongong Coal website (https://wollongongcoal.com.au/). Meetings of the CCC have continued since the public exhibition of the modification report. To date, three meetings of the CCC have been held since submission of the modification report, with one of these meetings attended by representatives of the DPIE.

- Wollongong Coal has maintained a community hotline and email address allowing for direct correspondence with the local community.

3.1.3 Government consultation

Consultation with government agencies has been ongoing since the public exhibition of the modification report. Key agency consultation is summarised in Table 3.1.

Table 3.1 Summary of government agency consultation

Stakeholder	Consultation method	Key matters discussed
NSW Department of Planning, Industry & Environment – Planning and Assessment Group	Ongoing consultation through face-to-face meetings, online meetings and email correspondence	• Confirmation of project description. • Confirmation of coal proposed to be extracted. • Confirmation of rail transport. • Confirmation of how water is managed onsite.
NSW Department of Planning, Industry and Environment – Division of Water	Meeting and follow up email correspondence and letter advice	• Meeting to discuss an appropriate path forward to ensure items raised within the DPIE Water submission are adequately addressed. • Confirmation that no conflict of interest exists for the groundwater assessment peer reviewer.
Heritage NSW	Telephone calls and correspondence	• Confirmation of items raised within the Heritage NSW submission and discussions regarding an appropriate path forward ensuring items raised within the submission are adequately addressed.

3.2 Further technical assessments and investigations

A number of additional technical investigations were commissioned by Wollongong Coal in response to submissions received on MOD2 after the public exhibition of the modification report. These studies include:

- Undertaking of a Supplementary Groundwater Impact Assessment (SGIA) to assist in responding to matters raised in submissions received. The SGIA responds to matters raised within DPIE Water Group and WaterNSW submissions. The SGIA is appended to this report, see Appendix H. To ensure all groundwater related submissions were adequately addressed an independent peer reviewer (Dr Doug Weatherill) was engaged to comment on the additional groundwater modelling and impact assessment undertaken to support this Submissions Report. The SGIA Peer Review Report is appended to this report, see Appendix I.

- Confirmation of the adequacy of the existing operation water management system to accommodate the minor increase of predicted groundwater inflows identified in the review of the SGIA. Confirmation is provided within the Surface Water Letter Report, see Appendix J.

- Updates to the ACHAR to include information regarding potential cumulative impacts as a result of MOD2 and further consultation with Registered Aboriginal Parties (RAPs). The revised ACHAR is appended to this report, see Appendix D.

- Updates to the Statement of Heritage Impacts (SoHI). The updated SoHI also provides further commentary regarding the location of the proposed extension of the NWMD under MOD2. The revised SoHI is appended to this report, see Appendix D, while the Conservation Management Plan (CMP) will be revised post approval of MOD2.

- Further geotechnical assessment to assist in responding to matters raised in submissions received. A letter report responding to matter raised is appended to this report see Appendix E. Matters raised included:

    - proximity of mining below the base of Lake Avon Reservoir;

    - the potential for water inflows associated with mining through the Wongawilli Fault and the dyke projected to extend below Lake Avon Reservoir;

- the potential for increased stresses in the vicinity of geological structures associated with previous mining in the Wongawilli seam; and

- potential interaction with the proposed Burrawang to Avon tunnel (Illawarra Spur Line).

4 Response to Government agency submissions

Responses to the comments received from the 14 respective state and local government agency submissions are provided in the following subsections. Comments from the government agencies are summarised, with each respective comment followed directly with a response.

In addition to the 14 respective agency submissions, DPIE has sought clarification on specific items relevant to MOD2. Responses to DPIE queries are outlined below.

4.1 Department of Planning, Industry and Environment (DPIE)

The DPIE requested the following items be clarified in the modification report:

- The estimated approved amount of coal (tonnes) in the North West Mains Development (ie the 'existing approved driveage' shown on Figure 2.4 of the Modification Report).
- The estimated amount of coal (tonnes) that has already been mined for the North West Mains Driveage completed workings (as shown on Figure 2.4 of the Modification Report).
- The estimated additional amount of coal (tonnes) proposed to be extracted as part of the modification (ie the 'Proposed additional driveage' as shown on Figure 3.1 of the Modification Report).

Wollongong Coal confirms the following tonnages associated with each aspect of the NWMD:

- The estimated approved amount of coal in the NWMD identified as the 'existing approved driveage' in Figure 2.4 of the Modification report is approximately 320 Kilo tonnes (kt).
- The estimated amount of coal mined to date within the approved NWMD identified as the 'North West Mains Development completed workings' in Figure 2.4 of the Modification report is approximately 9 kt.
- The estimated additional amount of coal proposed to be extracted under MOD2 identified as 'Proposed additional driveage' in Figure 3.1 of the Modification Report is approximately 175 kt.

Noting the above, when accounting for coal reserves remaining within the approved NWMD and the proposed additional driveage, a total of 486 kt of coal is proposed to be extracted under MOD2.

Wollongong Coal note, since submission of the Modification Report, total tonnes of coal proposed to be produced under MOD2 have been optimised. This is a result of an increased understanding of the coal resource within the proposed NWMD footprint following a review of the geological model. The total coal proposed to be produced as noted in the Modification Report was 385 kt, Wollongong Coal seek to clarify the proposed coal to be extracted is 486 kt over the life of MOD2. This representing an increase of 101 kt tonnes.

Assessments completed to inform MOD2, where relevant, were conservatively completed in consideration of the currently approved extraction and or processing limit applied to the Colliery, being 2 million tonne per annum (mtpa), excluding the Economics Assessment which was informed by the noted 385 kt (see Appendix P of the Modification Report).

As such, an updated Economic Letter Report has been prepared to account for the optimised production levels to that identified in the Modification Report. The updated Economic Letter Report completed by Gillespie Economics, is provided in Appendix G.

The updated Economic Letter Report documents how key economic outputs of the Economic Assessment have been adjusted as a result of the optimised productions levels. It is noted that the Economic Letter Report uses the same primary methods referred to in the original Economic Assessment, ie Cost Benefit Analysis (CBA) and Local Effects Analysis (LEA). The Economic Assessment appended to the Modification Report should be referred to for technical information on the methods, as well as the assumptions underpinning the analysis. All assumptions have remained constant apart from the optimised production level.

In summary, the consequence of the optimised total coal extraction is to:

- increase the net production benefits of MOD2;
- slightly increase the greenhouse gas costs of MOD2;
- increase the net social benefits of MOD2 to NSW; and
- increase the average annual direct and total regional economic output and value-added levels of MOD2.

The additional 101 kt of coal proposed to be produced under MOD2 in comparison to that proposed in the Modification Report has no significant implication. As is demonstrated in the below discussion which provides a comparison to CBA and LEA outputs of the Economic Assessment presented in the Modification Report and provided in the updated Economic Letter Report.

Cost benefit analysis

Net production benefits

The increased ROM production has the following effects on the net production benefits of MOD2:

- A proportional increase in revenues.
- A proportional increase in royalties.
- A less than proportional increase in operating costs (as most of the operating costs do not change with increased production eg labour costs, machinery hire and equipment costs and, environmental studies and approvals).

The consequence is that the overall net production benefits of MOD2 increase at the global, national and NSW level of analysis (refer to Table 4.1) which compares the result documented in the Modification Report to that noted in the updated Economic Letter Report

Table 4.1 Comparison of Net Production Benefits of MOD2 (Present Values at 7% Discount Rate)

	Original Assessment $M	**Revised Assessment $M**
Costs		
Opportunity cost of land	$6.2	$6.2
Opportunity cost of capital	$43.7	$43.7
Capital costs	$29.8	$29.8
Operating cost (ex royalties)	$56.2	$57.0
Sub-total	***$135.8***	***$136.7***

Table 4.1 Comparison of Net Production Benefits of MOD2 (Present Values at 7% Discount Rate)

	Original Assessment $M	Revised Assessment $M
Benefits		
Deferred rehabilitation and decommissioning	$9.0	$9.0
Revenue	$42.3	$53.5
Residual value of land	$5.1	$5.1
Residual value of capital	$35.6	$35.6
Sub-total	**$92.0**	**$103.2**
Global Net Production Benefits	**-$43.8**	**-$33.5**
Royalties to NSW Govt	$2.9	$3.7
Company Tax	-$14.0	-$11.1
Residual Net Production Benefits	-$32.8	-$26.1
Global Net Production Benefits	**-$43.8**	**-$33.5**
Royalties to NSW Govt	$2.9	$3.7
Company Tax	-$14.0	-$11.1
Residual Net Production Benefits	$0.0	$0.0
Australian Net Production Benefits	**-$11.1 to $2.9**	**-$7.4 to $3.7**
Royalties to NSW Govt	$2.9	$3.7
Company Tax	-$4.5	-$3.5
Residual Net Production Benefits	$0.0	$0.0
NSW Net Production Benefits	**-$1.6 to $2.9**	**$0.2 to $3.7**

Externalities

Increased production is assumed to proportionally increase GHG emissions, and hence GHG costs. All other externality categories are assumed to be insignificantly affected. The present value of externality costs and benefits, using a 7% discount rate, is provided in Table 4.2 whilst also providing a comparison to that documented in the Modification Report.

Overall increased production would have only very small increase in GHG costs.

Table 4.2 Comparison of NSW Externality Impacts of MOD2 (Present Values at 7% Discount Rate)

Benefits	Original Assessment $M	Revised Assessment $M
Wage benefits to employment	Not quantified	Not quantified
Economic benefits to existing landholders	$0	$0
Economic benefits to suppliers	$0	$0
Sub-total	$0	$0
Costs		

Table 4.2 Comparison of NSW Externality Impacts of MOD2 (Present Values at 7% Discount Rate)

Benefits	Original Assessment $M	Revised Assessment $M
Greenhouse gas emissions (Scope 1 and 2)	$0.02	$0.03
Operational noise	No material impact*	No material impact*
Road transport	No material impact*	No material impact*
Air quality	No material impact*	No material impact*
Groundwater	$0.06	$0.06
Surface water	No material impact*	No material impact*
Subsidence	No material impact*	No material impact*
Biodiversity	$0.02	$0.02
Aboriginal heritage	No material impact*	No material impact*
Historic heritage	No material impact*	No material impact*
Net public infrastructure costs	No material impact*	No material impact*

Notes: *"No material impacts" does not mean that there will be no impacts but that the scale of any impact is so small that it would not be expected to change the results of the analysis in a significant way.

Net Social Benefits to NSW

The NSW results from Table 4.1 and Table 4.2 are combined in Table 4.3 to estimate the net social benefits of MOD2 to NSW. This indicates that with increased production MOD2 will have net social benefits to NSW of between $0.0M and $3.7M (present value at 7% discount rate), depending on whether Wollongong Coal can realise the tax deduction that arises from MOD2. This is an increase in net social benefits to NSW relative to Economic Assessment presented in the Modification Report.

Table 4.3 Comparison of NSW Net Social Benefits of MOD2 (present value @ 7% discount rate) to NSW

Benefits	Original Assessment $M	Revised Assessment $M
Net Production Benefits		
Royalties to Government	$2.9	$3.7
Company Tax	-$4.5	-$3.5
Residual Net Production Benefits	$0.0	$0.0
Sub-total	***-$1.6 to $2.9***	***$0.2 to $3.7***
Other Benefits		
Wage benefits to employment	Not quantified	Not quantified
Economic benefits to existing landholders	$0	$0
Economic benefits to suppliers	$0	$0
Sub-total	$0	$0
Costs		
Greenhouse gas emissions (Scope 1 and 2)	$0.02	$0.03
Operational noise	No material impact*	No material impact*

Table 4.3 Comparison of NSW Net Social Benefits of MOD2 (present value @ 7% discount rate) to NSW

Benefits	Original Assessment $M	Revised Assessment $M
Road transport	No material impact*	No material impact*
Air quality	No material impact*	No material impact*
Groundwater	$0.06	$0.06
Surface water	No material impact*	No material impact*
Subsidence	No material impact*	No material impact*
Biodiversity	$0.02	$0.02
Aboriginal heritage	No material impact*	No material impact*
Historic heritage	No material impact*	No material impact*
Net public infrastructure costs	No material impact*	No material impact*
Sub-total	***$0.1***	***$0.1***
Net Social Benefits	**-$1.7 to $2.8**	**$0.0 to $3.6**[1]

1. Totals may differ due to rounding

Incidence of Costs and Benefits to NSW

The distribution of NSW costs and benefits with the optimised coal production is provided in Table 4.4.

Table 4.4 Incidence of NSW Costs and Benefits

Benefits and costs	Incidence of costs and benefits	($m)
Share of Net Production Benefits		
Royalties	NSW Government and NSW households	$3.7
Company tax	NSW Government and NSW households	-$3.5
Additional benefits		
Wage benefits to employment	Some of the local and NSW labour force	Not quantified
Economic benefits to existing landholders	Local landholders who sell land required for MOD2 including buffer land	$0
Economic benefits to suppliers	Regional and State suppliers of inputs to production	$0
Environmental, social and cultural costs*		
Greenhouse gas emissions (Scope 1 and 2)	Local and NSW households	$0.03
Operational noise	Adjoining landholders	No material impact*
Road transport	Local residents	No material impact*
Air quality	Adjoining landholders	No material impact*
Groundwater	Wollongong Coal via holding WAL purchases	$0.06
Surface water	Wollongong Coal via WAL purchases	No material impact*

Table 4.4 Incidence of NSW Costs and Benefits

Benefits and costs	Incidence of costs and benefits	($m)
Subsidence	People who use or enjoy facilities, infrastructure or natural areas above underground mining	No material impact*
Biodiversity	Wollongong Coal via payment to Biodiversity Conservation Trust Fund	$0.02
Aboriginal heritage	Aboriginal people and other local and NSW households	No material impact*
Historic heritage	Local and NSW households	No material impact*
Net public infrastructure costs	NSW Government and NSW households	No material impact*

Notes: *NSW regulations require many impacts to be borne by the proponent via mitigation, offset and compensation. Where these measures perfectly mitigate, offset or compensate then no residual impacts occur and all impacts are borne by the proponent.

Sensitivity Analysis

The revised CBA results for NSW, were tested for changes to the following variables at a 4%, 7% and 10% discount rate:

- Opportunity cost of land.
- Opportunity cost of capital.
- Operating costs.
- Capital costs.
- Deferred rehabilitation and decommissioning costs.
- Revenue.
- Residual value of land.
- Residual value of capital.
- Greenhouse gas costs.
- Groundwater costs.
- Offset costs.

Results of the sensitivity analysis and a comparison to the Economic Assessment presented in the Modification Report are reported in Table 2.5 of the updated Economic Letter Report, see Appendix G.

The sensitivity analysis indicated that the CBA results are not sensitive to changes in greenhouse gas costs, groundwater costs or biodiversity offset costs.

Under all scenarios examined, the net social benefits to NSW range from slightly negative to slightly positive depending on whether tax losses can be realised. This reflects the nature of MOD2 as an initial investment in support of potential future mining project, which would be subject of individual assessment and necessary approvals.

All sensitivity results are more positive than under the Economic Assessment presented in the Modification Report.

Local effects analysis

Increased Run Of Mine (ROM) production results in a slight increase in average annual direct output and value added (although for direct value-added it doesn't appear in the numbers due to rounding) and hence an increase in total (direct and indirect) output and value-added. All other impacts for the local area remain the same to that reported in the Economic Assessment presented in the Modification Report.

Table 4.5 reports the results of revised LEA compared to the results of the original LEA.

Table 4.5 Comparison of Local Effects Analyses

	Original Local Effects Analysis			Revised Local Effects Analysis		
Local Effects	**Direct Total**	**Direct Already Resident in the Local Area**	**Net**	**Direct Total**	**Direct Already Resident in the Local Area**	**Net**
Average annual direct employment FTE	56	54	26	56	54	26
Net income ($M)			2.5			2.5
Non-labour expenditure in the Local Area	7.5			7.5		
Regional Impacts	**Direct**	**Flow-on**	**Total**	**Direct**	**Flow-on**	**Total**
Output ($M)	23	20	43	24	20	44
Value-added ($M)	9	11	19	9	11	20
Income ($M)	6	5	11	6	5	11
Employment	56	62	118	56	62	118
Other Local Economic Impacts						
Contraction in other sectors	No material impact*			No material impact*		
Displaced activities	No material impact*			No material impact*		
Wage rise impacts	No material impact*			No material impact*		
Housing impacts	No material impact*			No material impact*		
Local Environmental Impacts						
Greenhouse gas emissions (Scope 1 and 2)	$0.00			$0.00		
Operational noise	No material impact*			No material impact*		
Road transport	No material impact*			No material impact*		
Air quality	No material impact*			No material impact*		

Table 4.5 Comparison of Local Effects Analyses

	Original Local Effects Analysis	Revised Local Effects Analysis
Groundwater	No material impact* - cost borne by Wollongong Coal	No material impact* - cost borne by Wollongong Coal
Surface water	No material impact*	No material impact*
Subsidence	No material impact*	No material impact*
Biodiversity	No material impact* cost borne by Wollongong Coal	No material impact* cost borne by Wollongong Coal
Aboriginal heritage	No material impact*	No material impact*
Historic heritage	No material impact*	No material impact*
Net public infrastructure costs	No material impact*	No material impact*

Clarification regarding realistic case and worst-case train movements for the proposed modification. The modification report proposes that there would be up to four train movements per day for the proposed modification, limited to the daytime only. The Department understands that required train movements may be substantially less based on the amount of coal to be extracted over the approval period.

Wollongong Coal as identified in Section 3.1 of the Modification Report seeks to reduce approved train movements from a maximum of 10 movements a day to 4, limited to daylight hours only. This is reflective of the reduced throughput (or rate of extraction) of coal associated with longwall mining previously undertaken at the Colliery, compared to first working mining techniques for the NWMD proposed under MOD2.

Given MOD2 involves periods of prolonged stone driveage to develop the NWMD as proposed, there will be periods of operation where no coal is produced and as such no required train movements are expected during this period. Whereas during development of the NWMD where it intersects with and through the coal resource, product coal will be produced and require potentially up to 4 train movements a day.

The modification report and associated technical assessments (namely noise, air quality and traffic assessments appended to the Modification Report) have considered a maximum of 4 train movements a day, limited to daylight hours, and demonstrated with adequate mitigation and management controls in place potential impacts associated with the train movements can be effectively managed. Furthermore, the reduction in train movements from that currently approved represents a reduction in potential impacts to local receivers.

Confirmation there would no further mining in the Elouera workings or other historic workings where mining has ceased as part of the project approval.

Under MOD2 no further mining or extraction of coal is proposed within the Elouera or historic workings outside of the proposed NWMD footprint identified in Figure 1.2. Noting that historic workings may be accessed to undertaken maintenance related tasks, rehabilitation activities, or as required to ensure a safe and stable environment in accordance with the Wongawilli Mine Operations Plan (MOP).

It is understood and acknowledged that any proposed future mining within the Elouera or other identified historic workings would be subject of an appropriate assessment and separate approvals process.

Clarification regarding the existing surface water management arrangement at the site, namely how clean and dirty water drainage is managed noting the extent of any interaction between clean and dirty water.

MOD2 is not inclusive of any changes to the existing Colliery water management system. A Surface Water Technical Report (SWTR) was completed for MOD2, see Appendix H of the Modification Report. Section 3.1.1 of the SWTR documents how both clean and dirty water is accounted for within the Colliery water management system. The Colliery surface water management practices are further documented within the approved Wongawilli Colliery Surface Water Management Plan (SWMP).

In summary, clean water from undisturbed areas of the Colliery outside of the existing cleared mine benches, work areas and access tracks largely have surface water drainage infrastructure to direct undisturbed area runoff to local surface water systems and off-site. Noting, in discrete areas this is not possible due to the local topology, as is identified in the sub-catchment boundaries identified in Figure 7 of the SWTR.

Dirty water from disturbed areas of the Colliery which include existing mine benches, work areas and access tracks have surface drainage infrastructure to direct disturbed area runoff to the Colliery's water management system. As noted within both the SWTR and SWMP, this water is reused in Colliery operations or discharged in accordance Environmental Protection License 1087 (EPL 1087).

Clarification regarding proposed coal stockpiling arrangements for the proposed modification.

As described within Section 7.2.5 of the Modification Report, the Colliery will preferentially utilise the coal storage bins and coal clearance system to store product coal in place of the existing stockpile area. The Colliery storage bins include the proposed coal bin at the Upper Pit Top and the two existing rail load out bins, amounting to a total coal storage capacity of approximately 6,000 tonne. Coal would be transported from the Colliery as required to Port Kembla in accordance with proposed rail transport requirements, detailed in Table 3.1 of the Modification Report.

This product coal stockpiling / storage strategy has been proposed in an effort to reduce potential noise and air quality emissions of MOD2 on the local community and environment. As such the use of equipment such as dozers and or front-end loaders in coal stockpile management would be minimised as far as practicable and feasible.

Given the above, Wollongong Coal seeks to maintain approval to utilise the coal stockpile in the event of a failure of the coal storage bins, required maintenance activities or delays as a result of transport restrictions which may otherwise impact the production capabilities of the Colliery.

Clarification regarding existing and proposed arrangements for the storage of excess mine water in underground workings (including the need to pump water to the surface) and the potential for an uncontrolled discharge in the event that storage in underground workings reaches capacity.

The Colliery is currently operated under care and maintenance conditions with the water level within the NWMD and historic workings having been allowed to recover over time. As such no areas of the Colliery are currently being actively managed to store water underground nor is water being actively pumped to the surface. Water at the Colliery is currently only managed on the surface in accordance with the SWMP..

To facilitate the develop of the NWMD under MOD2, water inflows will be pumped to the surface to be reused and or discharged in accordance with the SWMP. MOD2 does not seek to store water in underground workings for the purposes of developing the NWMD. As is identified within the Section 4.2 of the SWTR appended to the Modification Report (see appendix H), the Colliery surface water management system has greater capacity than that required to actively manage predicted inflows.

4.2 Environment Protection Authority (EPA)

4.2.1 Noise

i Noise performance criteria

The EPA recommended that new noise performance criteria for the proposed modification take into consideration the achievable noise levels in Table 10.2, Appendix E of MOD2.

Wollongong Coal propose to meet the predicted noise performance criteria outlined in Table 10.2, Appendix E of MOD2. The predicted 'achievable' noise levels represent the nearest potentially most affected six residences in each direction from the Colliery and will form locations for future noise compliance monitoring in consultation with the EPA.

ii Noise mitigation

The EPA noted inconsistencies in the proposed reasonable and feasible mitigation measures outlined in Table D.1, Appendix D and in Table 9.1, Appendix E of MOD2, including relocation of the sizer/screening equipment underground and minimising the use of the coal stockpile area following implementation of noise mitigation in the train loading area. The EPA recommended that the mitigation measures proposed in Table D.1, Appendix D be implemented to avoid inconsistencies and ensure that all reasonable and feasible mitigation measures are to be implemented.

As outlined in Section 7.2.5 of MOD2, based upon Wollongong Coal's proposed hierarchical approach to noise mitigation, the relocation of the sizing and screening infrastructure underground and minimising the use of the coal stockpile area (in lieu of rail load out improvements) are considered feasible and reasonable and will be adopted following approval of the modification.

Appendix C of this Submissions Report includes an updated Table C.1 mitigation measures which includes:

- relocation of the sizer and screening equipment underground; and
- extension of the Wongawilli lower pit top noise wall.

Noting the above and to avoid any inconsistencies, Wollongong Coal are accepting of the mitigation measures identified Table D.1, Appendix D of the Modification Report. The updated Mitigation Measures, see Appendix C of this Submissions Report, confirms this position.

iii Surface water quality

The EPA recommended including turbidity in the downstream monitoring program, in Table D.1, Appendix D under the heading surface water.

Section 6 of this Submissions Report includes an updated Table C.1 mitigation measures which includes downstream turbidity water quality monitoring. Wollongong Coal will incorporate this mitigation measure into an updated SWMP for the Colliery following approval of MOD2.Report

iv Updated noise, air and water management plans

The EPA recommended that approval of the modification will require Wollongong Coal to prepare updated noise, air and water management plans.

Wollongong Coal will update all relevant environmental management plans, including (but not limited to) noise, air quality and water, following approval of MOD2.

The EPA requested that they are consulted during development of the updated management plans to ensure potential impacts, such as noise and water quality, are appropriate addressed (eg water quality monitoring downstream of the pit top) in the relevant management plans.

Wollongong Coal will consult with the EPA and other relevant government agencies during the development and updating of all environmental management plans following approval of MOD2 to ensure potential impacts are adequately addressed during construction and operation.

The EPA recommended that potential construction noise impacts and work practices to minimise such impacts, including a complaint management process, be addressed in an updated noise management plan.

Wollongong Coal will update the noise management plan to outline noise mitigation measures during the construction and operation, including (but not limited to) identification of suitable controls and mitigation, monitoring, management actions, reporting, communications (eg complaints management), auditing and review, following approval of MOD2.

The EPA supports the proposed additional water quality monitoring given discharges from the Colliery points 2 and 4 (EPL licence number 1087) flow through restored creeks and water features in new residential developments immediately downstream (ie the discharges have more visibility and potential for human contact than previously when the surrounding area was farmland).

Wollongong Coal's proposed surface water mitigation measures outlined in Section 7.5.6 and Table D.1, Appendix E of the Modification Report will be incorporated into an updated SWMP following approval of MOD2.

4.3 Wollongong City Council

4.3.1 Noise

WCC recommended that noise emissions from the Colliery pit top are minimised with respect to the surrounding residential community in Wongawilli. The Council note that the Colliery has previously implemented noise mitigation measures at the site.

As outlined in Section 7.2.5 of the Modification Report, the main operational sources contributing to off-site noise levels are the screen and sizer building and elevator, rail load out bin, locomotives, dozer and front-end loaders.

Wollongong Coal have implemented a significant amount of mitigation works at the Colliery to manage noise emissions over many years, including:

- enclosing all conveyor and transfer points;
- installing a 6 m high concrete barrier adjacent to the rail line which is proposed to be extended as part of the modification;
- upgrades to the screen/sizer enclosure; and
- a preference for coal product to go directly to rail load out bins to avoid stockpiling (ie reducing the use of the dozer and FEL in the stockpile area).

Wollongong Coal propose a hierarchical approach to further mitigate noise impacts, including the relocation of the sizing and screening infrastructure underground and rail load out improvements following approval of MOD2.

The results of the noise assessment undertaken in accordance with the Noise Policy for Industry (EPA, 2017) (NPfI) (Appendix E of the Modification Report) indicated that with the inclusion of the proposed reasonable and feasible mitigation measures, noise emissions from the Colliery would reduce by up 3 to 8 dB at surrounding receptors with minimal residual noise impacts.

WCC noted that the Modification Report identifies the main sources of off-site noise as the screen and sizer building and elevator, rail load out bin, locomotives, dozer and front-end loader. In this regard, Council agreed with the proposed noise mitigation measures in Table 7.5 of MOD2 and recommended that the mitigation measures are included as conditions of consent by DPIE.

Section 6 of this Submissions Report includes an updated Table C.1 mitigation measures which include noise.

Wollongong Coal's proposed hierarchical approach outlined in Section 7.2.5 of the Modification Report has considered the feasibility and reasonableness of existing and additional noise mitigation measures, with reference to the guidance provided in NPfI to noise mitigation.

The proposed mitigation measures targeting the main noise sources will include the relocation of the sizing and screening infrastructure underground and rail load out improvements following approval of the modification. As outlined in the revised Table C.1 within Appendix C of this Submissions Report.

Wollongong Coal will develop an appropriate timeline to coordinate and implement the proposed mitigation measures within the revised Noise Management Plan Colliery (NMP) in consultation with the EPA and DPIE following approval of MOD2.

4.3.2 Water

i Maintenance of surface water management system

WCC regards the management of stormwater runoff as critical to ensuring that coal and sediment-laden waters do not enter Robin's Creek, Mullet Creek or Lake Illawarra. Council also notes that the existing surface water management system is proposed to continue as part of the proposed modification.

Council further notes the existing internal drainage system is designed to capture and direct runoff that potentially contains coal fines and sediment from the pit top operations.

Council recommended that DPIE ensure the EPA supports the proposed modification and specifically, the continuance of the existing surface water management system as part of the EPL 1087.

Council also recommended that appropriate conditions of consent be imposed to require ongoing maintenance of the surface water management system, including sediment treatment ponds and the filter pond.

Wollongong Coal's proposed surface water mitigation measures outlined in Section 7.5.6 of the Modification Report and included within Table C.1 of this Submission Report will be incorporated into an updated SWMP and any necessary amendment to EPL 1087 following approval of MOD2.

4.3.3 General

i Mine layout

WCC supports the proposed five-year extension as part of the proposed modification to enable the development of the North West Mains Development (NWMD) to access the existing Wongawilli Ventilation Shaft 1.

WCC advised that they reserve its rights to consider its position on any future application for the actual North West sector mine layout, based on merit assessment of the accompanying Environmental Impact Statement.

Wollongong Coal will consult with the WCC in regard to future applications to undertake further mining activities to that which are proposed under MOD2.

4.4 Transport for NSW

4.4.1 Traffic

i Traffic signals

TfNSW provided in-principal acceptance to Wollongong Council to construct traffic signals at the intersection of Shone Avenue/Wongawilli Road/West Dapto Road.

TfNSW noted that the existing interface agreement between Council and Wollongong Coal for the roads and the railway line would need to be updated considering the signals and the subject modification (including all necessary approvals).

Wollongong Coal will continue to consult with WCC to amend the existing interface agreement and ensure all necessary approvals for the roads and railway line are in place prior to transportation of coal from the Colliery subject to MOD2 being approved.

ii Princes Motorway

TfNSW advised that the Department does not believe the development will have a significant impact on the Princes Motorway and on this basis, does not object to the modification.

Noted.

4.5 Roads and Maritime Services Division

4.5.1 Traffic

i Princes Motorway

RMS advised that the Department does not believe the development will have a significant impact on the Princes Motorway and on this basis, does not object to the modification.

Noted.

4.6 Dams Safety NSW

4.6.1 Subsidence

i Subsidence monitoring program

Dams Safety NSW recommended that an appropriate subsidence monitoring program be developed and implemented for the proposed modification.

To ensure a proactive approach is taken to the mining Wollongong Coal will implement the mitigation and management measures identified Appendix C of this Submissions Report and documented in Section 7.7.6 of the Modification Report, including the development and implementation of a subsidence monitoring and response program following approval of MOD2.

4.6.2 Operation

i Inseam drilling

Dams Safety NSW recommended in-seam drilling be undertaken well ahead of mains development to establish an understanding of any structures ahead of the mining which might result in connections developing between the mine and surface.

As detailed in Appendix C of this Submissions Report and documented Section 7.7.6 of the Modification Report, to manage any potential risk of connections or inflows where the main headings cross below Avon Reservoir, Wollongong Coal will drill ahead into the Bulli Seam through the dyke from the underground roadways (as they are developed).

As noted within the Subsidence and Geotechnical Assessment (SGA), see Appendix K of the Modification Report.

To ensure a precautionary approach is taken to mining under the Lake Avon Reservoir, Wollongong Coal proposes to undertake in seam drilling ahead of working in the Bulli Seam below the base of Lake Avon Reservoir from approximately 50 m from the edge of the Lake Avon Reservoir, within the Bulli seam.

This precautionary approach would confirm there are no zones of increased hydraulic conductivity that would lead to potential inflows into the underground roadways. Should increased hydraulic conductivity be demonstrated by drilling activities appropriate management and mitigation measure would be enacted prior to the continuation of mining in accordance with industry best practice.

4.6.3 Water

i Baseline water volume and hydrochemistry

Dams Safety NSW recommended water monitoring measuring both volume and hydrochemistry of the waters entering the mine be undertaken to establish a base line water fingerprint and water make prior to mining under the reservoir. This will provide early indications on whether joints, or faults are opening up or that the provenance of the waters are changing, for example from groundwater to reservoir water.

Wollongong Coal will review and update the existing water management plan following approval of MOD2 to incorporate water quality monitoring for both volume and hydrochemistry . Monitoring proposed to be undertaken is described in Section 7 of the SGIA, see Appendix H. Results of water volume and quality monitoring will be reported in the Colliery's annual return.

ii Trigger action response plan (TARP)

Dams Safety NSW recommended a series of emergency TARPs be developed that include the notification of any relevant organisations (eg WaterNSW, Dams Safety NSW) should water inflows significantly increase.

Wollongong Coal will review and update the existing subsidence and water management plans, including associated emergency TARPs following approval of MOD2, to ensure notification of relevant agencies should water inflows significantly increase during operations.

iii Contingency plan

Dams Safety NSW recommended a contingency plan be developed to prevent or halt inrush, prior to developing roadways beneath the reservoir.

Wollongong Coal will review and update existing operational control plans to address the potential for inrush, prior to developing the roadways beneath the reservoir.

The contingency plan will be developed in accordance with the NSW Code of Practice: Inundation and inrush hazard management (NSW Department of Trade and Investment, Regional Infrastructure and Services).

Table C.1 identifying the revised proposed mitigation measures, see Appendix C of this Submissions Report, has been updated to be inclusive of this proposed mitigation measure.

4.7 WaterNSW

4.7.1 Subsidence

i Subsidence impacts to Lake Avon

WaterNSW noted that it is unlikely the modification would result in any noticeable subsidence, strain or tilt, stream bed uplift or bed cracking in Gallaghers Creek. The subsidence assessment undertaken by SCT concluded that cracking from the void would not extend into the Bulgo sandstone or the higher Hawkesbury sandstone. However, within the project area, WaterNSW noted that that base of Lake Avon is located below the Bulgo Sandstone in the Stanwell Park Claystone.

WaterNSW sought clarification as to how close cracking from the void will be to the base of Lake Avon.

As noted in Section 3.2, SCT undertook further geotechnical assessment to determine the height of cracking from the NWMD to the base of Lake Avon. The further geotechnical assessment is available in Appendix E of this Submissions Report.

Section 1 of the further SCT assessment notes:

> *The height of roof fracturing depends on the magnitude of horizontal stresses relative to the strength of the immediate roof strata. The Coal Cliff Sandstone that forms the immediate roof strata above the coal seam is expected to be much stronger than the horizontal stresses at 60m deep. Significant roof fracturing is therefore not expected. If the immediate roof strata were to become overloaded, the height of fracturing would not be expected to extend above the bolted horizon of the roof of the roadways i.e. above 2-2.5m. This height of fracturing is small by comparison to the full 60m overburden depth.*

To ensure the risk of cracking from the NWMD is reduced Wollongong Coal will continue to implement appropriate roof management controls in accordance with Colliery operational plans and industry best practice.

ii Impacts on Burrawang to Avon tunnel

WaterNSW noted that the project has not considered potential for impacts on a future water infrastructure project, including the Burrawang to Avon tunnel (Illawarra Spur Pipeline). WaterNSW recommended potential impacts be considered as part of the proposed modification.

As noted in Section 4 of SCTs further geotechnical assessment, see Appendix E of this Submissions Report, no impacts to the proposed Burrawang to Avon tunnel or Illawarra Spur Pipeline are expected to occur as result of MOD2.

4.7.2 Subsidence water

i Subsidence uncertainties

WaterNSW noted the proposed modification would extend the main drive through the Wongawilli fault and a known dyke and no subsidence predictions have been undertaken because the impact due to first workings is considered insignificant.

WaterNSW recommended that the following matters should be further addressed:

- The potential for increased stresses above the previously extracted Wongawilli Seam.
- The impact of mining through the Wongawilli fault.
- Interactions with the dyke, noting that a steady inflow of water was observed during previous mining, consistent with an increase in hydraulic conductivity. Water NSW acknowledged that this occurred during secondary extraction, rather than during first workings. However, given that this dyke will be intersected by the proposed modification below the surface of Avon Reservoir, it requires detailed assessment.

The potential for increased stresses above the previously extracted Wongawilli Seam.

A geotechnical and pillar stability assessment was undertaken to inform MOD2, see Appendix K of the Modification Report. Further consideration of increased stresses above the previously extracted Wongawilli Seam has been undertaken to support this Submission Report, see the Geotechnical Letter Report (Appendix E).

As documented within Section 3 of the Geotechnical Letter Report, the proposed NMWD main headings are to be mined in the Bulli Seam. The Bulli Seam is located 30 – 35 m above the Wongawilli Seam. There has been previous mining activity in the Wongawilli Seam below where the NMWD main headings are proposed. This mining includes some pillar extraction remote from the reservoir and some first workings directly under the reservoir at the third crossing point of the Avon Reservoir (see Figure 1.2) where the minimum overburden to the Bulli Seam is 134 m.

There is some potential for increased vertical stresses around the edges of areas of pillar extraction and reduced vertical stress directly above the pillar extraction. These changing vertical stresses are likely to locally impact mining conditions and require additional support to maintain serviceable roadway conditions. However, any impacts are limited to underground. There is no potential for there to be additional surface subsidence or other perceptible impacts due to this previous mining (ie expected to be long term stable).

The pillars in the Wongawilli Seam below the third crossing point are developed at 40 m centres with a roadway height of 2.8 m with a nominal width to height ratio of greater than 12. There is no potential for these pillars to become overloaded. The existence of these pillars causes slight variations in vertical stress at the level of the proposed Bulli Seam workings, however these variations are much less than the variations that occur elsewhere because of topography-related changes in overburden depth (ie expected to be long term stable).

The impact of mining through the Wongawilli fault

As documented within Section 2.1 of the Geotechnical Letter Report, see Appendix E of this Submissions Report, historical mining at the Colliery and at Elouera Colliery has driven ten cross-measure drifts through the Wongawilli Fault.

There are also many intersections of the fault plane(s) or steeper ground associated with the fault from everyday driveages in both the Wongawilli and Bulli Seams. Some of these intersections are in close proximity to where the Wongawilli Fault crosses the reservoir in the Flying Fox No1, No2 and No3 arms of the storage. No significant inflows have been observed from the drifts or other intersections of the Wongawilli Fault.

The proposed MOD2 roadways are designed to cross the Wongawilli Fault above existing Bulli to Wongawilli Seam cross-measures drifts which were driven in 1975-77 to service the mine operations until this section of the mine was sealed in 1999.

It is anticipated that the ground conditions where the proposed headings cross the Wongawilli Fault will be able to be managed without undue difficulty. The coal mining and Avon-Illawarra Tunnel driveage experience supports this expectation. The crossing point for the proposed headings is approximately 400 m from the full supply level (FSL) of Avon Reservoir. No interaction effects with the reservoir are expected.

Interactions with the dyke

As documented within Section 2.2 of the Geotechnical Letter Report, see Appendix E of this Submissions Report, dykes encountered in the Southern Coalfield are typically found to be dry when mined through.

It is anticipated that the dyke located below Avon Reservoir will also be dry. Nevertheless, inflows of up to approximately 0.2 Megalitres litres per day (ML/day) are anticipated at the first crossing below Avon Reservoir based on the pre-extraction inflows measured in nearby Blue Panel at Wongawilli Colliery.

Inflows in the range 0.1 - 0.3 ML/day were also reported by Reynolds (1977) for headings at Huntley Colliery located 65 m below the reservoir where there was no dyke present. No inflows were observed at Elouera Colliery where main headings passed 55 m below the reservoir. It is not clear whether the inflows observed prior to extraction in Blue Panel were due to the shallow depth or the presence of dykes and other geological features. In any case, a precautionary approach has been proposed.

In this regard, Wollongong Coal has proposed in Section 7.7 of the Modification Report to implement a program to drill ahead to confirm the absence of zones of elevated hydraulic conductivity below the reservoir and to develop a precautionary approach management strategy in accordance with industry best practice as discussed in Section 4.6 of this Submission Report.

ii Subsidence monitoring program

WaterNSW recommended that while no significant subsidence or inflows are expected, a precautionary approach should be applied including:

- a subsidence monitoring program for measuring stresses and pillar performance, and
- drilling ahead to confirm the absence of zones of elevated hydraulic conductivity and to manage any inflows from the reservoir into the first workings.

As outlined in Appendix C of this Submissions Report and documented Section 7.7.6 of MOD2, Wollongong Coal has committed to the implementation of a subsidence monitoring and response program.

The subsidence monitoring program will adopt a precautionary approach as recommended by WaterNSW including (but not limited to):

- measure stresses and pillar performance; and
- drill ahead to confirm the absence of zones of elevated hydraulic conductivity and to manage any inflows from the reservoir into the first workings.

Wollongong Coal will continue to review and update the existing subsidence management program which includes monitoring stresses and pillar performance following approval of MOD2.

4.7.3 Water

i Groundwater model inputs

WaterNSW noted that the groundwater model is heavily reliant on data from Dendrobium Mine (Areas 3A and 3B) with 635 monitoring locations compared to only 14 in Wongawilli Colliery. It was also noted that the model is a regional groundwater model, instead of a site-specific model.

WaterNSW advised that the lack of site-specific groundwater monitoring data means that the groundwater model predictions may not accurately represent the actual outcomes.

The model dependencies on Colliery data as well as Dendrobium data and the Dendrobium impact model are outlined in the within the SGIA, see Appendix H of this Submissions Report. Specifically model dependencies are documented in Section 3.2.2, 3.4 and 3.5.1 of the SGIA.

Wollongong Coal notes that the groundwater model is calibrated against all available site-specific monitoring data as identified in Section 3.5.1 of the SGIA.

ii Uncertainty about groundwater model mass balance predictions

WaterNSW noted that the mass balance results for the predictive models (2020 and 2049) discussed in Section 7.1 of MOD2 do not match with results presented in Table 7.2. For example, rainfall recharge of 59.7 ML/day vs 179 ML/day. WaterNSW recommended that the mass balance estimates are updated to remove inconsistencies and provide more clarification on the presented results.

Wollongong Coal acknowledges the error within the mass balance results reported within the Modification Report. The mass balance result are clarified within in Section 3.6 of the SGIA, see Appendix H of this Submissions Report.

4.7.4 General

i Consultation

WaterNSW advised that the Department does not object to the proposed modification, however they requested that the concerns raised in relation to groundwater model inputs and mass balance estimates are addressed.

WaterNSW also requested to continue to be listed as a key agency for consultation on this and other projects by Wollongong Coal in the future.

WaterNSW's concerns regarding groundwater model inputs and mass balance estimates have been addressed within the SGIA as described above. Wollongong Coal will ensure that WaterNSW continues to be consulted on this and other projects, where relevant, in the future.

4.8 Department of Regional NSW - Mining, Exploration and Geoscience (MEG)

4.8.1 Biodiversity

i Offsets

MEG requested that potential resource sterilisation be considered should any future biodiversity offset areas be required. In this regard, consultation with MEG and any holders of existing mining or exploration authorities that could be potentially affected by the proposed creation of any such biodiversity offsets would be required to be undertaken prior to creation of offsets occurring. MEG advised that this is to ensure a reduction in access to prospective land for mineral exploration or potential for the sterilisation of mineral and extractive resources does not occur.

As outlined in Section 7.8.6 of the modification report no direct impacts to biodiversity values will occur as a result of MOD2.

As outlined within the BDAR, see Appendix L of the Modification Report, a total of two ecosystem credits are required to offset impacts to two vegetation zones identified within the subject land and four species credits to offset impacts to fauna habitat. Offsetting requirements are proposed to be meet through payment into the Biodiversity Conservation Trust Offset Fund. As such no sterilisation of potential resources will result from MOD2.

The Biodiversity and Conservation Division of DPIE has commented that the BDAR report is acceptable providing the potential impacts are offset (refer Section 4.10).

4.8.2 Economic

i Economic return to NSW

MEG advised that the Department 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.

As discussed in Section 4.1, Wollongong Coal has clarified the production level proposed under MOD2.

ii Economic return to NSW

MEG considered the proposed modification will provide an appropriate return to the NSW Government including around $3.7 million in total additional royalties (current dollars).

In addition, MEG noted that the proposed modification will:

- generate around $38 million additional total revenue (current dollars);
- support up to 118 full time equivalent (FTE) jobs during operations;
- generate $1.6 million (lower range) in Net Present Value (NPV) terms of total net production benefits to the NSW economy; and
- provide project capital investment of about $37 million.

As discussed in Section 4.1, Wollongong Coal has clarified the production level proposed under MOD2.

MEG considers the proposed modification is an efficient development and utilisation of minerals resources which will foster significant social and economic benefits.

As discussed in Section 4.1, Wollongong Coal has clarified the production level proposed under MOD2.

4.8.3 Report

i Consultation

MEG requested that the Department be provided with an opportunity to review the draft conditions of approval before finalisation and any granting of development consent.

Noted. This is a matter for the DPIE.

4.9 Department of Regional NSW – Resources Regulator

Based on the review of the modification report and supporting documents, the Resources Regulator advises that it has no specific comments in relation to mine rehabilitation. The Regulator notes that the first workings in the North West Mains Development (NWMD) are within approximately 60 metres of the base of the Avon Reservoir and intersect a dyke. The mine should undertake a review of the Inrush and Inundation Risk Assessment and the Inrush and Inundation Principal Hazard Management Plan prior to undertaking the planned activities.

Wollongong Coal will review and update existing operational controls to address the potential for inrush and inundation, prior to developing roadways beneath the reservoir.

The contingency plans will be developed in accordance with the *NSW Code of Practice: Inundation and inrush hazard management* (NSW Department of Trade and Investment, Regional Infrastructure and Services).

Potential interactions between the proposed NWMD and the underlying old mine workings must also be considered, and any risks managed appropriately.

Interactions between the proposed NWMD and historic mine workings have been considered and documented within Section 5 of the SGA, see Appendix K of the Modification Report. Risk management and mitigation measures as documented within the SGIA will be adopted by Wollongong Coal. Furthermore, Wollongong Coal will undertake strict operational controls to ensure risks associated with mining in proximity of historic workings are adequately managed.

Regarding subsidence, the Modification Report states that:

"There is no potential for the proposed main heading development roadways to cause surface ground movements of any consequence. Any surface subsidence is expected to be so small as to be imperceptible for all practical purposes. Impacts to natural and built features are expected to be imperceptible."

Notwithstanding this comment, there are several factors that must be specifically considered further. The presence of important natural and built surface features above the proposed NWMD including the Illawarra Escarpment, the Moss Vale to Unanderra Railway Line and TransGrid's Avon to Marulan 330kV power transmission line is critically important. Development and implementation of effective subsidence monitoring programs and risk management plans for these surface features must be a requirement of the Conditions of Development Consent. Monitoring and management must include consideration of the shallow depths of cover between the proposed workings and parts of these surface features.

Section 7.7.5 of the Modification Report identifies natural and built surface features which were considered within the SGIA.

Surface features considered within the SGA, which are not predicted to be impacted included:

- The Illawarra Escarpment Conservation area;
- five fire roads numbered 15A, 15H, 15Jand 15G, and 6H;
- the Moss Vale to Unanderra Railway Line;
- TransGrid's Avon to Marulan 330 kilovolt (kV) power transmission line;
- Avon Reservoir;
- Upper Avon Pumping Station; and
- Wongawilli Ventilation Shaft 1.

Wollongong Coal as noted in Appendix C of this Submissions Report, will develop a subsidence monitoring and response program following approval of MOD2. The subsidence monitoring and response program will consider natural and built features above the proposed NWMD.

4.10 Biodiversity and Conservation Division (BCD)

4.10.1 Biodiversity

i Offsets

BCD noted the impact on terrestrial biodiversity associated with the pit top works is minimal and will occur in a heavily modified environment. The Biodiversity Development Assessment Report (BDAR) was reviewed by BCD and considered to satisfactorily assess the biodiversity impacts associated with the proposed modification. Under the proviso that the offsets required under the BAM are offset, BCD advise that the BDAR is considered acceptable.

As outlined in Section 7.8.6 of MOD2, avoidance of native vegetation, threatened ecological communities and fauna habitat has been undertaken. No direct impacts to biodiversity values will occur because of the works within the proposed extension of NWMD.

A total of two ecosystem credits are required to offset impacts to the two vegetation zones identified within the subject land and four species credits to offset impacts to fauna habitat. Offsetting through the transfer and retirement of biodiversity credits or paying into the BCT Offset Fund will be undertaken by Wollongong Coal following approval of MOD2.

4.10.2 Design

i Guideline document

BCD recommended that the Office of Environment and Heritage's (OEH) "*Guidelines for developments adjoining land managed by the Office of Environment and Heritage*" be considered, including guidance for suggested conditions of consent:

http://www.environment.nsw.gov.au/research-and-publications/publicationssearch/guidelines-for-developments-adjoining-land-managed-by-the-office-of-environmentand-heritage

Noted. This is a matter for DPIE.

ii Impact on the Illawarra Escarpment State Conservation Area (IESCA)

BCD noted the proposed development adjoins the Illawarra Escarpment State Conservation Area (IESCA). No part of the adjacent pit top development should impact upon or occur within the adjoining IESCA.

BCD recommended that asset protection zones for the proposed pit top modification works must be maintained wholly on the subject site, and not encroach into the IESCA.

As identified in Figure 1.2 and outlined in Section 5.1.1 of MOD2, the Wongawilli Colliery upper pit top is located on the outskirts of the IECA, which is a nationally protected area. The proposed changes to surface infrastructure to enable to modification are within the existing mine operations footprint, as identified in Section 3 of the Modification Report, and asset protections zones will not encroach on this area.

BCD supports Wollongong Coal's position that no future mining proposals at Wongawilli will comprise longwalls, given the likely subsidence impacts on upland swamps and other sensitive threatened species habitats and watercourses. While noting that the proposed header tunnel is first workings only, BCD advised that they will provide input on any subsequent mining applications utilising the extended tunnel header at such time on merit.

As outlined in Section 1.3 of the Modification Report, approval of the proposed modification will enable the NWMD to be completed, and during this period Wollongong Coal propose to seek approval for mining activities within the North West and South West Domain utilising the existing Wongawilli pit top infrastructure for a 30-year mine life.

The completion of the NWMD development during the MOD2 period is essential for the proposed North West Domain and South West Domain mining operations project, as this would ensure that there is mining operations continuity assuming that the approval for the proposed North West Domain and South West Domain mining operations project will require a 3 to 5 year period for application preparation, submission and determination.

Wollongong Coal acknowledges that approval of MOD2 does not guarantee approval of future mining activities in the North West Domain or South West Domains which would be assessed and approved via a separate State Significant Development process, including relevant government agencies including BCD.

4.10.3 Water

i Swamp offsets policy

BCD noted that one Coastal Upland Swamp, a threatened ecological community listed under the *NSW Biodiversity Conservation Act 2016* and *Commonwealth Environment Protection & Biodiversity Conservation Act 1999*, is proposed to be undermined by the proposed North West mains tunnel extension, while the approved mains tunnel undermines one other upland swamp.

BCD noted that the first workings tunnel proposed by MOD2 is not predicted to have greater than negligible subsidence at the surface (<20 mm). As such, there is not predicted to be surface cracking in bedrock beneath swamps or in streams, meaning it is highly unlikely that the Addendum to NSW Biodiversity Offsets Policy for Major Projects - Upland swamps impacted by longwall mining subsidence ("Swamp Offsets Policy") will be triggered.

As per the Swamp Offsets Policy, BCD recommended that no greater than "negligible" impacts to swamps be addressed in conditions of consent, where "negligible" is defined as "small and unimportant, such as to be not worth considering". In the very unlikely event that this standard is exceeded, BCD recommended that the Swamp Offsets Policy apply. Similarly, it is highly unlikely that other terrestrial threatened species, including frogs that may be present in overlying streams, will be subject to subsidence impacts.

Noted. No change required.

4.11 Heritage NSW

4.11.1 Heritage

i Consultation with Illawarra Local Aboriginal Land Council (ILALC)

Heritage NSW recommended that additional Aboriginal community consultation needed to be conducted with the Illawarra Local Aboriginal Land Council (ILALC) to appropriately consider and address their concerns given their objections raised during the assessment process.

Heritage NSW recommended an amended Aboriginal Cultural Heritage Assessment Report (ACHAR) (Biosis 2020a) be prepared documenting the outcomes of the consultation process, including outlining the steps taken to address the concerns of the ILALC.

The ACHAR completed to inform the Modification Report has been revised to outline the steps taken to address concerns raised by the ILALC. The revised ACHAR is appended to this Submissions Report, see Appendix D. Section 4.3 within the revised ACHAR documents the outcomes of the consultation process and addresses how concerns of the LALC have been addressed.

In summary, to ensure concerns were adequately considered further consultation was undertaken with the ILALC and Heritage NSW post submission of the Modification Report. Representatives of Wollongong Coal meet with the ILALC on 29 April 2021, in which the ILALC identified the following key matters relevant to the ACHAR:

- Additional assessment and mitigation requirements or opportunities;
- Considering and documenting options to address the impact on intangible values; and
- Considering and documenting options to manage remediation.

Table 8 with the revised ACHAR provides individual responses to each of the matters raised by the ILALC. potential impacts to items of Aboriginal cultural heritage will mitigated and managed in accordance with the proposed ACHMP, to be developed post approval of MOD2 and in consultation with RAPs. The ACHMP will include at a minimum management and mitigation measures outlined in Section 5.3.3 of the updated Archaeological Report (see Appendix 6 of the ACHAR, appended to this Submissions Report) and noted below.

ii Inadequate assessment of cumulative impacts

Heritage NSW recommended a stronger assessment of cumulative impact across the mining lease needs to be included in the amended ACHAR to address overall impact of the proposed modification on Aboriginal cultural heritage values and provide appropriate management and mitigation measures.

In accordance with recommendations made by Heritage NSW, Wollongong Coal has revised the ACHAR to include a robust assessment of potential cumulative impacts to items of Aboriginal cultural heritage (see Appendix D of this Submissions Report). The cumulative assessment considered mining impacts across the Colliery held mining leases, historic impacts and the anticipated consequences of MOD2. Heritage NSW was consulted in regard to cumulative impact assessment methodology as discussed in Section 3.1.3.

The cumulative impact assessment, see Section 5.3 of the revised Archaeological Report appended to the revised ACHAR, notes that across the wider Colliery mining lease, multiple mitigation and management measures have been implemented to reduce any negative effects on Aboriginal cultural heritage. When comparing the Aboriginal sites that have been assessed and monitored with no impacts being recorded, it can be concluded that the cumulative impact of MOD2 on Aboriginal heritage values is low. It is noted that the assessment of cumulative impacts completed is associated with only archaeological or scientific values.

The Illawarra LALC expressed concerns that the cumulative effect on cultural values would include landscape changes as well as potential site impacts. Which are not predicted to occur as a result of MOD2. Wollongong Coal will continue to consult with the Illawarra LALC via the implementation of a AHMP post approval of MOD2.

iii Consultation with the Aboriginal community

Heritage NSW recommended MOD2 needs to be revised to accurately reflect the outcomes of the additional Aboriginal community consultation process and provide appropriate management measures to respond to these concerns.

The ACHAR has been revised to reflect the outcomes of additional Aboriginal community consultation (see Appendix D of this Submissions Report) as recommended by Heritage NSW.

Furthermore, Wollongong Coal is accepting of the recommendations outlined in Section 6 of the ACHAR to ensure appropriate management measure are enacted to respond to concerns highlighted by RAPs and Heritage NSW. Recommendations have been included within the updated mitigation measures table within Appendix C of this Submissions Report.

iv Need for an Aboriginal Heritage Management Plan

Heritage NSW recommended that once the ACHAR and MOD2 are amended, an Aboriginal Heritage Management Plan (AHMP) needs to be prepared to provide a framework for the ongoing consultation with the Aboriginal community and management of cumulative harm to Aboriginal cultural heritage through this project.

In accordance with Recommendation 4 within the revised ACHAR (see Section 6 of Appendix C of this Submissions Report), Wollongong Coal propose to develop an AHMP to provide a framework for the ongoing consultation with the Aboriginal community and management of any potential harm to Aboriginal cultural heritage as result of MOD2. As a minimum the AHMP will include, subject to ongoing consultation with RAPs and Heritage NSW, the following:

- Heritage inductions for all employees, contractors and sub-contractors working in the study area.
- Procedures to minimise and manage the impacts of the project on heritage items within the study area, such as baseline recording and monitoring.
- Procedure to protect Aboriginal heritage sites outside the project disturbance area.
- Contingency plan if Aboriginal heritage items outside the approved disturbance area are damaged.
- Procedure to follow for conducting further archaeological and heritage assessments in any undisturbed areas where assessment has not been carried out.
- Ongoing consultation with Aboriginal stakeholders regarding the management and conservation of Aboriginal cultural heritage throughout the operational life of the proposed development.
- Maintaining and managing reasonable access for Aboriginal stakeholders to Aboriginal heritage items located within the study area throughout the operational life of the project.
- Procedure to follow in the event of the discovery of human remains.
- Procedure to follow in the event of chance/unexpected Aboriginal finds.
- Procedure to follow in the event of unexpected non-Aboriginal finds.

4.12 Heritage NSW - Heritage Council of NSW

4.12.1 Heritage

i Impacts on SHR curtilage

Heritage Council of NSW noted that the Biosis Report states that, as the driveage is being developed using the first workings method, no impacts are expected to the ground surface.

Heritage Council of NSW advised that the Biosis Report does not discuss reasons why the additional driveage is located below the State Heritage Register (SHR) curtilage and does not provide consideration of locations outside of the SHR curtilage which should be addressed.

Wollongong Coal acknowledges the Heritage Council of NSW concern regarding mining under the SHR curtilage of the Lake Avon Reservoir. However, the NWMD as currently approved is located under the SHR curtilage of the Lake Avon Reservoir. As discussed in Section 3.2 of the Modification Report, the proposed extension of the NWDM under MOD2 is required to access the existing Wongawilli Ventilation Shaft 1 (located on the northern side of Lake Avon) to provide ventilation for the full extent of the NWMD. It is not possible to access the existing Wongawilli Ventilation Shaft 1 without the extension of the approved NWMD under the SHR curtilage.

As noted within the Modification Report and acknowledged within the Heritage Council of NSW submission, no impacts are expected to occur to the ground surface as result of MOD2. As such, no impacts to Lake Avon Reservoir or the SHR curtilage is predicted to occur. Furthermore, all surface activities proposed under MOD2 are located outside of the SHR curtilage of the Lake Avon Reservoir.

To ensure an adequate assessment of first workings mining activities under the Lake Avon Reservoir SHR Curtilage the Statement of Heritage Impacts (SoHI) has been amended to include discussion regarding the location of mining activities proposed under MOD2 (see Appendix F of this Submissions Report).

Heritage Council of NSW recommended that all project works should be located outside the Avon Dam SHR curtilage with no extraction beneath the SHR curtilage.

As noted above, mining activities proposed under MOD2 are required under the SHR curtilage of the Lake Avon Reservoir to access the existing Wongawilli Ventilation Shaft 1. No surface activities proposed under MOD2 are located within the SHR curtilage of the Lake Avon Reservoir.

No activities are proposed under MOD2 which would directly impact the SHR curtilage of the Lake Avon Reservoir.

To ensure an adequate assessment mining activities under the Lake Avon Reservoir SHR Curtilage, the SoHI has been amended to include discussion regarding the location of mining activities proposed under MOD2 (see Appendix F of this Submissions Report).

ii Conservation management plan

Heritage Council of NSW noted that MOD2 indicates that the study area has low archaeological potential and recommends an unexpected finds procedure. Heritage Council of NSW agreed that this is an appropriate management process. Additionally, it is noted that archaeological information in the existing conservation management plan (CMP) is out of date and recommended it be updated to reflect the current legislative requirements for understanding archaeological significance.

Wollongong Coal will update all relevant Colliery environmental management plans, including the CMP, to reflect and address current legislative requirements and proposed mitigation measures following approval of MOD2.

iii Consultation with local council

Heritage Council of NSW noted as the site contains a local heritage item, and a local heritage conservation area is in the vicinity, advice should be sought from the relevant local council.

WCC completed a review of the Modification Report and did not identify any concerns or mitigation measures for historical heritage as part of proposed MOD2 (refer Section 4.3).

4.12.2 Report

i Heritage recommendations

Heritage Council of NSW recommended if DPIE approved the proposed modification the Biosis Report recommendations should be included as conditions of consent.

Wollongong Coal would support the inclusion of the Biosis Report recommendations as conditions of consent. The proposed recommendations are documented within Table C.1, see Appendix C of this Submissions Report.

4.13 Crown Lands

4.13.1 General

Crown Lands advised that all Crown land and Crown roads within a Mining Lease (with surface rights), subject to mining or mining related activity, must be subject to a Compensation Agreement issued under Section 265 of the *Mining Act 1992*, to be agreed and executed prior to any mining activity taking place.

Crown Lands advised that the Compensation Agreement may include conditions requiring the Mining Lease Holder to purchase Crown land impacted on by mining activity.

No changes required. No activities associated with MOD2 will occur on Crown land parcels.

Crown Lands advised that all Crown land and Crown roads located within an Exploration Licence, subject to exploration activity, must be subject to an Access Arrangement issued under Section 141 of the *Mining Act 1992*, to be agreed and executed prior to any exploration activity taking place.

No changes required. No activities associated with MOD2 will occur on Crown land parcels.

Crown Lands advised that all Crown land and Crown roads within a Mining Lease (with sub-surface rights only) must be subject to a Section 81 Consent under the *Mining Act 1992* where surface activities are proposed, to be agreed and executed prior to any surface activity taking place.

No changes required. No activities associated with MOD2 will occur on Crown land parcels.

4.14 Subsidence Advisory NSW

4.14.1 General

Subsidence Advisory (SA) NSW noted that the proposal involves a 2.9 km extension to underground roadways (main headings) that have been previously approved by the department and will not result in any perceptible subsidence effects. As such SA NSW have no comment on the proposal.

Noted. No changes required.

4.15 Water Group

4.15.1 National Resource Access Regulator

The following identifies and provides responses to the individual recommendations made by the National Resource Access Regulator (NRAR) within the DPIE Water submission.

The project holds Water Access Licence (WAL) 36487 with a share entitlement of 1500 units/ML in the Sydney Basin Nepean Groundwater Source, Management Zone 1. The project is to ensure all water take falls under the existing entitlement as further entitlements in this water source will only be available by trading within the water source as controlled allocation in this zone is unlikely.

As noted within the DPIE Water submission and confirmed in the Modification Report, Wollongong Coal under Water Access License (WAL) 36487 holds a share entitlement of 1,500 units in the Sydney Basin Nepean Groundwater Source, Management Zone 1. All proposed water take under MOD2 is proposed to be licensed under WAL 36487, no further entitlement is required to facilitate MOD2. A summary of entitlements held by Wollongong Coal and entitlement required to facilitate MOD2 is provided in Section 7.6 of the Modification Report.

The project has not indicated it holds any entitlement in the surface water source above the proposed location of Mod 2. If as a result of Mod 2, surface water baseflow in rivers and creeks were to reduce, this would be considered water take and must be licenced under the Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Source 2011.

As confirmed by the Groundwater Impact Assessment (GWA), the Subsidence and Geotechnical Assessment (SGA), see Appendices I and K of the Modification Report, and SGIA, see Appendix H of this Submissions Report, MOD2 is not predicted to result in water take from surface water sources. As such entitlement under the Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Source 2011 is not a requirement of MOD2. Proposed water take under MOD2 will be licensed under WAL 36487 within the Sydney Basin Nepean Groundwater Source, Management Zone 1.

A summary of entitlements held by Wollongong Coal and entitlement required to facilitate MOD2 is provided in Section 7.6 of the Modification Report.

The proposal is located in close proximity to the Lake Avon Reservoir, part of the Sydney Drinking Water supply. Any surface cracking that leads to water take must be licenced and any reduction in the reservoir capacity may directly impact on WaterNSW's licensable take.

The SGA completed for MOD2, see Appendix K of the Modification Report, concludes that there is no potential for the proposed NWMD roadways to cause any significant surface ground movement. This is further supported by SCT supplementary assessment provided in Appendix E of this Submissions Report. Any surface subsidence is expected to be so small as to be imperceptible. Any potential impacts to natural and built features are expected to be imperceptible. In accordance with the finding of the SGA, GWA and SGIA and as noted above, no water take is predicted to occur from surface water sources including the Lake Avon Reservoir.

Wollongong Coal acknowledges the NRARs concern regarding mining in proximity to the Lake Avon Reservoir. As noted within the Subsidence and Geotechnical Assessment (SGA), see Appendix K of the Modification Report, to ensure a precautionary approach is taken to mining under the Lake Avon Reservoir, Wollongong Coal proposes to undertake in seam drilling ahead of workings in the Bulli Seam below the base of Lake Avon Reservoir from approximately 50 m from the edge of the Lake Avon Reservoir, within the Bulli seam.

This precautionary approach would confirm there are no zones of increased hydraulic conductivity that would lead to potential inflows into the underground roadways. Should increased hydraulic conductivity be demonstrated by drilling activities appropriate management and mitigation measure would be enacted prior to the continuation of mining in accordance with industry best practice.

Any licensable water take requiring a meter must install a meter that is compliant with the NSW non-urban water metering Policy - https://www.industry.nsw.gov.au/__data/assets/pdf_file/0017/312335/nsw-non-urbanwater-metering-policy.pdf

Wollongong Coal will ensure any licensable water take would be metered in accordance with NSW Non-Urban Water Metering Policy (NSW Government 2020).

The proponent should contact NRAR to modify water supply work 10WA118768 or link a new work to ensure there is a linked water supply work (miscellaneous work) located in the same water source as the WAL which holds entitlement, ie Sydney Basin Nepean Groundwater Source, Management Zone 1.

Wollongong Coal will consult with the NRAR to modify the current water supply work 10WA118768.

4.15.2 DPIE Water

The following identifies and provides responses to the individual recommendations made by DPIE Water concerning the groundwater impact assessment and model report submission.

Wollongong Coal notes that individual submissions raised by DPIE Water are responded to within the appended SGIA, see Appendix H of this Submissions Report.

Address the contradictory and uncertain descriptions of the project and modification, in particular regarding the use of longwall mining methods.

Wollongong Coal seeks approval of MOD2 as described in Section 1.1. No longwall mining proposed under MOD2. For clarity the project description is included within the SGIA, see Appendix H of this Submission Report, to ensure the report can be read as a standalone document.

Address all the requirements for improved modelling and reporting, these are listed in Attachment B.

Wollongong Coal has provided detailed responses and or clarification to each individual item raised within Attachment B of the DPIE Water submission. Table 4.6 below identifies each individual item raised and provides for a summary response and references the section of the SGIA, see Appendix H of this Submissions Report, where a detailed response and or clarification is provided.

Table 4.6 DPIE Water detailed response

ID	DPIE Comment	Wollongong Coal Response	Section of SGIA
1	The groundwater modelling report should be a standalone document, with minimal referral of the reader to external material.	Consolidated modelling report prepared.	The SGIA
2	The groundwater modelling report must include a clear description of the proposed Project, which is consistent with the description provided in other documents like the Main Report.	To include clear project description in report.	Section 1.3 Section 3.3.8
3	The groundwater modelling report must demonstrate that the proposed Project is properly represented in the numerical model. If no longwall mining is proposed, longwalls must be removed from the conceptual and numerical model and the effects of longwall mining on the overlying hydrogeological system must not be represented.	Report updated to better clarify that the Project does not include longwall mining.	Section 1.3 Section 3.2
4	Revise the Model and the Report addressing comments and recommendations in: a) the EMM peer review; b) WaterNSW submission to Environmental Impact Statement - Wongawilli Mine Modification (MP 09_0161 MOD 2); c) the Independent Expert Panel for Mining in the Catchment Report (IEMPC 2019) mentioned in Section 7.4 in the Report; and d) these comments by DPIE Water.	Incorporated into SGIA.	The SGIA

Table 4.6 DPIE Water detailed response

ID	DPIE Comment	Wollongong Coal Response	Section of SGIA
5	Include self-assessment of modelling using checklists in the AGMG 2012.	Modelling reported on against AGMG 2012.	The SGIA
6	There are omissions in the Report that must be addressed including errors and inconsistencies in text and between text, tables, and figures. Most of the figures must be reproduced to meet expected professional standards and be useful. The content and formatting of tables must also be checked.	SGIA prepared to address errors and omissions in the original report.	The SGIA
7	Please use consistent units. There are basic unit conversion errors that must be corrected, eg Table 3-7.	Consistent units applied throughout SGIA and conversion data checked and fixed.	The SGIA Section 2.7.1
8	Explain what change in recharge and specific yield of less than 0% means (-300% and -500% as stated in Section 8, p 112).	Details on model setup presented in the SGIA.	Section 3.2
9	Account for other mining operations in the area and clearly describe the approach adopted to assess cumulative impacts, including listing and characterisation of other considered operations.	Details on model setup including surrounding and historical mining presented in the SGIA.	Section 3.3.7 and Section 3.6
10	Provide maps of the predicted drawdown due to the Project alone and all developments in the area including the proposed Project for all model layers at key times, eg start of the Project, end of the Project, then selected dates that will help understand the long-term effects of the Project.	Predictions presented in the SGIA.	Section 4
11	Clearly indicate other operations modelled at various stages. Particularly, describe how was the Dendrobium Mine included in the model while it occurs outside the model domain.	Details on model setup including surrounding and historical mining presented in the SGIA.	Section 3.3.7
12	Clarify the sources of all presented data.	From consultation, comment was related to hydraulic properties, source data information included in the SGIA.	Section 2.7.1
13	Provide a clear geological map showing geological units and structure.	Geological details and map included in the SGIA.	Section 2.4
14	Clarify the extent of the used geological model/s.	Details on geological models included in geology section of report and model development details included in the SGIA.	Section 2.4 Section 3.2
15	List the hydraulic parameter values and boundary conditions adopted from Golder 2010 SEEP/W modelling, including providing a map showing the alignment of the modelled cross-section/s.	Details on model setup including hydraulic properties assigned presented in the SGIA.	Section 2.7.1
16	Provide a useful map of existing monitoring networks, including South 32 setups.	Included in the SGIA.	Section 2.5
17	Make appropriate recommendations to set up a useful monitoring network to support future modelling of the Project and expected future modifications.	Included in the SGIA.	Section 7

Table 4.6 DPIE Water detailed response

ID	DPIE Comment	Wollongong Coal Response	Section of SGIA
18	Obtain relevant surface water data and incorporate in the model, eg rivers and lakes stage and bed elevations, bed conductance, baseflow, etc.	Details on model setup the river package and use of observation data presented in the SGIA.	Section 3.3.2
19	Include lines representing the arithmetic and geometric mean of the K data in Figure 6-8.	Details on hydraulic properties included in the SGIA.	Section 2.7.1
20	In all assessments of effects, present 'Project only' and 'cumulative' impacts. Cumulative impacts include all historical and approved developments in the area in addition to the proposed Project.	Include clarity on what each of the model scenarios are and what they represent in the SGIA.	Section 4
21	Clarify the numerical model representation of surface water features, including the river zones shown in Figure 5-3.	Include map of the different river zones with a legend to explain the zonation and link to the SGIA.	Section 3.3.2
22	Provide an assessment of potential groundwater level drawdown effects at individual nearby bores due to all developments in the area including the Project and due to the Project alone. The assessment must clarify assessment uncertainty.	SGIA includes details on registered landholder bores and predicted impacts on registered bores.	Section 2.10.1 and Section 4
23	Include the Hawkesbury Sandstone in all impact, sensitivity, and uncertainty analysis as it represents an important water source in the area.	SGIA includes maps and results for the Hawkesbury Sandstone.	Section 5
24	Provide an assessment of the water level variation in groundwater associated with GDEs in support to the views regarding drawdown effects on GDEs expressed in Section 7.4.	Included in the SGIA.	Section 4.4
25	Provide an assessment of potential impacts on individual neighbouring GDEs due to the Project alone and the Project and other developments in the area, including clarifying uncertainty in the analysis.	Included in the SGIA.	Section 4.4
26	Clearly describe the northern GHB settings, including how the effects of the existing and future Dendrobium Mine operations have been accounted for.	SGIA includes detail on the model setup and assumptions.	Section 3.3.1
27	Ensure that the model boundaries alignments, types, and descriptions are consistent in the text and figures.	SGIA includes detail on the model setup and assumptions.	Section 3.2
28	Provide a clear description of the eastern model boundary.	SGIA includes detail on the model setup and assumptions.	Section 3.2
29	Provide steady-state model calibration scatter plot (modelled vs observed heads).	Steady-state model calibration scatter plot presented in the SGIA.	Section 3.5.2.1
30	Clearly describe the methodology for estimating initial rainfall recharge, including map presentation of the data.	SGIA includes details on recharge parameters.	Section 3.2
31	Present maps showing rainfall recharge and evapotranspiration (ET) from the water table for steady-state conditions and an average from the transient simulation.	SGIA includes the different recharge zones with the map legend to explain the zonation and link to report. SGAI includes graph showing recharge input (timeseries).	Section 3.3.3

Table 4.6 DPIE Water detailed response

ID	DPIE Comment	Wollongong Coal Response	Section of SGIA
32	Clarify the assigned confinement status for each model layer.	SGIA confirms if layers are defined as confined or convertible in the model setup.	Section 3.2
33	Obtain and calibrate the model against surface water and mine inflow data.	SGIA includes details on model setup and inputs (ie use of streamflow data to set up RIV package and mine inflows).	Section 3.3.2
34	Clarify the source and rational behind the use of the Kh-depth equation to assign Kh values to the model cells, including the used factors and coefficients.	SGIA includes details on hydraulic data and depth dependence equation sources, and recommendations for future iterations.	Section 3.4.1
35	Clarify whether the initial Kh values assigned using the adopted Kh-depth relationship have been altered during the model steady-state and transient calibrations.	SGIA includes details on model setup.	Section 2.7.1 and Section 3.4.1
36	Undertake composite parametric sensitivity (parameter identifiability) analysis to determine influential parameters in the model. The results must be used to enhance the model calibration and guide the uncertainty analysis.	SGIA includes details of model setup, and recommendations for future iterations.	Section 3.5.4.3
37	Explain in simple analytical formula/s (or other means) how the rising water levels noticed in some piezometers is related to an increase in storage due to recharge of the historical workings.	Groundwater level trends reviewed and revised discussion on trends is included in the SGIA.	Section 2.6
38	Identify possible reasons for the calibrated model not being able to replicate seasonality, long-term trends, and vertical relationships and discuss/implement potential solutions.	SGIA includes discussion on the model calibration performance and updated calibration, include mapped residuals and recommendations for future improvement.	Section 3.5
39	Provide a revised assessment of expected mine inflows, including appropriate uncertainty analysis.	Included in the SGIA.	Section 4
40	Undertake sensitivity analysis of heads and conductance values used in the model's GHB.	SGIA includes further information on the model setup and boundary head conditions.	Section 5
41	Undertake sensitivity and uncertainty analyses of ET extension depth.	SGIA includes explanation of model setup, including ET and describes the water balance components.	Section 3.3.5 and Section 5
42	Undertake uncertainty analysis guided by the results of comprehensive sensitivity analysis including parameter identifiability assessment.	SGIA includes recommendations for future model improvements.	Section 3.5.4.3
43	Examine the effects of concurrent changes in hydraulic properties in the uncertainty analysis (eg coinciding higher Sy and Kh).	SGIA conducted additional sensitivity scenarios with combined parameters.	Section 5
44	Arrange for the peer review to be re-done by an independent party, as required by the NSW Aquifer Interference Policy.	Peer reviewer independence declaration completed and included in peer review report.	Appendix C of the SGIA

With the improved modelling, provide updated predictions of drawdown effects at different receptors (bores, wetlands and adding the Hawkesbury Sandstone to the reporting), and inflow volumes of the approved and proposed mine workings.

Wollongong Coal notes that improved modelling, updated predictions of drawdown effects and inflow volumes of the approved and proposed mine workings are provided for within the SGIA and identified in Table 4.6 above.

For completeness given the minor changes in inflow volumes documented in the SGIA in comparison to the Groundwater Impact Assessment (SLR 2020) completed for the Modification Report. A Surface Water Letter Report (SWLR) confirming the adequacy of the existing operational water management system to accommodate the increase of inflows was completed by Hydro Engineering and Consulting (HECONs). The assessment is appended to this Submissions Report, see Appendix J. The SWLR confirms that the existing operational water management system as described within Section 7.5 of the Modification Report is sufficient to manage the increase the peak inflows being a change of 17.1 ML to that reported in the GIA. Furthermore the SWLR confirms that the existing discharge limit permitted under EPL 1087 is sufficient and that potential surface water impacts are expected to be consistent with those described as described in Modification Report.

5 Response to organisation and community submissions

Responses to the comments received from the 4 organisations and 29 community submissions are provided in the following subsections. Comments from the organisations and community are summarised by sub-category, with each respective comment followed directly with a response.

5.1 Air quality and greenhouse gas

An air quality and greenhouse impact assessment (AQGHGA) was undertaken to inform MOD2, see Appendix F of the Modification Report. The AQGHGA considered potential air quality and greenhouse gas (GHG) impacts associated with MOD2 on the surrounding environment, particularly at neighbouring sensitive receptors. This section provides responses to submissions received regarding air quality and GHG.

5.1.1 Generation of dust

Number of objections received from organisation submissions relating to quantity and composition of dust and emissions generated by the project: 0.

Number of objections received from community submissions relating to quantity and composition of dust and emissions generated by the project: 1 (1.8%).

The key concern/comment was that the proposed modification would impact the air quality, resulting in dust and affecting residents.

The AQGHGA completed for MOD2 identified that there will be no cumulative exceedances of the air quality criteria for the annual average PM_{10} concentration, annual average $PM_{2.5}$ concentration, annual average TSP concentration, annual average dust deposition level, 24-hour average PM10 concentration or 24-hour average $PM_{2.5}$ concentration at any assessment location, in accordance with the guidelines specified by the NSW Environment Protection Authority (EPA) in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA 2016).

The Colliery currently operates under an approved Air Quality and Greenhouse Gas Management Plan (AQGHGMP) which identifies numerous mitigation and management measures in place to reduce potential air quality impacts. The AQGHGMP requires that all personnel undertaking works at the Colliery understand their responsibility to manage air quality, including the effective management of potential dust sources. The mitigation and management measures as described within the AQGHGMP would continue to be implemented and updated where required as part of MOD2, in consultation with the EPA and to the satisfaction of DPIE.

Changes proposed under MOD2 including the reduction in stockpile use and height, relocation of coal processing infrastructure and increased utilisation of coal stockpile bins will provide a net benefit reduction in dust emissions by the Colliery to that currently approved.

5.1.2 Contribution to greenhouse gas emissions

Number of objections received from organisation submissions relating Concern/comments about the project's contribution to greenhouse gas emissions: 3 (75%).

Number of objections received from community submissions relating Concern/comments about the project's contribution to greenhouse gas emissions: 11 (20.75%).

The key concern/comments were as follows:

- The project will contribute to GHG emissions and contribute to climate change.
- The project is not aligned with policy in regard to climate change.
- WCL has no plans to offset GHG emissions.

Each of the key concerns identified above are responded to individually below.

MOD2 will result in GHG emissions and contribute to climate change.

Total GHG emissions from MOD2 are summarised below, with results being presented in full within the AQGHGA (see Appendix F of the Modification Report).

Annual Scope 1 and Scope 2 GHG emissions generated by the Colliery amount to 383,726 t CO_2-e, representing approximately 0.291% of total GHG emissions for NSW and 0.071% of total GHG emissions for Australia, based on the National Greenhouse Gas Inventory for 2018. Scope 3 emissions are approximately 6.1 Mtpa, with the majority associated with consumption of product coal by end users. It is common practice in environmental impact assessments to compare a project's emissions with total State and National emissions, which has been done in the AQGHGA, and shown to be a very small percentage of these emissions. However, attempting to quantify a project's impact on climate change on the basis of its contribution to total emissions is unscientific as climate change impacts are not linear with increases in emissions. For this reason, MOD2 presented the emissions data to enable these estimates to be included in future regional or global emission projections, and for consideration by decision-makers and other stakeholders.

It is important to note total emissions proposed by MOD2 are calculated based on the maximum extraction rate of 2 Mtpa, so as to provide a conservative assessment (ie worst case scenario). MOD2 as proposed requires driveage to be developed through stone, in sections, where metallurgical coal may not be present in order to access the Wongawilli Ventilation 1 Shaft and Wongawilli seam at the eastern end of the NWMD. As such, it is unlikely the total proposed extraction rate of 2 Mtpa, and the associated total emissions thereof, would be achieved during the development of the NWMD. The total coal proposed to be extracted under MOD2 is discussed in Section 4.1.

The Colliery currently operates under an approved AQGHGMP to ensure all personnel undertaking works at the Colliery understand their responsibility to manage air quality and greenhouse gas emissions. The mitigation and management measures as described within the existing Colliery AQGHGMP would continue to be implemented. The AQGHGMP would be updated following approval of MOD2.

Wollongong Coal propose to implement the following mitigation measures, in addition to those proposed in MOD2 and established within the AQGHGMP, to further reduce the relatively minor GHG emissions:

- Equipment sourced to support the activities proposed under MOD2 is to be selected taking into consideration GHG emission production potential.
- Source fuels which are both suitable for equipment and represent the lowest GHG emission potential.
- Investigate the utilisation of renewable energy to support mining activities to reduce GHG emissions associated with electricity consumption of operations.

- Tenders to provide substantive capital works and or equipment to Wollongong Coal will including a weighting in which GHG emissions are to be considered, by means of supplier policy and or proximity to the Wongawilli.

The project is not aligned with policy in regard to climate change.

Australia ratified the Paris Agreement in November 2016 reinforcing its commitment to action on climate change and further reductions to GHG emissions. The Paris Agreement builds upon the United Nations Framework Convention on Climate Change and aims to strengthen the global response to the threat of climate change. Under the Paris Agreement, Australia has committed to reduce its emissions by 26–28% below 2005 levels by 2030 (Australian Government 2015). This emissions reduction target builds upon the national 2020 target of reducing emissions by 5% below 2000 levels (Australian Government 2015). The target represents a 50–52% reduction in emissions per capita and a 64–65% reduction in the emissions intensity of the Australian economy between 2005 and 2030 (Australian Government 2015).

In addition to the ratification of the Paris Agreement, the Commonwealth and NSW governments have demonstrated their ongoing commitment to GHG emission reductions through the implementation of a suite of policies. These policies are already contributing to emission reductions and encouraging both technological innovation and further expansions to the country's clean energy sector. For example, the NSW Government's *Net Zero Plan* is the foundation for NSW's action on climate change and goal to reach net zero emissions by 2050. As nominated within Stage 1 of this plan: "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" (NSW Government 2020).

The NSW Government released its NSW Climate Change Policy Framework (CCPF) in 2016, which commits NSW to achieving net-zero emissions by 2050. The CCPF does not however set emission reduction targets for individual sectors, or developments.

Further to the CCPF, in 2020 the NSW Government released the Net Zero Plan Stage 1: 2020-2030 (Net Zero Plan), which sets the net zero priorities for this decade, as follows:

- Drive uptake of emission reduction technologies.
- Empower consumers and businesses to make sustainable choices.
- Accelerate research, development and demonstration of low emissions technologies.
- Ensure the NSW Government leads by example.

In relation to coal, the Net Zero Plan acknowledges 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 the communities they support.

The NSW Government also released the Strategic Statement on Coal Exploration and Mining in NSW (the Statement) in June 2020. This Statement provides a clear and consistent policy framework for coal exploration and mining in NSW that supports investment certainty as the coal mining sector responds to global demand. Notably, the Statement does not include a cap or policy objective on Scope 1 GHG emissions other than to state (with reference to reducing the impacts of coal mining) that the NSW government will work to:

> reduce the greenhouse gas emissions directly associated with coal mining in NSW (fugitive emissions) (page 9)

MOD2 and the above noted commitments to reduce GHG emissions ensure the Colliery meets the noted policy objectives. Further, as discussed in greater detail below Wollongong Coal will further investigate reasonable and feasible measure to offset GHG emissions as part of the proposed future North West Domain and South West Domain projects.

The Statement also makes it clear that the NSW Government seeks to:

> recognise existing industry investment by continuing to consider responsible applications to extend the life of current coal mines.

MOD2 is consistent with this policy objective.

Furthermore, as noted in Appendix F of Modification Report, Wollongong Coal has committed to only exporting coal to countries who are signatories of the Paris Agreement. As such, all emissions including Scope 1, 2 and 3 relevant to MOD2 are to be accounted for by the appropriate country in accordance with the Paris Agreement, in so ensuring MOD2 is adequately considered in achieving emissions targets of the relevant countries in which the relevant Scope emissions are attributable.

Wollongong Coal has no plans to offset GHG emissions.

As described in Section 3 of the Modification Report, MOD2 seeks to extend the life of the Colliery by 5 years to enable Wollongong Coal to continue development of the approved NWMD. Furthermore, the modification largely seeks approval to extend the length of the approved NWMD alignment to access the existing Wongawilli Ventilation Shaft 1 and minor surface activities. MOD2 represents a relatively minor change to activities currently approved, in which, no offsets of GHG emission are required. GHG emissions proposed under MOD2 will be minimised by the methods proposed above.

As noted in the Modification Report, approval of MOD2 is sort to ensure continuity of operations, assuming that the approval for the proposed future North West Domain and South West Domain mining projects will require a 3 to 5 year period for application preparation, submission and determination. Wollongong Coal will further investigate reasonable and feasible options to offset emissions from the Colliery as part of the proposed North West Domain and South West Domain mining projects. As the proposed projects would represent a significant change to that currently approved, a new State Significant Development (SSD) would be required.

5.2 Noise

A noise and vibration impact assessment (NVIA) was undertaken to inform the modification report to assess potential noise and vibration impacts associated with MOD2 on the surrounding environment, particularly at neighbouring sensitive receptors (Appendix E of the Modification Report).

5.2.1 Noise impacts

Number of objections received from organisation submissions relating to Concern/comments about the project's contribution to noise emissions: 0 (0%).

Number of objections received from community submissions relating Concern/comments about the project's contribution to noise emissions: 3 (5.8%).

The key concern/comment was that noise generated from the project will impact the surrounding community.

Wollongong Coal acknowledges the local community concern regarding potential noise impacts of the Colliery. In respect of this, Wollongong Coal has assessed all reasonable and feasible noise mitigation measures to reduce potential noise emissions from Colliery operations. As a result of this assessment, significant improvement opportunities to the existing Colliery infrastructure and operational processes have been identified. Proposed improvements to reduce noise impacts are identified in the Modification Report and further discussed in the NVIA, a summary of Wollongong Coal's improvement opportunities is provided below.

Proposed Colliery improvements proposed by MOD2 to reduce noise emissions:

- Fitting of noise suppression kit to front-end loading (FEL) equipment - It is expected that a 5dB reduction to the overall FEL sound power level would be achievable. Being one of the main contributors to off-site mine noise emissions these controls to the dozer will have the benefit of reducing mine noise at all neighbouring residences.

- Relocate sizing and screening infrastructure underground - This measure will require consideration of engineering design and capital investment and will result in a significant reduction to mine noise emissions at nearby residences, in particular with regard to low frequency noise emissions. It is expected that the current enclosure housing the sizing and screening plant would be retained with coal transferred via conveyor within the current enclosure.

- Improvements to elevator enclosure - This measure will require consideration of engineering design and capital investment, but it is expected that a reduction of noise levels would be possible.

- Extend existing 6m high rail barrier further north to the rail loadout bin - Extending the rail barrier north would provide additional acoustic shielding to, primarily, locomotives on the track whilst loading wagons. Approximate extension of the rail noise barrier is shown in Appendix E of the NVIA. The extension will be located within the existing Wongawilli lower pit top disturbance footprint.

Operational noise from the Colliery has been assessed in accordance with the methodology outlined in the Noise Policy for Industry (NPfI) for existing sites. The assessment considered noise data recorded whilst the Colliery was in operation and proposed reasonable and feasible mitigation measures.

Results of the assessment indicated that, with the inclusion of all reasonable and feasible mitigation measures, noted above, noise emissions from the Colliery would reduce by up 3 to 8 dB at surrounding receptors with minimal residual noise impacts; one receptor is predicted to experience marginal impacts and six receptors predicted to experience negligible impacts, in accordance with the NPfI.

The Colliery currently operates under an approved Noise Management Plan (NMP) which acts to ensure all personnel undertaking works at the Colliery understand their responsibility to manage potential noise emissions and provides practical guidance on the implementation of noise monitoring, management and mitigation measures. As outlined in the NMP real time and attended noise monitoring will be relied upon to proactively manage noise emission from the Colliery, in accordance with the Noise Trigger Action Response Plan (TARP), within the NMP. The NMP would be updated following approval of MOD2 to include the proposed mitigation and management measures as approved.

WWC will develop an appropriate timeline to coordinate and implement all these measures in the NMP.

5.2.2 Adequacy of noise assessment

Number of objections received from organisation submissions relating to the adequacy of the noise assessment: 0 (0%).

Number of objections received from community submissions relating to the adequacy of the noise assessment: 1 (1.8%).

The submitter lives close to the Colliery and was concerned/commented about the noise levels from the conveyor belt during the day and night. The submitter queried the accuracy of the following MOD2 statements:

- "Background monitoring conducted in the EA was not indicative of the typical existing acoustic environment".
- "Based on the results table, the predicted noise levels at each assessment location are estimated to reduce by 3-8 dB at most assessment locations, compared to predicted noise levels from approved operations".

The submitter also requested that further noise suppression measures are conditioned in any consent approvals to assist in mitigating the noise pollution from the conveyor belt.

The NVIA as noted in Section 7.2.1 of the Modification Report was completed with reference to the following guidelines and polices:

- NSW Environment Protection Authority (EPA) 2017, *Noise Policy for Industry* (NPfI).
- NSW Department of Environment and Climate Change (DECC) 2009, *Interim Construction Noise Guideline* (ICNG).
- NSW EPA 2013, *Rail Infrastructure Noise Guideline* (RING).
- NSW Department of Environment, Climate Change and Water (DECCW) 2011, *Road Noise Policy* (RNP).
- Department of Environment and Conservation NSW 2006, *Assessing Vibration: a technical guideline*.

Furthermore, the EPAs submission regarding MOD2 confirms that the NVIA has followed the NPfI in developing the project noise trigger levels for the project.

In regard to the submission 775616 which queries the adequacy of the assessment noting *'background monitoring conducted in the EA was not indicative of the typical existing acoustic environment'.* Section 6 of the NVIA documents how the existing acoustic environment was established considering both the Colliery in care-and-maintenance and whilst in operation. The NPfI allows for noise from the existing premises to be included in background noise measurements if it has been operating for a significant period of time (ie greater than 10 years) and is operating in accordance with noise limits and requirements imposed in a consent or licence. Wongawilli Colliery has been in operation since 1916 and a review of results of the most recent quarterly monitoring indicate that the Colliery has been predominantly compliant with existing noise limits. As such, background noise levels have been determined in accordance with the NPfI.

Submission 775616 also seeks confirmation that the property which the submitter owns will benefit from the proposed noise mitigation measures. Section 5 of the NVIA establishes the approved mine noise, whereas Section 8 confirms the operational noise emission when unmitigated. Section of the 9 of NVIA identifies MOD2 noise emissions taking into consideration proposed mitigation measures. When comparing the unmitigated and mitigated noise contours displayed in Sections 8 and 9 respectively the submitters property is predicted to experienced reduced noise levels to that currently approved.

Of note Wollongong Coal has committed to the proposed noise mitigation measures identified in the Modification Report and identified in Section 5.2.1 of this Submission Report. Wollongong Coal would be accepting of DPIE conditioning these mitigation measures on the basis that an acceptable amount of time would be allowed to engineer and construct the noted mitigation measures so as to not be prohibitive of operations.

5.3 Traffic

5.3.1 Suitability of roads and rail infrastructure

Number of objections received from organisation submissions relating to Concern/comments about the suitability of roads in relation to the project: 0 (0%).

Number of objections received from community submissions relating to Concern/comments about the suitability of roads in relation to the project: 1 (1.8%).

The key concern/comment was that roads are not suitable for mining traffic and that the rail line requires maintenance.

A Traffic Impact Assessment (TIA) was completed to inform the modification report for MOD2. The TIA was appended as Appendix G to the Modification Report.

The TIA noted when compared to the approved operation at the Colliery, the road and traffic impacts of MOD2 will be lower than the current approval for the mine, due to the reduction of the workforce from 300 full time equivalents (FTEs) (as approved) to 150 FTEs. The TIA has concluded that the traffic associated with MOD2 will be relatively small and traffic conditions on the road network will remain satisfactory.

MOD2 is not expected to have any negative impacts on road safety on the road network adjacent Wongawilli Colliery, or negative impacts on other road users.

Noting the minimal traffic impact proposed by MOD2, Wollongong Coal will ensure all personnel undertaking works at the Colliery are made aware of the local traffic network, ensure personnel are courteous of other road users and are respectful of neighbouring residents. The Colliery will also make every effort to schedule deliveries and or site activities to avoid any additional traffic during school times.

As identified in TfNSW submission on MOD2, TfNSW has provided in-principal acceptance to WCC to construct traffic signals at the intersection of Shone Avenue, Wongawilli Road and West Dapto Road. Wollongong Coal will continue to consult with WCC to ensure MOD2 is adequately considered in any planned works.

Regarding the Wollongong Coal private rail line, any required maintenance activities relevant to the continued use of the line will be carried out prior to proposed rail movements after MOD2 approval.

5.4 Biodiversity

5.4.1 Impact to biodiversity

Number of objections received from organisation submissions relating to impacts to biodiversity in relation to the project: 0 (0%).

Number of objections received from community submissions relating to impacts to biodiversity in relation to the project: 2 (3.9%).

The key concern was that the project will impact biodiversity:

- The project will damage biodiversity, in particular EECs.
- The project will damage land and wildlife.

A BDAR was prepared to address the potential impacts of MOD2, see Appendix L of the Modification Report.

As documented within the BDAR and Section 7.8 of the Modification Report, avoidance of impacts to native vegetation, threatened ecological communities and fauna habitat have been undertaken to restrict proposed direct impacts associated with MOD2 to the removal of 0.01 hectares of Plant Community Type (PCT) 906 (Illawarra Subtropical Rainforest in the Sydney Basin Bioregion) and 0.02 hectares of PCT 1245 (Illawarra Escarpment Blue Gum wet forest), and the habitat it supports from the subject land. The vegetation integrity scores for vegetation at the subject land are such that a total of two ecosystem credits are required to offset impacts to the two vegetation zones identified within the subject land.

There were no threatened flora species recorded or assumed to be present within the subject land.

No threatened fauna species were recorded at the subject land however the presence of four credit species identified by the Biodiversity Assessment Method (BAM) calculator have been assumed. These are Pink Robin, Large-eared Pied Bat, Large Bent-winged Bat and Little Bent-winged Bat. Based on the impact area and biodiversity risk weighting attributed to these species, four species credits are required to offset impacts to fauna habitat.

Furthermore the GWA completed for the Modification Report and additional SGIA undertaken for this Submissions Report predict negligible impacts to surface or groundwater as a result of the proposed extension to the NWMD. Hence, impacts to ecosystems that rely on groundwater are unlikely to be impacted by MOD2.

Wollongong Coal proposes to offset the impacts of MOD2 via satisfying the offset obligations via the biodiversity conservation fund.

5.5 Economic

An economic assessment was undertaken as part of MOD2 (see Appendix P of the Modification Report) to assess the potential economic cost and benefits of the project. Following submission of the Modification Report and as discussed in Section 4.1, Wollongong Coal has clarified the proposed production level proposed under MOD2. Wollongong Coal has relied upon the updated key economic outputs discussed in Section 4.1 to inform responses to organisation and community submissions.

This section provides responses to submissions received regarding the economic assessment and financial position of Wollongong Coal.

5.5.1 Impact to economy

Number of objections received from organisation submissions relating to impacts to economy in relation to the project: 1 (25%).
Number of objections received from community submissions relating to impacts to economy in relation to the project: 9 (17.65%).
The key concern is that the project will not contributing significantly to the economy.

MOD2 will provide direct economic activity, including jobs, to the local area of Illawarra SA4, and indirect economic activity to the local area via both wage and non-wage expenditure. Environmental, social and cultural impacts of MOD2 to the local community are not expected to be material from an aggregate economic efficiency perspective.

As outlined in Section 4.1 of this Submission Report and updated Economic Letter Report, see Appendix G, a cost benefit analysis (CBA) indicates net production benefits to NSW at $0.2 to $3.7M (present value at 7% discount rate) comprising royalties of $3.7M (present value at 7% discount rate) and a company tax deduction of -$3.5M, that can only be realised if there is positive taxable income from which it can be deducted. If it cannot be realised then the net production benefit to NSW is $3.7M (present value at 7% discount rate). There will also be some additional externality costs ($0.01M, present value at 7% discount rate) associated with GHGs, biodiversity offsets and the opportunity cost of holding groundwater licences. Overall MOD2 is estimated to have net social benefits to NSW of between $0M and $3.6M (present value at 7% discount rate).

The modification would allow for existing social and economic benefits of the Colliery to continue as a result of the extended mine-life by enabling the employment of up to 150 FTE employees, while supporting local and regional suppliers. The modification would also provide stability and certainty to local and regional communities, contributing to negating possible social and economic impacts during a period of financial hardship caused by COVID-19. Economic benefits would also extend to state and national levels with ongoing royalty payments and export sales.

5.5.2 Adequacy of economic assessment

Number of objections received from organisation submissions relating to the adequacy of the economic assessment: 1 (25%).

Number of objections received from community submissions relating to the adequacy of the economic assessment: 9 (17.65%).

The key concerns relating to the adequacy of the economic assessment are as follows:

- The economic assessment is incomplete as it does not assess the project as part of the large future proposal to mine the north-west and south-west domains.
- The economic assessment is incomplete as it does not consider/quantify water loss or discharge of polluted waters.
- GHG emissions may have been underestimated by using a low carbon cost price and proportion the cost to NSW as a fraction of global pollution.
- The economic assessment is misleading as it does not attempt to quantify the social costs of the project. A critical and essential evaluation has not been performed by this CBA contravening the NSW Treasury Guidelines.

Each of the key concerns identified above are responded to individually below.

The economic assessment is incomplete as it does not assess the project as part of the large future proposal to mine the north-west and south-west domains.

As identified within Section 7.12 of MOD2 and Section 2.1 of the economic assessment (Appendix P of the Modification Report), the potential north-west and south-west mining domains have been considered as part of the economic assessment. Specifically, Section 7.12.2 of the Modification Report states:

> The economic assessment was based on financial, technical and environmental advice provided by Wollongong Coal and EMM and was evaluated using two different scenarios, comprising MOD2 as a project of its own and an evaluation of MOD2 as a subcomponent of a larger future potential mining project (ie mining within the North West Domain, for which Wollongong Coal propose to seek future approval).

Section 2.6.3 of the economic assessment specifically addresses the potential net social benefits to NSW of future mining in the north-west domain.

This approach is consistent with the NSW Treasury document *NSW Government Guidelines to Cost Benefit Analysis 2007* (NSW Treasury, 2007) which notes:

> A project may consist of a series of component parts. In such circumstances it is the evaluation of the larger project which is critical and it is essential that this be provided, not just an evaluation of the individual component part.

For the purpose of clarity, the North West and South West Domain as described within the economic assessment is inclusive of the noted south-west domain identified within submissions received.

The economic assessment is incomplete as it does not consider/quantify water loss or discharge of polluted waters.

The economic assessment completed for MOD2 is based on financial, technical and environmental advice provided by Wollongong Coal and technical specialists. As such the economic assessment considered the findings of the Surface Water Technical Report and the Groundwater Impact Assessment (Appendix H and I of the Modification Report respectively).

Specifically, the economic assessment noted the following consideration in regard to water:

- Groundwater (Section 2.5.2 of the economic assessment):
  - The Groundwater Impact Assessment (SLR Consulting Australia Pty Ltd, 2020) found that there would be mine inflows of up to 37ML/yr for which Groundwater Water Access Licences (WALs) will be required. Wollongong Coal already hold these WALs, however there is an opportunity cost of holding them which is assumed to be $2,000/ML ie $0.06M.

- The Groundwater Impact Assessment also found that:
    - there would be negligible impact on water supply bores;
    - it is very unlikely that there would be any impacts to groundwater dependant ecosystems;
    - will be negligible impact on baseflow to rivers and creeks; and
    - Surface water (Section 2.5.2 of the economic assessment).

No impacts to the surface water systems or the water management system of the Wongawilli Colliery are expected to occur as a result of MOD2 as noted in the Modification Report and support by this Submissions Report. Consequently, there are no material impacts for inclusion in the CBA.

In light of the above, the economic assessment has considered water loss and potential discharge of polluted waters associated with the proposed modification. On the basis of technical specialist outputs, no material impact is predicted to occur as a result of MOD2 and as such no material impacts have been accounted for within the costs benefit analysis or the local effects analysis identified in Table 7.34 and Table 7.35 of the Modification Report.

GHG emissions may have been underestimated by using a low carbon cost price and proportion the cost to NSW as a fraction of global pollution.

The Air Quality and Greenhouse Gas Assessment (Appendix P of the Modification Report) identified average annual Scope 1 and Scope 2 emissions of 361,297 t Co2-e and 22,029 t Co2-e, respectively.

The methodology and estimation of GHG emissions was undertaken in accordance with the Australian Government Department of the Environment and Energy (DoEE) National Greenhouse Accounts Factors (NGAF) workbook (DoEE 2019). The methodologies in the NGAF workbook follow a simplified approach, equivalent to the 'Method 1' approach outlined in the National Greenhouse and Energy Reporting (Measurement) Technical Guidelines (DoEE 2014).

Similarly, the Economic Assessment to inform the Modification Report and the updated Economic Letter Report, see Appendix G of this Submissions Report, was carried out in accordance with relevant standards and guidelines as follows:

- *Guideline for the economic assessment of mining and coal seam gas proposals* (the Guidelines) (NSW Government 2015).
- *Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals* (NSW Government 2018).

Consistent with the NSW Government (2015), the quantification/valuation of benefits and costs was undertaken:

- in 2020 real values;
- with discounting at 7% and sensitivity testing at 4% and 10%; and
- with an analysis period in 7 years, comprising one year per MOD2, the MOD2 life and one year post MOD2.

For accounting and reporting purposes, GHG emissions were defined in the economic assessment as 'direct' and 'indirect' emissions. Direct emissions (also referred to as Scope 1 emissions) will occur within the boundary and as a result of that Colliery's activities. Indirect emissions will be generated as a consequence of the Colliery's activities but are physically produced by the activities of another organisation (DoEE 2019). Indirect emissions are further defined as Scope 2 and Scope 3 emissions. Scope 2 emissions occur from the generation of the electricity purchased and consumed by the Colliery, while Scope 3 emissions occur from all other upstream and downstream activities, for example the downstream extraction and production of raw materials or the upstream use of products and services.

To place an economic value on CO2-e emissions, the economic assessment applied a shadow price of CO2-e with three initially used, comprising the:

- Forecast European Union Emission Allowance Units price;
- Australian Treasury Clean Energy Future Policy Scenario; and
- US Environmental Protection Agency (EPA) Social Cost of Carbon.

The economic assessment acknowledged that the shadow prices of CO2-e represent the global damage cost of carbon (ie the cost of carbon emissions to the population of the whole world) and that for a CBA of a NSW project undertaken in accordance with the NSW Government (2015) *Guidelines for the economic assessment of mining and coal seam gas proposals* and the NSW Government (2018) *Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals*, only the GHG impacts that accrue to NSW households are relevant for the purpose of the proposed modification. In the absence of any studies that have focused on the social damage cost of carbon emissions to NSW residents, some means of apportioning global damage costs borne by NSW residents is required and for the purpose of the economic assessment, this has been undertaken using NSW's share of the global population.

On this basis, the present value of the cost of greenhouse gas emissions from MOD2 to NSW is estimated at between $0.01M and $0.04M (present value), with an average across the three shadow prices of $0.02M (present value).

The economic assessment is misleading as it does not attempt to quantify the social costs of the project. A critical and essential evaluation has not been performed by this CBA contravening the NSW Treasury Guidelines.

Section 4.1 identifies the net social benefits and costs of MOD2 to NSW, in accordance with NSW Government (2015) *Guidelines for the economic assessment of mining and coal seam gas proposals*. The social costs of the modification, based on the technical and environmental advice provided by Wollongong Coal and technical specialists is provided in Table 4.3

5.5.3 Financial position of Wollongong Coal

Number of objections received from organisation submissions relating to WCL's financial position: 2 (50%).

Number of objections received from community submissions relating to WCL's financial position: 17 (33%).

The key concerns in relation to WCL's perceived financial position are:

- WCL is at risk of insolvency/bankruptcy.

The NSW DPIE has previously identified that the financial viability of projects is a risk assumed by the project owners. The financial position of an application for development consent is not a relevant matter for consideration when assessing a development application. Wollongong Coal is willing to incur a financial loss associated with MOD2 to facilitate access to the North West Domain and ensure continuity of mining operations. Any risk that MOD2 may commence and then cease operation for financial reasons leaving unmet rehabilitation liabilities is mitigated by the fact that Wollongong Coal is required to pay a rehabilitation security deposit to the NSW DPIE – Mining, Exploration and Geoscience (DPIE-MEG) as the holder of a mining authority under the Mining Act. This security deposit is held by DPIE-MEG to ensure that the legal obligations in relation to rehabilitation and safety of the site can be met following mine closure. If rehabilitation obligations are not met to the satisfaction of the Minister, then the security funds would be used by DPIE-MEG to meet the relevant requirements.

Notwithstanding, Wollongong Coal has reduced its external interest-bearing debt by 50% during the 2020/21 financial year with overall reduction of external debt being much higher. A copy of Wollongong Coals audited financials is publicly available with the company continuing to strengthen its balance sheet supported by major shareholder JSPL, despite operations, such as Wongawilli Colliery, being in care & maintenance over the past few years. Submission statements which relate to the Wollongong Coal being of risk of insolvency and or bankruptcy are therefore considered incorrect.

5.6 Social

Number of objections received from organisation submissions relating to social impacts relating to the project: 1 (25%).

Number of objections received from community submissions relating to social impacts relating to the project: 4 (7.8%).

The key concerns in relation to social impacts are as follows:

- The project will result in negative economic implications for the community for years to come.
- WCL avoids providing CCC with information.
- The project will negatively impact the Illawarra's transition to sustainable industry and employment.
- The project does not consider the community by mining under the water catchment.

Each of the key concerns identified above are responded to individually below.

The project will result in negative economic implications for the community for years to come

The economic contribution of the MOD2 on the local community is defined in Section 4.1 and the updated Economic Letter Report, see Appendix G of this Submissions Report. In summary, MOD2 will provide direct economic activity, including jobs, to the local area of Illawarra SA4, and indirect economic activity to the local area via both wage and non-wage expenditure. Environmental, social and cultural impacts of MOD2 to the local community are not expected to be material from an aggregate economic efficiency perspective. Post operations, the Colliery will be actively rehabilitated in accordance with current approvals, and objectives outlined in the Wongawilli Colliery MOP.

WCL avoids providing CCC with information

Engagement with the established CCC is undertaken in accordance with Community Consultative Committee Guideline – State Significant Projects (DPIE 2019). The CCC meets quarterly in which relevant Colliery information is communicated by Wollongong Coal. A record of all meetings is kept and made available online via Wollongong Coals website (https://wollongongcoal.com.au/community/). Wollongong Coal disagrees with the statement that information is withheld from the CCC, with every effort made to communicate current operational activities, environmental compliance, and potential future mining activities.

The project will negatively impact the Illawarra's transition to sustainable industry and employment

MOD2 aligns with the strategic policies for the region as identified in Section 4 of the Modification Report, including the NSW Strategic Statement on Coal Exploration and Mining in NSW (DPIE - Division of Resources and Geoscience, 2020). MOD2 will also assist the state to continue to meet predicted growing coal demand, particularly from Asian markets with the majority of coal production to be sold to JSPL's for steel manufacturing purposes.

The project does not consider the community by mining under the water catchment

Wollongong Coal has undertaken significant assessment of potential impacts associated with mining activities within the Sydney Drinking Water Catchment and more specifically beneath the Lake Avon Reservoir and the potential impact to the local community. Consideration of mining under the water catchment has been considered within but not limited to:

- MOD2 – Modification Report;
- MOD2 – Social Impact Assessment (see Appendix O of the Modification Report);
- MOD2 – Economic Impact Assessment (see Appendix P of the Modification Report);
- MOD2 – Groundwater Impact Assessment (see Appendix J of the Modification Report); and
- MOD2 – Surface Water Impact Assessment (see Appendix H of the Modification Report).

The above noted assessments are supported by the supplementary information provided within this Submissions Report and appended technical assessments and reports.

5.7 Water resources

Number of submissions received from organisations in relation to water resources: Surface water 4 (100%) / Groundwater 0 (0%) (note impacts to water security have been attributed to Surface water).

Number of general submissions received from community in relation to water resources: Surface water 18 (35.29%) / Groundwater 3 (5.88%).

The key concerns/comments in relation to water resources are as follows:

Impacts to the Sydney Drinking Water Catchment and water security:

- The project will impact the Sydney and the Illawarra's drinking water supply.
- The project will result in 7 million litres of polluted mine water per day will make its way into Lake Illawarra.
- The project will result in polluted discharge into Robins Creek.
- The project poses a potential risk to water security.
- The project will create further risks to water catchment integrity and damage the catchment.
- The project has the potential for water loss.
- The project has potential for cracking of Lake Avon Reservoir and groundwater depressurisation.

Cumulative Impacts:

- No official record of cumulative impacts of coal mining on the Greater Sydney Water Catchment.

Each of the key concerns identified above are responded to below.

Impacts to the Sydney Drinking Water Catchment and water security:

The project will impact the Sydney and the Illawarra's drinking water supply, the project will create further risks to water catchment integrity and damage the catchment and the project will impact the Sydney and the Illawarra's drinking water supply.

As described in Section 7.5 of the Modification Report, under the *Sydney Drinking Water State Environmental Planning Policy* (2018) (SEPP), all development in the Sydney drinking water catchment is required to demonstrate a neutral or beneficial effect on water quality. For MOD2, this applies to any area within the catchment or discharging to the catchment of Lake Avon.

In accordance with WaterNSW (2015), it is reasonable to assume that a development will have no identifiable potential impact on water quality if the development is unlikely to result in:

- a concentration of flow of water;
- the impedance of flow water;
- discharge of effluent, dust pollutants or stormwater; and
- other matters considered to result in a water quality impact, such as the potential for contamination.

No surface development activities associated with MOD2 is proposed to be undertaken in the Lake Avon catchment and negligible impact to surface water systems within Lake Avon catchment are expected to occur as a result of MOD2. Noting that no perceptible subsidence is predicted on the basis of the first workings mining technique, supported by Subsidence Letter Report, see Appendix E of this Submissions Report. As such, MOD2 is expected to result in a neutral effect on water quality of surface water systems within the Lake Avon catchment.

The project will result in 7 million litres of polluted mine water per day will make its way into Lake Illawarra.

Wollongong Coal under MOD2 propose to comply with the existing requirements of EPL 1087 in regard to the discharge of water from the Colliery. Wollongong Coal will continue to implement the approved Colliery SWMP to ensure potential risk associated are adequately mitigated and managed. Furthermore as described in Section 7.5.6 of the Modification Report and detailed in Appendix C, Table C.1 of this Submissions Reports, Wollongong Coal propose additional monitoring points downstream of licensed discharge points (LDPs) under EPL 1087 so as to provide an improved understanding of the potential water quality impacts to Robins Creek associated with the Wongawilli Colliery.

The project will result in polluted discharge into Robins Creek.

As noted above, Wollongong Coal under MOD2 propose to comply with the existing requirements of EPL 1087 in regard to the discharge of water from the Colliery. Wollongong Coal will continue to implement the approved Colliery SWMP to ensure potential risk associated are adequately mitigated and managed. Furthermore as described in Section 7.5.6 of the Modification Report and detailed in Appendix C, Table C.1 of this Submissions Report, Wollongong Coal propose additional monitoring points downstream of LDPs under EPL 1087 so as to provide an improved understanding of the potential water quality impacts to Robins Creek associated with the Wongawilli Colliery.

The project poses a potential risk to water security.

Wollongong Coal hold all necessary water licenses to facilitate MOD2, no further water allocation is required to be sought on the open market.

As discussed and illustrated in Section 2.9.1 of the SGIA (Appendix H of this Submissions Report), there are no registered landholder bores within 10 km of the MOD2 area above the Illawarra Escarpment. This is due to the area being designated Metropolitan and Woronora Special Areas. As identified in Section 4.1.1 of the SGIA, the extent of depressurisation at the end of mining and maximum extent post mining to model year 29 (2049) is predicted to remain within 6 km of the proposed NMWD and largely within mining lease ML 1596, being mining leaves in which MOD2 is located. ML1596 is illustrated in Figure 4.1 of the SGIA. The extent of drawdown due to the Project is not predicted to extend to any registered private water supply bores. Please note, mining leases relevant to the SGIA

The project has the potential for water loss.

As noted in Section 9 of the SGIA (Appendix H of this Submissions Report), predicted direct and indirect take of groundwater under the Water Sharing Plan for the Sydney Basin Nepean Sandstone Groundwater Source - Management Zone 1 (MZ1) of up to 324.1 ML/year, of which the MOD2 contributes up to 53.9 ML/year of direct take during operations and 24.1 ML/year of indirect take post mining.

No further surface water loss are expected under MOD2 when compared to existing operations.

It is noted Wollongong Coal hold all necessary water licenses to facilitate the MOD2. Post Colliery operations necessary water licenses will be surrendered by Wollongong Coal to offset any post mining water loss.

The project has potential for cracking of Lake Avon Reservoir and groundwater depressurisation

As noted in Section 4.7, SCT undertook further geotechnical assessment to determine the height of cracking from the NWMD to the base of Lake Avon. The further geotechnical assessment is available in Appendix E of this Submissions Report.

As noted in Section 1 of the further SCT assessment:

> The height of roof fracturing depends on the magnitude of horizontal stresses relative to the strength of the immediate roof strata. The Coal Cliff Sandstone that forms the immediate roof strata above the coal seam is expected to be much stronger than the horizontal stresses at 60m deep. Significant roof fracturing is therefore not expected. If the immediate roof strata were to become overloaded, the height of fracturing would not be expected to extend above the bolted horizon of the roof of the roadways i.e. above 2-2.5m. This height of fracturing is small by comparison to the full 60m overburden depth.

As such the potential risk of fracturing resulting in water loss is considered low.

No official record of cumulative impacts of coal mining on the Greater Sydney Water Catchment

An assessment of potential cumulative groundwater impacts associated with MOD2 and neighbouring mining operations is available within Section 6.2.3 of the SGIA, see Appendix H of this Submissions Report. The cumulative impact assessment was undertaken in accordance with the EPBC Act Significant Impact on Water Resources Guidelines.

5.8 Design (process/application)

Number of submissions received from organisations in relation to design (process/application): 0 (0%).

Number of general submissions received from community in relation to design (process/application): 5 (9.8%).

The key concerns/comments in relation to design (process/application) are as follows:

- The project should not be considered a modification but a new approval.
- The project does not consider future mining activities and should consider the next 30 years not just 5 years.

Each of the key concerns identified above are responded to individually below.

The project should not be considered a modification but a new approval.

As noted in Section 5.2.2 of the Modification Report, Wollongong Coal propose to modify PA 09_0161 under Section 4.55(2) of the EP&A Act, as MOD2 is *"substantially the same development"* as that which was the subject of the PA as modified by MOD1. Legal advice supporting this position is available within Appendix B of the Modification Report.

DPIE's Director of Resource Assessments confirmed that this is the appropriate approval pathway for MOD2 in a letter dated 9 April 2020 (refer Appendix A of the Modification Report). Furthermore the requirements of Section 4.55(2) of the EPA Act and compliance of MOD2 are provided in Section 5 of the Modification Report.

The project does not consider future mining activities and should consider the next 30 years not just 5 years

As noted in Section 1.3 of the Modification Report and discussed below, approval of MOD2 will enable the NWMD to be completed, and during this 5-year period Wollongong Coal propose to seek approval for future mining activities within the North West and South West Domain utilising the existing Wongawilli pit top infrastructure with a 30 year mine life. The proposed North West Domain and South West Domain mining operations would use first workings place change mining method only.

The completion of the NWMD development during the MOD2 period is essential for the proposed North West Domain and South West Domain mining operations project, as this would ensure that there is mining operations continuity assuming that the determination of the proposed North West Domain and South West Domain mining operations project will require a 3 to 5 year period for application preparation, submission and determination.

Wollongong Coal acknowledges that approval of MOD2 does not guarantee approval of mining activities in the North West Domain or South West Domains. Any future mining activities would be subject of appropriate assessment with approval sought through the relevant consent authority at the time.

5.9 Design (technical element)

Number of submissions received from organisations in relation to design (technical element): 1 (25%).

Number of general submissions received from community in relation to design (technical element): 3 (5.88%).

The key concerns/comments in relation to design (technical elements) are as follows:

- The Nebo longwalls are too close to the Cordeaux Reservoirs No1 and No2 and associated watercourses to risk further reckless and careless mining mishaps.
- Multi-seam mining poses unacceptable risks where overlying coal seams have already been mined.
- The project presents safety issues for the miner by having a one way in and one way out of the shaft.
- The original route selection should have been reassessed with a view to using existing roadways rather than driving new roadways under the reservoir.
- The project has the potential to result in fracturing, which will result in water loss.
- The inrush and inflow hazard posed by dyke intersection.
- The piecemeal approach to mine expansion.

Each of the key concerns identified above are responded to individually below.

The Nebo longwalls are too close to the Cordeaux Reservoirs No1 and No2 and associated watercourses to risk further reckless and careless mining mishaps

As noted in Section 1.1 of the Modification Report, Wollongong Coal committed in 2019 to no longer undertake mining via longwall extraction methods as such no longwall mining is proposed as part of MOD2. In addition, no mining activities are proposed in the Nebo mining area under MOD2. MOD2 is limited to the development of the NWMD via traditional first working mining methods as identified in Figure 1.2.

Multi-seam mining poses unacceptable risks where overlying coal seams have already been mined

A geotechnical and pillar stability assessment was undertaken to inform MOD2, see Appendix K of the Modification Report. Further consideration of increased stresses above the previously extracted Wongawilli Seam has been undertaken to support this Submissions Report, see the Geotechnical Letter Report (see Appendix E).

As documented within Section 3 of the Geotechnical Letter Report, the proposed NMWD main headings are to be mined in the Bulli Seam. The Bulli Seam is located 30 – 35 m above the Wongawilli Seam. There has been previous mining activity in the Wongawilli Seam below where the NMWD main headings are proposed. This mining includes some pillar extraction remote from the reservoir and some first workings directly under the reservoir at the third crossing point of the Avon Reservoir (see Figure 1.2) where the minimum overburden to the Bulli Seam is 134 m.

There is some potential for increased vertical stresses around the edges of areas of pillar extraction and reduced vertical stressed directly above the pillar extraction. These changing vertical stresses are likely to locally impact mining conditions and require additional support to maintain serviceable roadway conditions. However, any impacts are limited to underground. There is no potential for there to be additional surface subsidence or other perceptible impacts due to this previous mining.

The pillars in the Wongawilli Seam below the third crossing point are developed at 40m centres with a roadway height of 2.8 m. They thus have a nominal width to height ratio of greater than 12. There is no potential for these pillars to become overloaded. The existence of these pillars causes slight variations in vertical stress at the level of the proposed Bulli Seam workings, but these variations are much less than the variations that occur elsewhere because of topography-related changes in overburden depth.

Management and mitigation measures proposed in the geotechnical and pillar stability assessment and documented in the mitigation measures table, see Appendix C, Table C.1 of this Submissions Report, are proposed to be adopted to ensure a safe and stable working environment.

The project presents safety issues for the miner by having a one way in and one way out of the shaft

People's safety is of the upmost importance to Wollongong Coal. As approved the NWMD has two access portals, under MOD2 and additional portals are proposed, see Figure 1.2. The additional measures of egress will provide further optionality for access and thus improved safety outcomes to that currently approved.

The original route selection should have been reassessed with a view to using existing roadways rather than driving new roadways under the reservoir

Approximately 1,300 m of the NWMD as approved has been developed to date, MOD2 largely seeks approval to mine the remaining extent of the approved NWMD alignment and the proposed extension to access the Wongawilli Ventilation Shaft 1.

As discussed in Section 3.2 of the Modification Report and Section 1 of this Submission Report, the proposed extension of the NWMD under MOD2 is required to access the existing Wongawilli Ventilation Shaft 1 (located on the northern side of Lake Avon) and provide ventilation for the full extent of the NWMD. It is not possible to access the existing Wongawilli Ventilation Shaft 1 without the extension of the approved NWMD under Lake Avon Reservoir. There are no existing roadways which would provide adequate access to Wongawilli Ventilation Shaft 1 and provide ventilation requirements for the ongoing development of the NWMD and potential future mining activities in the North West and South West Domains.

Potential mining activities within the North West and South West Domains are discussed in Section 3.2.1 of the Modification Report.

The project has the potential to result in fracturing, which will result in water loss

As noted in Section 4.7, SCT undertook further geotechnical assessment to determine the height of cracking from the NWMD to the base of Lake Avon. The further geotechnical assessment is available in Appendix E of this Submissions Report.

As noted in Section 1 of the further SCT assessment:

> The height of roof fracturing depends on the magnitude of horizontal stresses relative to the strength of the immediate roof strata. The Coal Cliff Sandstone that forms the immediate roof strata above the coal seam is expected to be much stronger than the horizontal stresses at 60m deep. Significant roof fracturing is therefore not expected. If the immediate roof strata were to become overloaded, the height of fracturing would not be expected to extend above the bolted horizon of the roof of the roadways i.e. above 2-2.5m. This height of fracturing is small by comparison to the full 60m overburden depth.

As such the potential risk of fracturing resulting in water loss is considered low. To ensure the risk of cracking from the NWMD is managed and mitigated, Wollongong Coal will continue to implement appropriate roof management controls and undertake inseam drilling in accordance with Colliery operational plans and industry best practice.

Inrush and inflow hazards are posed by dyke intersection

As documented within Section 2.2 of the Geotechnical Letter Report (see Appendix E of this Submissions Report), dykes encountered in the Southern Coalfield are typically found to be dry when mined through.

It is anticipated that the dyke located below Avon Reservoir will also be dry. Nevertheless, inflows of up to approximately 0.2 ML/day are anticipated at the first crossing below Avon Reservoir based on the pre-extraction inflows measured in nearby Blue Panel at Wongawilli Colliery.

Inflows in the range 0.1 - 0.3ML/day were also reported by Reynolds (1977) for headings at Huntley Colliery located 65 m below the reservoir where there was no dyke present. No inflows were observed at Elouera Colliery where main headings passed 55 m below the reservoir. It is not clear whether the inflows observed prior to extraction in Blue Panel were due to the shallow depth or the presence of dykes and other geological features. In any case, a precautionary approach has been proposed.

In this regard, Wollongong Coal has proposed in Section 7.7 of the modification report to implement a program to drill ahead to confirm the absence of zones of elevated hydraulic conductivity below the reservoir and to develop a management strategy as discussed in Section 4.6 of this Submissions Report.

5.10 General

Number of general submissions received from organisations: 0 (0%).

Number of general submissions received from community: 2 (3.9%).

The key concerns/comments are as follows:

- Negative environmental consequences.
- There are risks associated with approval of this modification if the anticipated larger project gets rejected.

Each of the key concerns identified above are responded to individually below.

MOD2 will have negative environmental consequences

The Modification Report assessed the potential impacts that may result from the MOD2. The assessment of environmental issues has been multi-disciplinary and involved consultation with DPIE and key stakeholders as outlined in Chapter 6 of the Modification Report.

MOD2 as assessed will not result in significant biophysical, social or economic impacts, with the Modification Report identifying that any residual impacts can be appropriately managed.

There are risks associated with approval of this modification if the anticipated larger project gets rejected

As discussed in Section 1.3 of the Modification Report, approval of MOD2 will enable the NWMD to be completed, and during this period Wollongong Coal propose to seek approval for mining activities within the North West and South West Domain utilising the existing Wongawilli pit top infrastructure with a 30 year mine life.

The proposed North West Domain and South West Domain mining operations would use first working mining methods only. The North West Domain and South West Domain would be accessed via the completed NWMD and are displayed in Figure 3.2 of the Modification Report.

The North West Domain has coal resource contained within the Bulli Coal Seam and Wongawilli Coal Seam. The South West Domain has coal resource contained within the Wongawilli Coal Seam and the Tongarra Coal Seam.

The completion of the NWMD development during the MOD2 period is essential for the proposed future North West Domain and South West Domain mining operations project, as this would ensure that there is mining operations continuity assuming that the approval for the proposed North West Domain and South West Domain mining operations project will require a 3 to 5 year period for application preparation, submission and determination.

Wollongong Coal acknowledges that approval of MOD2 does not guarantee approval of mining activities in the North West Domain or South West Domains. Should future mining activities not be approved rehabilitation and mine closure activities would be undertaken in accordance with the Colliery MOP.

5.11 Definition

Number of submissions received from organisations: 0 (0%).

Number of submissions received from community: 4 (7.8%).

The key comment in relation to MOD2 definition are as follows:

- The project does not clarify how much coal and rock will be extracted.

As noted in Section 4.1, Wollongong Coal confirms the following tonnages associated with each aspect of the NWMD:

- The estimated approved amount of coal in the NWMD identified as the 'existing approved driveage' in Figure 2.4 of the Modification Report is approximately 320 kt.
- The estimated amount of coal mined to date within the approved NWMD identified as the 'North West Mains Development completed workings' in Figure 2.4 of the Modification Report is approximately 9 kt.
- The estimated additional amount of coal proposed to be extracted under MOD2 identified as 'Proposed additional driveage' in Figure 3.1 of the Modification Report is approximately 175 kt.

Nothing the above, when accounting for coal reserves remaining within the approved NWMD and the proposed additional driveage a total of 486 kt of coal is proposed to be extracted under MOD2.

5.12 Organisational

Number of submissions received from organisations in regards to Wollongong Coal: 2 (50%).

Number of submissions received from community in regards to Wollongong Coal: 16 (31%).

The key comment in relation to MOD2 definition are as follows:

- Wollongong Coal organisational reputation and financial history.
- Wollongong Coal is not a fit and proper to hold a mining lease.
- Lack of resources and expertise to safely and responsible carry out MOD2.
- Contribution to local area.

Each of the key concerns identified above are responded to individually below.

Wollongong Coal organisational reputation and financial history

Wollongong Coal has worked proactively with all the relevant government agencies to resolve past instances of non-compliance, and cooperated with investigations, resulting in the close out of the majority of actions.

Wollongong Coal is committed to continual improvement of its ongoing environmental management and compliance with the conditions of consent, outlined in the Colliery Project Approval 09_0161, along with the various other licences, approvals and commitments. The financial position of an application for development consent is not a relevant matter for consideration when assessing a development application.

Submissions regarding the financial status and debt performance are incorrect. Wollongong Coal reduced its external interest-bearing debt by 50% during the previous financial year. Overall reduction of external debt is much higher with audited financials publicly available. The company continues to strengthen its balance sheet supported by major shareholder JSPL, despite being in care and maintenance over the past few years.

Wollongong Coal is not a fit and proper to hold a mining lease

Wollongong Coal prior to previous approvals and or issuing of development consents and mining leases, was subject of investigation to whether the organisation satisfied the "fit and proper" requirements for a proponent. Pursuant to the NSW EP&A Act and the Mining Act. Wollongong Coal was found to satisfy the "fit and proper" test and as a result, its applications for all relevant development consents and mining leases were approved by the relevant NSW Government bodies. There have been no findings that declare Wollongong Coal not to be "fit and proper".

While Wollongong Coal has been issued with non-compliance notices in the past, Wollongong Coal has improved its policies and procedures in order to maintain compliance with relevant consents and approvals. The board of directors are updated by the Chief Executive Officer and Chief Financial Officer on compliance related matters in monthly board meetings.

Lack of resources and expertise to safely and responsible carry out MOD2

Wollongong Coals safety statistics are below industry average for NSW underground Coal Mines as measured by the Lost Time Injury & Total Recordable Incident Rates. As such submissions regarding safety are unfounded.

As the Colliery is currently operated under care and maintenance provisions additional staff will be required to restart operations. Wollongong Coal will recruit appropriately experienced and trained staff to relevant safely operate the Colliery in accordance with statutory requirements.

Contribution to local area

Wollongong Coal is committed to constructively engaging with the local community. Community engagement activities, including community consultation and information sessions, are designed to provide information on current and planned projects and ongoing operations.

Wollongong Coal is an important part of the community in which it operates and takes pride in the partnerships it develops and benefits it delivers. Wollongong Coal strives to create opportunities for ongoing growth and development. Whether through contributions to charities, sponsorship of local groups and organisations or employment opportunities, the organisation is committed to continued improvement in the community. Company growth will further expand Wollongong Coal's ability to invest in the social and economic well-being of the Illawarra.

Direct and indirect economics contributions to the local community as a result of MOD2 are defined in Section 5.1 of this Submissions Report.

5.13 Rehabilitation

Number of submissions received from organisations: 0 (0%).

Number of submissions received from community: 1 (1.8%).

The key comment in relation to MOD2 definition are as follows:

- Wollongong Coal has a history of not carrying out remedial environmental maintenance work.

Wollongong Coal currently undertakes rehabilitation activities at the Colliery consistent with the approved MOP. As discussed in Section 5.8, Wollongong Coal has proactively engaged with all the relevant government agencies to resolve past instances of non-compliance.

Rehabilitation activities proposed under MOD2 are consistent with that of current approvals and outcomes defined the Colliery MOP. Current rehabilitation needs have been fully provided for by a Bank Guarantee and Cash deposits to the NSW Resource Regulator in accordance with the Rehabilitation Cost Estimate (RCE).

Wollongong Coal will meet the requirements of the revised RCE and Colliery MOP post approval of MOD2 to ensure proposed activities are accounted for.

5.14 Support for the project

Number of submissions received from organisations in support of the project: 0 (0%).

Number of submissions received from community in support of the project: 1 (1.8%).

The key comment in relation to social impacts are as follows:

- WCL has made every effort to keep noise to a minimum and to provide a safe working place for their employees.

Noted. No change required.

6 Updated evaluation of merits

6.1 Introduction

A description of the need and justification for MOD2 is provided below with regard to biophysical, social and economic factors, the principles of ecologically sustainable development (ESD), submissions received and the consistency of MOD2 with the objects of the EP&A Act.

6.2 MOD2 impacts

The Modification Report and this Submissions Report have assessed the potential impacts that may result from the MOD2. The assessment of environmental issues has been multi-disciplinary and involved consultation with DPIE and key stakeholders as outlined in Chapter 3.1 of this report.

MOD2 will not result in significant biophysical, social or economic impacts and MOD2 report has identified that any residual impacts can be appropriately managed.

6.3 MOD2 benefits

MOD2 will extend the life of the Colliery by five years, enable completion of the NWMD and prevent the sterilisation of a high-quality coal resource within Wollongong Coals mining tenements whilst utilising existing site infrastructure.

The first workings mining method proposed by the modification leaves pillars intact and the overlying strata fully supported. Ensuring no potential for the main heading development roadways (ie the approved NWMD and Additional Driveage) to cause perceptible surface ground movement or additional groundwater and surface water impacts to that currently approved.

The Modification Report and this Submissions Report have assessed and determined MOD2 will not results in any new significant biophysical, social and economic impacts. As such, the residual impacts can continue to be managed in accordance with the modified consent, updated mitigation measures and management plans which will be revised as part of MOD2.

MOD2 aligns with the strategic policies for the region, including the NSW Strategic Statement on Coal Exploration and Mining in NSW (DPIE - Division of Resources and Geoscience, 2020), and would assist the state to continue to meet predicted growing coal demand, particularly from Asian markets with the majority of coal production to be sold to JSPL's for steel and power generation.

The modification would allow for existing social and economic benefits of the Colliery to continue as a result of the extended mine life. Enable the employment of up to 150 FTE employees, while supporting local and regional suppliers. The modification would also provide stability and certainty to local and regional communities, contributing to negating possible social and economic impacts during a period financial hardship caused by COVID-19. Economic benefits would extend to state and national levels with ongoing royalty payments and export sales.

In addition, the modification will enable the continuation of a brownfield site in a long-established coal mining precinct. Minimal or no changes are proposed to a number of key aspects of the existing operations at the Colliery; in particular, there is no proposed increase in annual coal extraction volumes or water requirements, nor is perceptible subsidence predicted. Potential environmental impacts of the project, such as impacts in relation to traffic, air quality and noise are therefore expected to be much the same as that of the existing operations. Or as is the case with noise and traffic related impacts, reduced given mitigation and management measures documented within this Submissions Report.

6.4 Ecological sustainable development

The overall objectives of ESD are to use, conserve and enhance natural resources. This ensures that ecological processes are maintained facilitating improved quality of life, now and into the future. Wollongong Coal are committed to the principles of ESD and understand that biophysical, social and economic objectives are interdependent.

Wollongong Coal acknowledge that well-designed and effectively managed operation will avoid significant and/or costly environmental impacts or degradation. With two coal mines in operations, up to date EPA licensing, Wollongong Coal understands the importance of maintaining ESD objectives on site and has extensive experience implementing ESD principles in all its development projects and assets.

The principles of ESD, for the purposes of the EP&A Act, are provided in Clause 7(A) of Schedule 2 of the EP&A Regulation. The four principles of ESD are:

- precautionary principle – the precautionary principle states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;

- inter-generational equity – the principle of inter-generational equity is that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;

- conservation of biological diversity and maintenance of ecological integrity – the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making; and

- improved valuation and pricing of environmental resources – improved valuation, pricing and incentive mechanisms should be promoted.

MOD2 has been designed to reduce impacts to a level which is as low as is reasonably practicable and which are generally in accordance with the impacts of the approved Colliery. Each of the four principles of ESD are considered further below.

6.4.1 Precautionary principle

The Modification Report and this Submissions Report have assessed the potential biophysical, social and economic impacts of MOD2, including detailed technical assessments of the key potential issues. The assessments have found that MOD2 will not result in any new significant biophysical, social or economic impacts and the residual impacts can continue to be managed in accordance with the modified consent, updated mitigation measures and management plans which will be revised as part of MOD2.

Wollongong Coal will continue environmental monitoring and to confirm that the impacts of MOD2 are in accordance with the predicted impacts. Environmental management measures will be reviewed and, where required, updated if any impacts are greater than assessed.

6.4.2 Inter-generational equity

Wollongong Coal will continue to undertake ongoing environmental monitoring with mitigation measures to provide effective environmental management across its operation. This management is provided through planning, communication, documentation, review and feedback. These environmental management measures ensure that the health, diversity and productivity of the environment is maintained or enhanced for future generations.

As described above the first workings mining method proposed by modification leaves pillars intact and the overlying strata fully supported resulting in perceptible ground movement. As a result, the modification would not obstruct future potential land uses, environmental outcomes or economic opportunities within the vicinity of the proposed mining activities.

Under the current conditions of its PA, the Colliery is approved to undertake mining operations until 31 December 2020, therefore in the absence of MOD2, it is likely that the approved NWMD and any future underground mining in the North West Domain (subject to a future separate planning process and full merit assessment) would not proceed. The mine would likely be rehabilitated in accordance with conditions under the PA. Should this occur, the economic and social benefits of the NWMD would not be realised, nor that of future potential mining activities. Restricting the ability for both current and future generations to benefit from the Colliery.

6.4.3 Conservation of biological diversity and maintenance of ecological integrity

The potential environmental impacts of MOD2 are detailed in the Modification Report and this Submissions Report. MOD2 is not expected to cause direct impacts to threatened species or endangered ecological communities. A BDAR has been undertaken with potential ecological impacts, mitigation measures and offset requirements summarised in Section 7.8 of the Modification Report.

As discussed in Section 4.9 of this Submission Report, BCD has reviewed the BDAR prepared for MOD2 and noted that the pit top works is minimal and will occur in a heavily modified environment. Furthermore BCD has confirmed the BDAR has satisfactorily assessed the biodiversity impacts associated with MOD2. Noting, that under the proviso that the offsets required under the BAM are offset, BCD advise that the BDAR is considered acceptable. Wollongong Coal confirm offset requirements will be met following approval of MOD2, in accordance with the BDAR.

6.4.4 Improved valuation and pricing of environmental resources

MOD2 will support the ongoing, efficient operation and supply of coal production from the Colliery and provide an economically viable pathway for Wollongong Coal to continue development of the approved NWMD. Furthermore, MOD2 allows for further assessment into the North West Domain which demonstrates an economically viable resource which would not be accessible without the proposed NWMD.

6.5 Conclusion

MOD2 has been designed to avoid and minimise adverse biophysical, social and economic impacts. MOD2 is anticipated to result in minimal environmental impacts beyond those previously assessed and approved under the consent. The residual impacts have been identified and assessed. Furthermore matters raised within submissions received have been adequately considered and responded to within this Submission Report.

All aspects relating to environmental management will continue in accordance with the PA 19_0161 (as modified), EPL 1087, revised site management plans, and the mitigation measures consolidated in Appendix C.

MOD2 and the proposed 5 year extension to the operation of the Colliery will provide immediate and long-term benefits to the local community, region and State.

As the potential environmental impacts can be managed and mitigated with few residual impacts and there are a range of immediate economic benefits from extending the life of the mine through MOD2, Wollongong Coal are confident that MOD2 is in the public interest. MOD2 allows the best use of the approved Colliery and the site and presents an opportunity to meet ongoing coal demand without establishing a greenfield site. Rather, MOD2 will enable production from a brownfield site in a well-established coal mining region.

Appendix A

Submissions summary

Appendix B

Register of submitters

Appendix C

Updated table of proposed mitigation measures

Appendix D

Revised Aboriginal Cultural Heritage Assessment Report

Appendix E

Subsidence assessment

Appendix F

Amended Statement of Heritage Impacts

Appendix G

Economic Letter Report

Appendix H

Supplementary Groundwater Impact Assessment

H.1 Supplementary Groundwater Impact Assessment

Appendix I

Supplementary Groundwater Impact Assessment Peer Review

Appendix J

Surface Water Letter Report