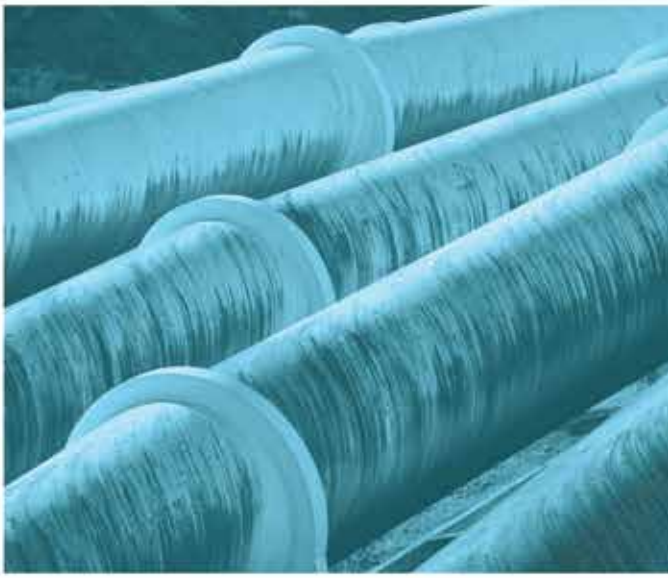



Wongawilli Colliery Modification Report

PA 09_0161 MOD 2 - North West Mains Development
Volume 16 - Appendices O to P

Prepared for Wollongong Coal Limited
December 2020

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Appendix O

Social impact assessment

Social Impact Assessment

Wongawilli Modification 2

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Social Impact Assessment

Wongawilli Modification 2

Report Number

J200053 RP1

Client

Wollongong Coal Ltd

Date

23 December 2020

Version

V2 Final

Prepared by

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Social Planners
23 December 2020

Approved by

Santiago Ayala
Associate Social Scientist
23 December 2020

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

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Executive Summary

This Social Impact Assessment (SIA) has been prepared for Wollongong Coal Pty Limited (Wollongong Coal) to examine the likely impacts of the North West Mains Driveage (NWMD) Modification 2 (the Project) on the nearby local and regional communities as part of the proposed modification of consent application (MOD 2) to the existing Project Approval (PA) 09_0161.

The Wongawilli Colliery (the Colliery) is an underground coal mine operated by Wongawilli Coal, a subsidiary of Wollongong Coal, with mining activities having occurred at the site since 1916, principally producing coking coal for steel production. The proposed modification is seeking to extend the life of the mine by 5 years to enable Wollongong Coal to continue development of the approved NWMD. To date, approximately 500 m of the NWMD has been developed prior to the mine going into care and maintenance in July 2019. Furthermore, the modification largely seeks approval to extend the NWMD approximately 2.9 km to access the existing Wongawilli Ventilation Shaft 1 and for the construction of a new section of coal conveyor system, approximately 60 m in length, at the Wongawilli Upper top pit. MOD 2 is also inclusive of the relocation of coal preparation infrastrucre including the crusher screen from the Wongawilli pit top to underground.The NWMD would continue to be extracted via first workings mining method using two continuous miners.

Wollongong Coal committed in 2019 to no longer undertake mining via longwall extraction methods, as such no longwall mining is proposed as part of this modification application. A transition from longwall mining to the first workings mining methods at the Colliery will result in a reduction in full time equivalent (FTE) personnel requirements under the proposed modification. The Colliery intends to operate two continuous miners with a maximum of 150 FTE personnel required to effectively staff the operations. Under care maintenance the mine has been utilising 5 FTE personnel, meaning this represents an increase of 145 FTE, though a decrease from 300 FTE personnel currently approved under PA 09_0161 (as modified).

The primary area of social influence (local area) for the Project is Horsley – Kembla Grange Statistical Area 2 (SA2) encompassing the suburbs of Dombarton, Wongawilli, Huntley, Horsley, and Kembla Grange. The regional area of social influence (regional area) is Illawarra Statistical Area 4 (SA4) (Australian Bureau of Statistics 2020) to include potentially impacted communities such as Dapto, Wollongong (nearest major city), and Port Kembla. These communities have the potential to experience change during the establishment and operation of the proposed modification.

To inform this SIA for the modification community engagement has been informed by data collected as part of the social baseline, community consultation and engagement findings, findings from technical studies, previous SIA reports from the same regional area, academic research and relevant government and agency reports. The local community was informed of the project via establishment of a project website, SIA email account, regular newsletters distributed by mailbox drop to the local area and via download from the project website, Community Consultative Committee (CCC) meetings, mass media advertising and a Community Information Day to provide updates to the community on the proposed project, environmental assessments and the planning and approvals process.

In addition, the Aboriginal cultural heritage assessment included consultation with Registered Aboriginal Parties (RAPs) in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010). RAPs were invited to participate in a site survey of the study area to identify any Aboriginal items, places or sites that could be potentially impacted by the Project and were provided a copy of the draft Aboriginal cultural heritage assessment to confirm it reflects the survey methodology and assessment findings.

The key potential social impacts identified were:

- Health impacts:
  - impacts on health from increased noise;
  - public safety impacts from increased traffic; and
  - impacts on health from expelled dust.
- Surroundings impacts:
  - impacts on amenity from noise and vibration.
  - impacts to water.
- Decision-making systems:
  - lack of community consultation.

Mitigation and management strategies have been proposed for each of the identified potential social impacts to minimise potential negative consequences and to maximise social benefits for the local and regional communities.

Wollongong Coal also propose an adaptive approach to allow them to manage and respond to changing circumstances and new information over time through ongoing monitoring and periodic review of mitigation strategies to allow for modification if required and appropriate in line with existing Colliery management process.

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1 Introduction

This Social Impact Assessment (SIA) has been prepared for Wollongong Coal Pty Limited (Wollongong Coal) to examine the likely impacts of the North West Mains Driveage (NWMD) Modification 2 (the Project) on the nearby local and regional communities as part of a proposed modification of consent application (MOD 2) to the existing Project Approval (PA) 09_0161.

This SIA has instead been informed by data collected as part of the social baseline, community consultation and engagement findings, findings from technical studies, previous SIA reports from the same regional area, academic research, and relevant government and agency reports.

The local community was informed of the Project via establishment of a Project website, SIA email account, regular newsletters distributed twice by mailbox drop to the local area and once via download from the Project website and Community Consultative Committee (CCC) meetings to provide updates to the community on the proposed Project, environmental assessments and the planning and approvals process.

1.1 Wollongong Coal

Wollongong Coal owns and operates two mines in New South Wales (NSW), including Russell Vale Colliery and the Wongawilli Colliery, both located in the Illawarra region near Wollongong and close to the Port Kembla Coal Terminal. Wollongong Coal was previously known as Gujarat NRE Coking Coal Limited, until it was renamed Wollongong Coal on 25 March 2014 following Jindal Steel and Power Limited (JSPL) of India acquiring a majority shareholding in the company.

The Wongawilli Colliery (the Colliery) is an underground coal mine operated by Wongawilli Coal Pty Ltd, a subsidiary of Wollongong Coal, with mining activities having occurred at the site since 1916, principally producing coking coal for steel production.

The relevant planning legislation for NSW is the *Environmental Planning and Assessment Act, 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation, 2000* (EP&A Regulation). The EP&A Act and EP&A Regulation set the framework for planning and environmental assessment in NSW. The EP&A Act instituted a system of environmental planning and assessment in NSW and is administered by the Department of Planning, Industry and Environment (DPIE).

The Nebo Project Area PA 09-0161 is a former Part 3A project that has transitioned to State significant development (SSD). MOD 2 of PA 09-016 for a time extension of 5 years is proposed under Section 4.55(2) of the EP&A Act. The current PA permitted:

- continued use of the surface infrastructure at the Wongawilli pit top as currently operated;
- run of mine (ROM) coal production of up to 2 million tonnes per annum (Mtpa);
- mining of six longwalls panels (N1 to N6) in the Nebo Project Area;
- continued development and construction of the NWMD;
- continued transportation of ROM coal from Wongawilli Colliery to Port Kembla Coal Terminal by rail; and
- rehabilitation of the site.

Under conditions of its PA, the Colliery is approved to undertake mining operations until 31 December 2020, with the coal extracted transported via rail to Port Kembla for export to JSPL's steel production facilities and other markets.

1.2 Proposed modification

The proposed modification is seeking to extend the life of the mine by 5 years to enable Wollongong Coal to continue development of the approved NWMD. To date, approximately 500 m of the NWMD has been developed prior to the mine going into care and maintenance in July 2019. Furthermore, the modification largely seeks approval to extend the NWMD approximately 2.9 km to access the existing Wongawilli Ventilation Shaft 1 and construction of a new section of coal conveyor system, approximately 60 m in length, at the Wongawilli Upper top pit. The NWMD would continue to be extracted via first workings mining method using two continuous miners. Wollongong Coal committed in 2019 to no longer undertake mining via longwall extraction methods, as such no longwall mining is proposed as part of this modification application.

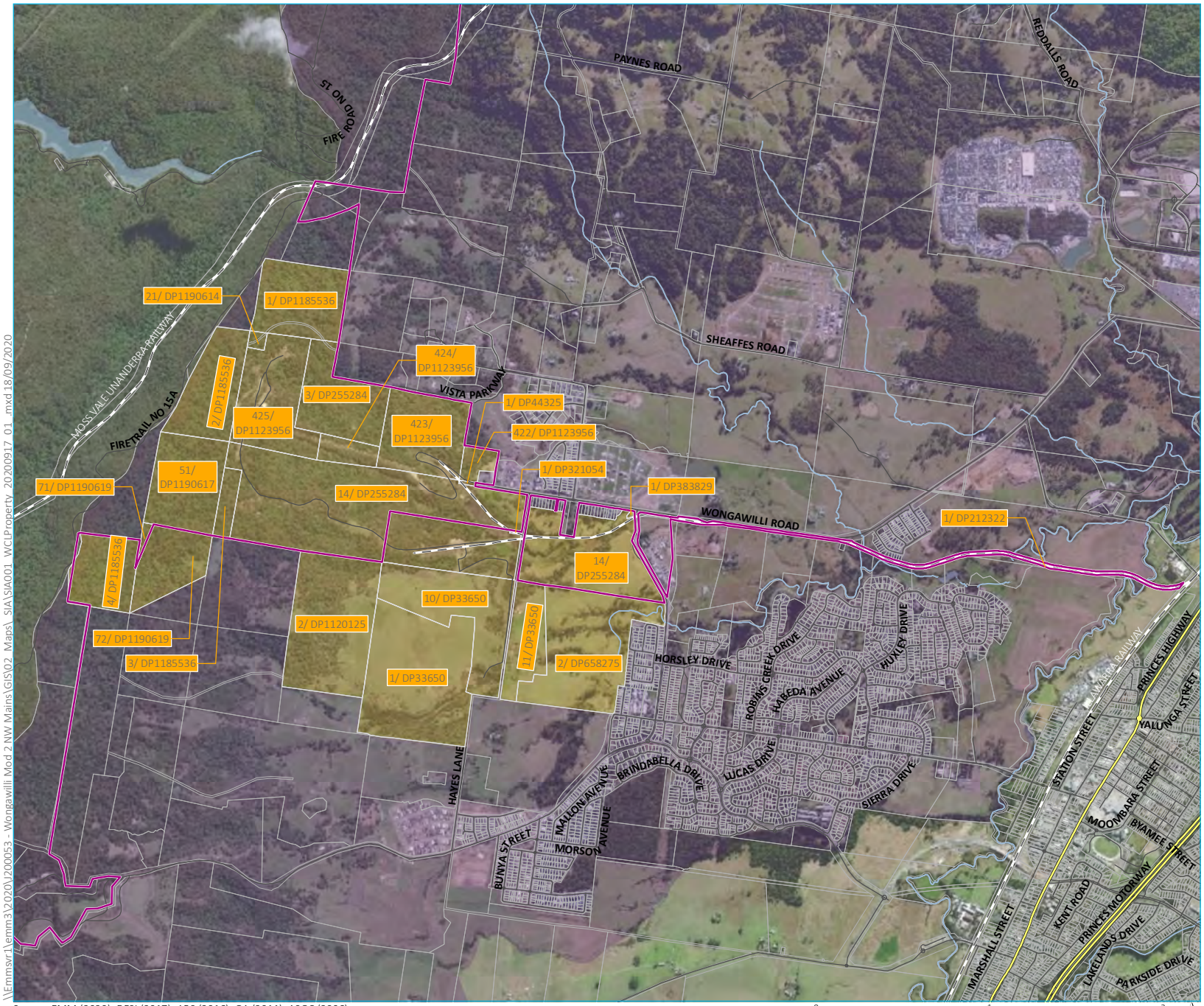
1.3 Location of the site

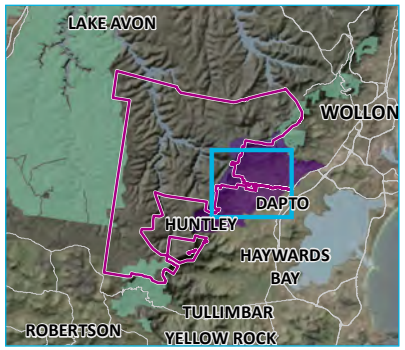
The site of the proposed modification is located within the Southern Coalfields of NSW, approximately 14 kilometres (km) south-west of Wollongong, and falls within the Wollongong local government area (LGA) and Wingecarribee LGA. The Colliery holds mining leases including Consolidated Coal Lease (CCL) 766, Mining Lease (ML) 1565 and ML 1596, covering a total area of 14,767 hectares (ha), herein referred to as the project application area (PAA). Extensive underground mining has taken place within the PAA from the early 1900s, however a substantial volume of high-quality coking coal and some thermal coal remain within the Wongawilli and Bulli coal seams; in particular, within the Western Area of the PAA.

Land parcels on the site are presented in Table 1.1. The project site in the local context is shown in Figure 1.1 and the project site in the regional context is shown in Figure 1.2.

Table 1.1 Site land parcels, 2020

Site ID	Site ID	Site ID	Site ID
1DP255284	7DP255284	422DP1123956	1DP321054
2DP255284	8DP255284	423DP1123956	1DP33650
3 DP255284	9DP255284	424DP1123956	10DP33650
4DP255284	14DP255284	425DP1123956	11DP33650
5DP255284	2DP658275	1DP44325	2DP1120125
6DP255284	1DP383829	1DP212322	





KEY

- Project application area
- Wongawilli Colliery owned land
- Local area (Horsley-Kembla Grange SA2)
- Rail line
- Major road
- Minor road
- Named watercourse
- Named waterbody
- Cadastral boundary

INSET KEY

- Main road
- NPWS reserve

Site location in the local context

Source: EMM (2020); DFSI (2017); ABS (2016); GA (2011); ASGC (2006)

0 1 2 km

GDA 1994 MGA Zone 56

N

Wollongon Coal Limited
Social impact assessment
Figure 1.1

EMM creating opportunities

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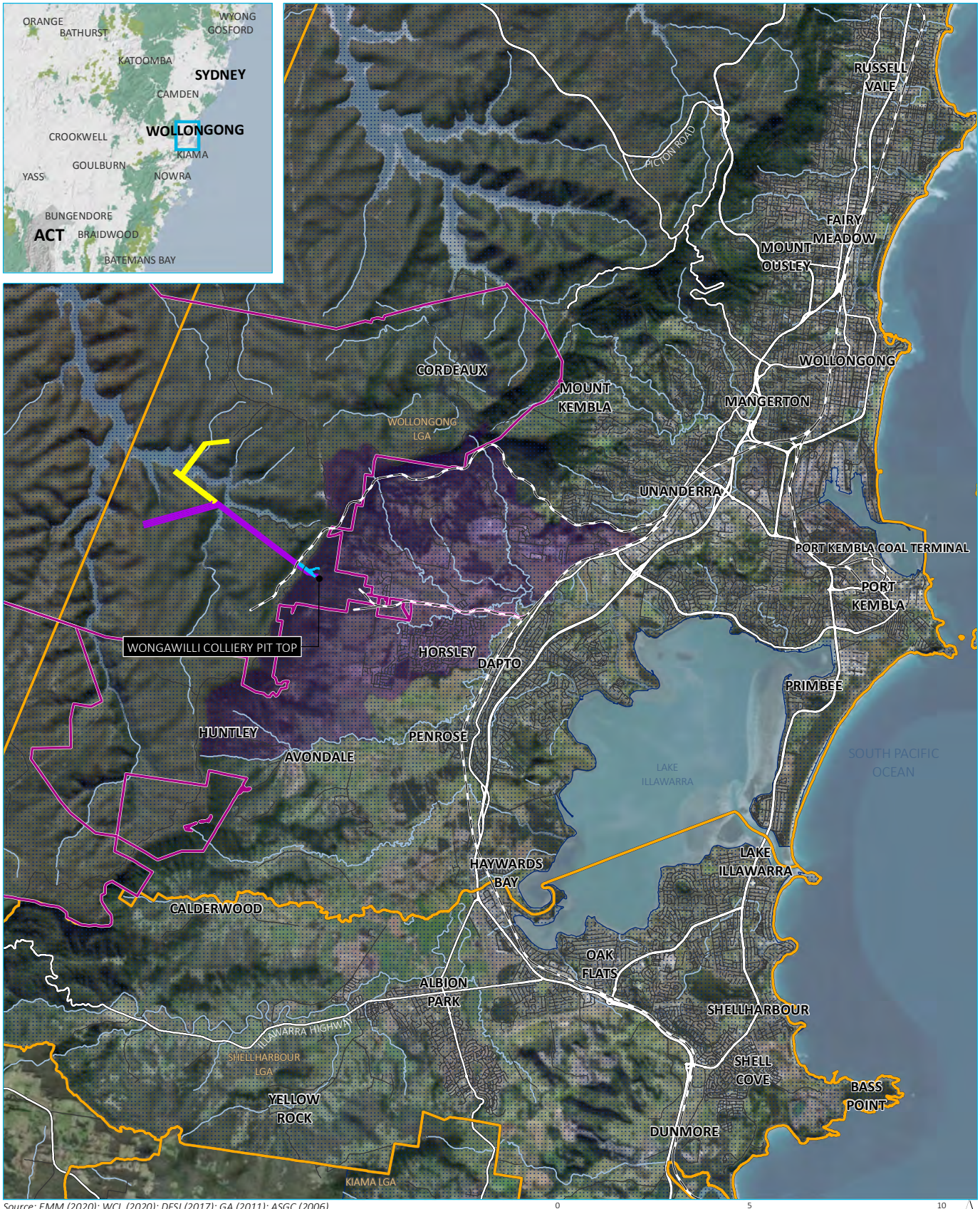

Source: EMM (2020); WCL (2020); DFSI (2017); GA (2011); ASGC (2006)

0 5 10 km

GDA 1994 MGA Zone 56

N

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KEY

- Project application area
- Regional area (Illawarra SA4)
- Local area (Horsley-Kembla Grange SA2)
- NWMD completed workings
- Existing approved drivage
- Proposed additional drivage
- Rail line
- Main road
- Local road
- Named watercourse
- Named waterbody
- Local government area
- NPWS reserve (refer to inset)
- State forest (refer to inset)

Site location in the regional context

Wollongong Coal Limited
Social impact assessment
Figure 1.2

EMM creating opportunities

The majority of the surface area that falls within the PAA is zoned for environmental management and conservation under the relevant Local Environmental Plans (E1 National Parks and Nature Reserves, E2 Environmental Conservation, and E3 Environmental Management). There are small areas that are zoned for public recreation (RE1), primary production (RU1) and rural landscapes (RU2), low density (R2) and large lot residential (R5) and infrastructure (SP2).

The PAA falls within the Upper Nepean catchment, which covers almost 900 square kilometres (km^2) of native bushland on the Illawarra Plateau south of Sydney (WaterNSW 2020). The catchment lies at the southern end of the Illawarra Plateau, which stretches from the Heathcote National Park at the southern outskirts of Sydney to the town of Robertson. It is bordered by the Illawarra Escarpment Conservation Area (IECA) to the east and smaller towns including Yanderra, Yerrinbool and Alpine to the west. The IECA west of the Wongawilli pit top area is managed by the National Parks and Wildlife Service (NPWS). The proposed NWMD underlies this area.

The area has a long history of mining spanning from the early 1900s. Other historic land uses in the area include grazing and agricultural activities. In recent years, land along Wongawilli Road near the Colliery has been re-zoned to residential, with housing estates established within 400 m of the Colliery pit top facilities.

The nearest major population centres are the Wollongong LGA suburbs of Horsley (approximately 2.7 km south-east of the project site) and Dapto (approximately 4 km south-east of the Colliery pit top facilities). Historically, the suburb of Wongawilli was approximately 1.5 km east of the Wongawilli pit top. However, in the last few years land within the vicinity of the Colliery has been rezoned and subdivided for residential development, with current residential construction activities occurring in close proximity to the Colliery lower pi top (see Figure 1.1).

A community hall and Dapto Rural Fire Brigade Station are located to the east of the Wongawilli pit top. The Colliery's private rail line runs east from the lower pit top to the south of Wongawilli.

Wongawilli Road turns into West Dapto Road and connects the Colliery to the Princes Highway approximately 4.3 km west of the mine. The State-owned Unanderra to Moss Vale rail line is situated west of the Colliery pit top and runs in a north – south direction.

The closest school is a preschool, the Little School Preschool Incorporated, located 2 km north-east from the lower part of the Colliery at the base of the Illawarra Escarpment.

1.4 Purpose of this report

This SIA report supports the proposed modification of PA 09-0161. It documents the assessment methods and results, the initiatives built into the project design to avoid and minimise potential impacts to the local and regional communities, and the mitigation and management measures proposed to address any residual impacts not able to be avoided.

The specific objectives of this assessment are to:

- describe the existing social conditions and demographic profile;
- identify and assess the extent and nature of potential social risks;
- evaluate the significance of the social impacts, positive and negative arising from the project;
- provide mitigation measures to reduce the negative social impacts and enhancement measures for significant positive impacts; and
- develop a monitoring and management framework.

1.5 Assessment guidelines and requirements

This SIA has been prepared in accordance with the Social impact assessment guideline: For State significant mining, petroleum production and extractive industry development (SIA Guideline) (DPE 2017) and addresses the social impacts and benefits of the proposed modification to the local region, the regional area, and to the State. It also considers whether the proposed modification would increase the demand for community infrastructure and services.

This SIA has reviewed all of the environmental assessments prepared in support of MOD 2, noting DPIE was satisfied with the Scoping Report (Wollongong Coal 2020) requirements and requested that a stability assessment of the proposed underground roadway configurations (ie headings) be included within the MOD 2 assessment of subsidence impacts.

2 Project description

The Colliery is an underground coal mine located approximately 15 km south-west of Wollongong within the Wollongong and Wingecarribee LGAs. The site is owned and operated by Wollongong Coal. Wollongong Coal is majority owned by JSPL.

The proposed Modification Report 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. Of note, Wollongong Coal committed in 2019 to no longer undertake mining via longwall extraction methods, as such no longwall mining is proposed as part of the modification.

Wollongong Coal proposes to continue the development and construction of NWMD and underground mining operations at the Colliery, by extracting coal from the Wongawilli and Bulli coal seams via first workings mining method using two continuous miners. It does not seek to increase the approved production rate or approved hours of operation, nor change the mining method. Product coal will continue to be transported from the mine via rail to Port Kembla to meet export demand.

2.1 Construction

2.1.1 Main activities

The following main activities would be undertaken during the construction of the project:

- construction of a conveyor to transport ROM coal from portals to decline ROM coal conveyor;
- relocation of coal handling infrastructure including the crusher, sizer and screen from the Wongawilli lower pit top to underground; and
- upgrades to existing conveyors and coal handling infrastructure.

Proposed improvements to the conveyor network relate to the construction of a new conveyor section from North West Mains B Portal to the existing Main North Underground Conveyor (MNUC). The new conveyor section includes the construction of a bin in which ROM coal would be placed before being transported via a new section of conveyor, approximately 60 m in length, to the existing MNUC. Minor modifications to the existing MNUC will be required to facilitate the upgrade of the conveyor network. All new and upgraded conveyor sections will be enclosed to reduce impacts as is consistent with existing infrastructure.

The relocation of coal preparation equipment including the crusher, sizer and screen is planned to remove potential noise sources at the Wongawilli lower pit top. The relocation of the equipment will provide improved outcomes for residents neighbouring the operation. The relocated coal preparation equipment would be integrated into the existing coal conveyance system within the NWMD workings. The existing crusher, sizer and screen will be removed from the Lower Wongawilli lower pit top.

2.1.2 Traffic movements

Construction activities are minor in nature and accounted for under the proposed traffic movements identified in Section 2.2.4.

2.1.3 Construction timeframes and hours

Work for construction activities will be undertaken during the hours of operation outlined in Section 2.2.7.

2.1.4 Workforce

The construction workforce is accounted for in the operational workforce identified in Section 2.2.6.

2.2 Operations

2.2.1 Main activities

Operation activities under the proposed modification are substantially the same to that approved under PA 09-0161. The project will continue to operate at the same rate of extraction of 2 Mtpa. The modification does not seek to change any of the other aspects of the mining operations, including the coal production rate, coal processing and handling activities, coal transportation routes, hours of operation, or the PAA footprint, which would all remain as approved by the PA. Product coal will continue to be transported from the operation via rail to Port Kembla to meet export demand. The mine will operate using first workings place change mining method with two continuous miners. The development of the NWMD itself will provide high quality coal for steel manufacturing purposes.

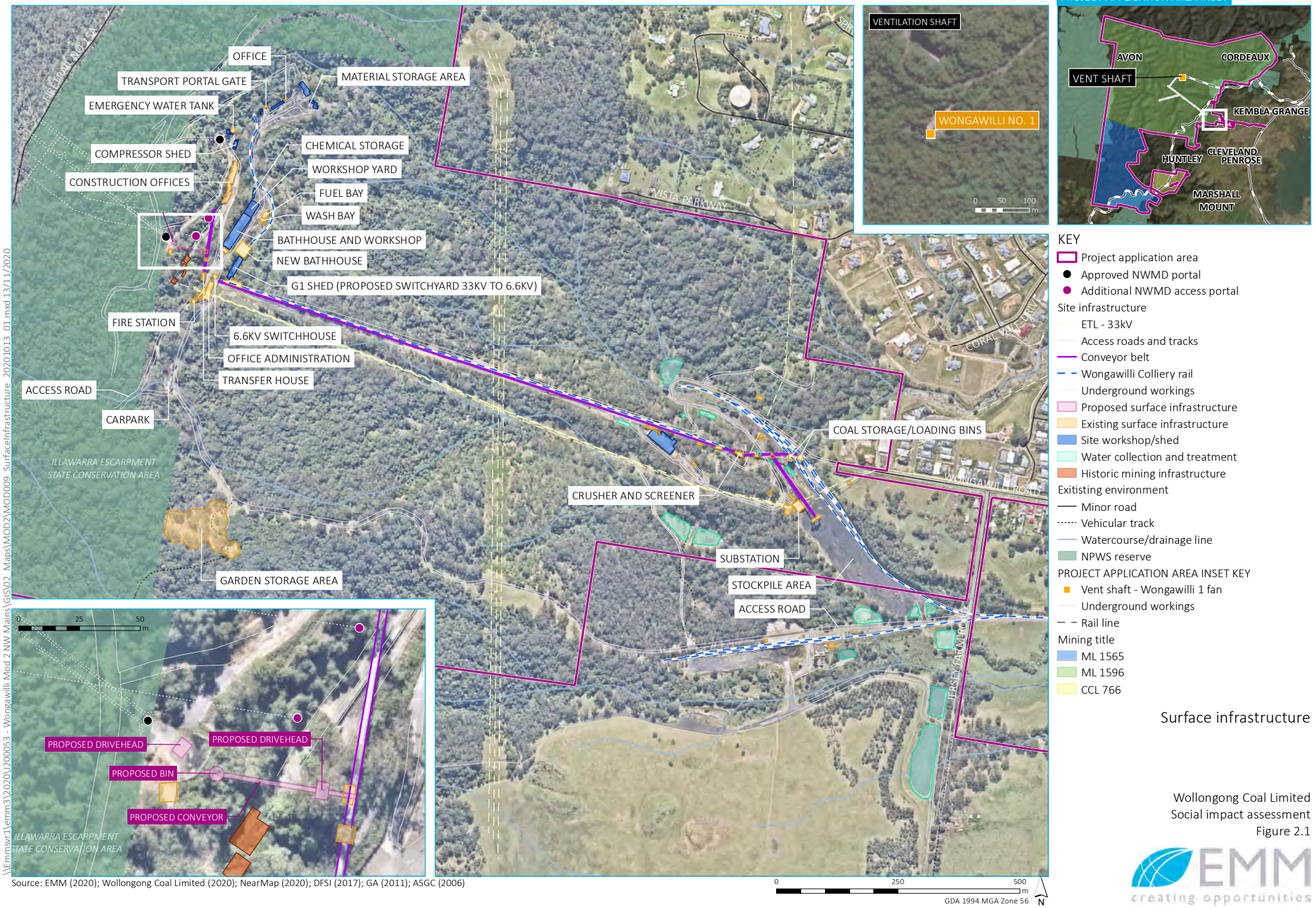
To date less than 500 m of the proposed additional NWMD has been developed of the approved 4,990 m length. The driveage will entail four 5.5 m wide (approximate) headings. An extension of the NWMD to the north-west by approximately 1,300 m, and by a further 1,600 m to the north-east is proposed to utilise the existing Wongawilli Ventilation Shaft 1. This shaft will ensure ventilation requirements of future Western Area mining activities would be adequately met, as such reducing potential surface disturbance. The proposed realignment of the Western Driveage, to reduce potential surface infrastructure requirements, will enable access to the existing ventilation fan site.

2.2.2 Site layout

The pit top surface infrastructure for the Colliery is shown in Figure 2.1.

In the last few years land within land to the east of the Colliery has been rezoned and subdivided for residential development. The closest new residential estate is in the process of being established at the corner of Wongawilli and Jersey Farm roads, with the nearest estate residence located approximately 340 m east of the coal storage loading bins. Once completed, this new residential estate will substantially increase residential density close to the Colliery's pit top facilities.

There will be minor alterations to the pit top infrastructure with the construction of a coal stockpile bin and conveyor to transport coal from portals to decline coal conveyors. The existing crusher and screen located at Wongawilli lower pit top are to be relocated underground. The remainder of the development and the continued mining of the NWMD will take place underground. The proposed modification of the NWMD is shown in Figure 2.2.



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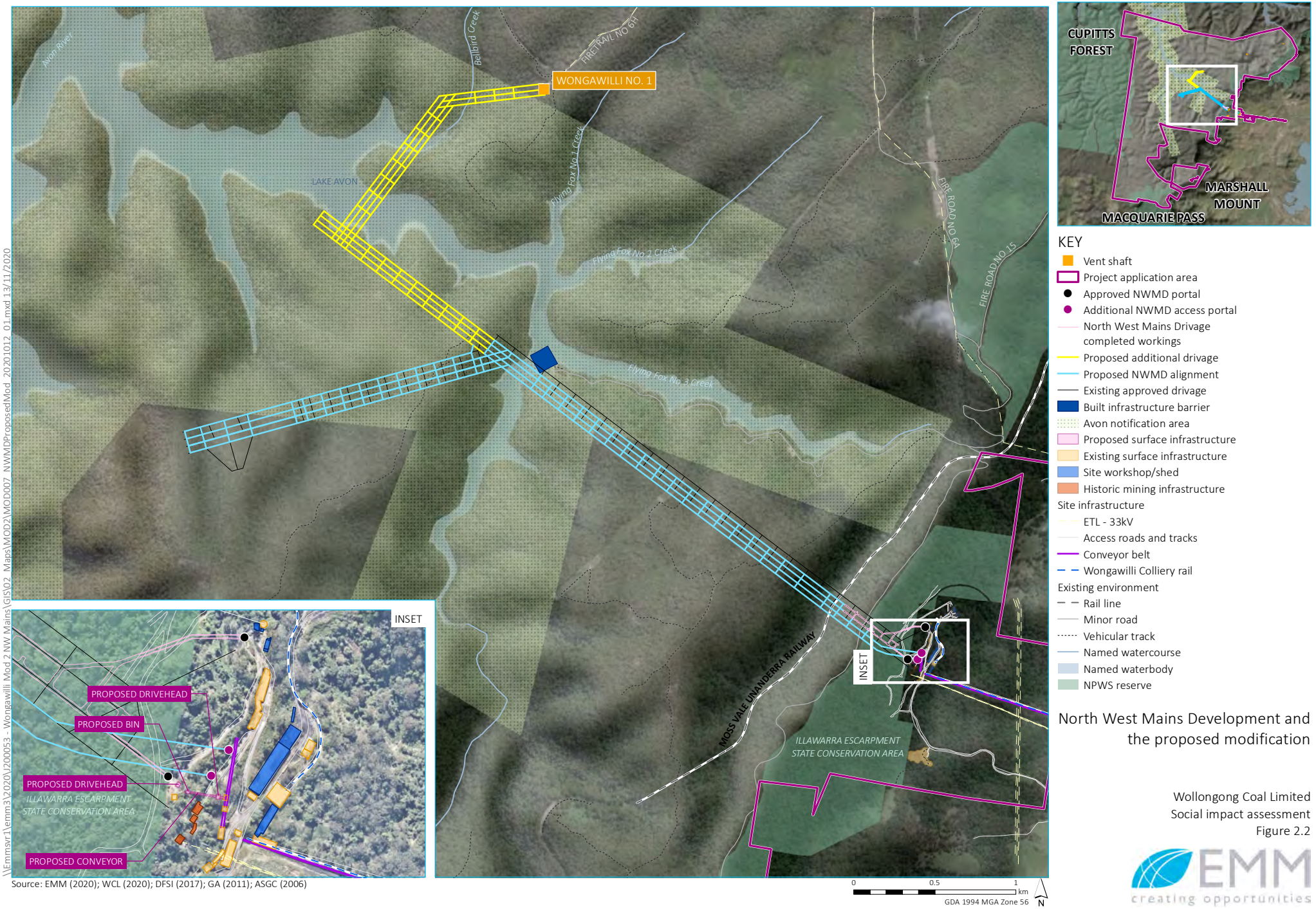
Source: EMM (2020); Wollongong Coal Limited (2020); NearMap (2020); DFSI (2017); GA (2011); ASGC (2006)

Surface infrastructure

Wollongong Coal Limited
Social impact assessment
Figure 2.1

EMM creating opportunities



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

North West Mains Development and the proposed modification

Wollongong Coal Limited
Social impact assessment
Figure 2.2

EMM creating opportunities

2.2.3 Utility connections

There will be no change in the utility connections from the existing mining facility.

2.2.4 Traffic movements

The main road network connecting staff, visitors, deliveries, and maintenance vehicles to the site is made up of the Princes Highway, West Dapto Road, Darkes Road, Shone Avenue, and Jersey Farm Road. Traffic along these roads is expected to increase from present mining related traffic movements as the mine is currently in care and maintenance. Although the workforce would decrease from current approval requirements under the proposed modification (see section 2.2.6), residents will experience an increase from current mine traffic. The expected traffic movements would be:

- weekdays up to 122 (61 inbound/61 outbound) light vehicle trips per day for staff and visitors (27 from 6.30 am– 7.30 am (mine peak)/34 from 2.30 pm– 3.30 pm (mine peak);
- twenty (10 inbound/10 outbound) heavy vehicle trips per day for deliveries and maintenance vehicles; and
- roughly 10 trips on weekends.

Road traffic movements will not include transport of final product as the extracted coal is transported by rail. To minimise potential impacts to residents neighbouring the project,

2.2.5 Rail movements

Wollongong Coal propose to restrict train movements to two trains (four movements) per a day, all occurring during normal daytime operating hours. Existing approvals allow for 5 trains (10 movements) per a day.

2.2.6 Workforce

Wollongong Coal committed in 2019 to no longer undertake mining via longwall extraction methods, as such no longwall mining is proposed as part of this modification application. A transition from longwall mining to the first workings mining methods at the Colliery will result in a reduction in full time equivalent (FTE) personnel requirements under the proposed modification.

The Colliery intends to operate two continuous miner machines, a maximum of 150 FTE personnel will be required to effectively staff the project. This represents a decrease in 150 FTE personnel from the 300 FTE personnel currently approved under PA 09_0161).

2.2.7 Hours of operation

This modification does not propose to change the existing Wollongong Colliery hours of operation, being 24 hours per day, seven days per week with unloading from coal handling/train loading infrastructure occurring during normal operational hours as follows:

- 7am to 6pm Monday to Friday;
- 8am to 4pm Saturday; and
- no time on Sundays and public holidays.

However, to further minimise potential impacts to residents neighbouring the operation Wollongong Coal propose to restrict the conveyance of coal from the Wongawilli upper pit top to the lower pit top to during normal operational hours as defined above. Coal is proposed to be stored within the proposed coal storage bin located at the Wongawilli upper pit top outside of normal operating hours.

2.3 Decommissioning

The proposed changes to the conveyor network will result in the redundancy of approximately 50 m of the existing MNUC. This section of the conveyor will be decommissioned in accordance with the State Environmental Planning Policy (Mining, Petroleum production and Extractive Industries) 2007 and does not form part of this modification.

3 Methodology

The scope of this SIA has been developed in accordance with the social characteristics and community values of Wollongong City Council (WCC) and the local Wollongong community, and the SIA Guideline (DPE 2017).

The assessment of social impacts was conducted using the SIA Guideline (DPE 2017) definition of social impacts which refers to potential changes to people's:

way of life: how people live, work, play and interact;

community: its composition, cohesion, character, how it operates and sense of place;

access to and use of infrastructure, services, and facilities: provided by all levels of government, not-for-profit organisations, or volunteers;

culture: shared beliefs, customs, values and stories, and connection to land, places, and buildings;

health and well-being: physical and mental health;

surroundings: access to and use of ecosystem, public safety and security, access to and use of natural and built environment, aesthetic value and/or amenity;

person and property rights: economic livelihoods, personal disadvantage, or civil liberties;

- **decision-making systems**: extent community can have a say in decisions that affect their lives, access to complaint, remedy, and grievance mechanisms; and
- **fears and aspirations**: combination of above, or about future of their community.

This SIA has been informed by best practice guidance and standards set out by the International Association for Impact Assessment (IAIA) and International Finance Corporation (IFC).

3.1 Social impact assessment scope

The scope of this SIA has been developed in accordance with:

- the Wongawilli Colliery North West Mains – Modification 2 Scope Report submitted on March 2020;
- the SIA Guideline (DPE 2017); and
- the social characteristics and community values of WCC and the local Wollongong community.

3.2 Area of social influence

This SIA addresses the social impacts and benefits of the project to the local area, the regional area, and to the State (the area of social influence). It considers whether the proposed modification increases the demand for community infrastructure and services.

The area of social influence has been developed in accordance with the SIA Guideline (DPE 2017). The area of social influence is summarised in Section 5.1.

3.3 Potentially affected communities

This section describes potentially affected communities in the local area and regional area, which may be impacted, negatively or positively, by the project.

Key considerations for identifying potentially affected communities are the risk of social impacts (negative and positive) as a result of the project. Factors considered in defining the SIA scope included:

- proximity of properties and communities to the project and its access routes;
- vulnerabilities that increase risk, and/or magnitude of potential impacts on communities or groups;
- the role, culture, and identity of communities in the region;
- availability, and capacity of, housing and other social infrastructure to attract and support potential growth;
- availability of skilled workforce and experienced personnel, or ability of residents to gain the skills required for the mining industry;
- native title rights and other interests held by Aboriginal and/or Torres Strait Islander groups;
- location of businesses who could supply the project;
- communities and vulnerable groups potentially affected by other projects within the region; and
- likelihood of social impacts and opportunities for the local and regional communities.

3.5 Methodological approach

The methodology used for this SIA follows the SIA Guideline (DPE 2017). The phases of the SIA methodology are described in Figure 3.1. This version informs the Modification Report and is yet to be place for public exhibition where submissions are received (ie Phase 3).

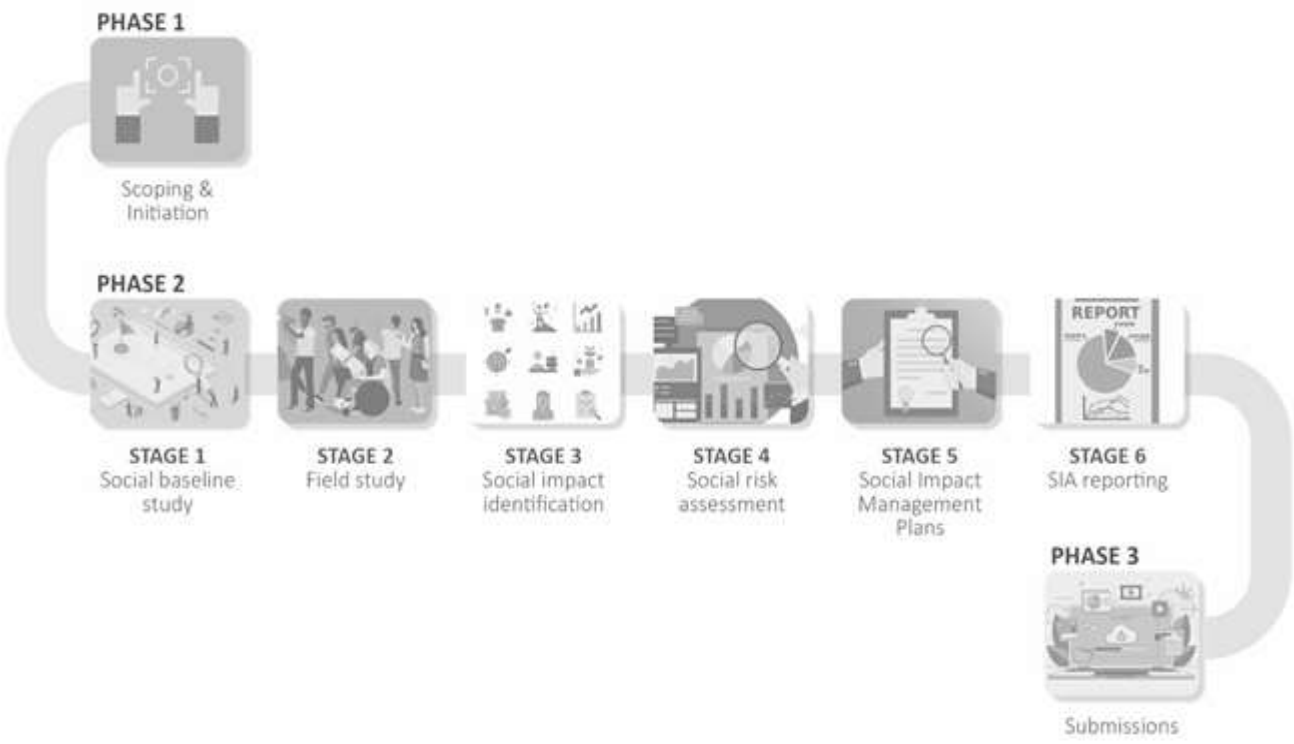

Figure 3.1 Phases of the SIA methodology

Phase 1

Scoping and initiation

A scoping report for the NWMD was prepared by Wollongong Coal and submitted to DPIE on 3 March 2020. The report committed Wollongong Coal to organise community consultation to facilitate the preparation of the SIA, in accordance with DPIE's SIA Guideline. Response letter from DPIE on 9 April 2020 confirmed satisfaction with the issues identified in the application to be addressed in a Modification Report. Community consultation and engagement took place considering social distancing requirements due to COVID 19.

The SIA Guideline (DPE 2017) requires that the applicant identify and understand the Project's area of social influence, however this took place during Phase 2 at Stage 1.

Phase 2

Stage 1 – Social baseline study

The first step in the preparation of the SIA was to understand the existing social environment and identifying trends that are relevant to the potential social impacts. The social baseline study:

- provided a community profile, including a socio-economic profile of the area of social influence;
- provided an analysis of the social infrastructure and capacity within the area of social influence; and
- reviewed relevant government strategic policies and plans.

EMM conducted a baseline study providing the benchmark against which potential social impacts can be identified and assessed. This informed subsequent stages.

Stage 2 – Field study

During the field studies community engagement and consultation takes place. Outcomes of the community engagement are presented in Section 6 where methods used to inform and consult the community on MOD 2 are described.

Key engagement objectives set out in the SIA Guideline include "understanding the interests that potentially affected and interested people have in the Project; and how potential impacts are predicted to be experienced from their perspectives" and "considering the views of potentially affected and interested people in a meaningful way and using these insights to inform Project planning and design, mitigation and enhancement measures, and monitoring and management frameworks" (DPE 2017, p.12).

Engagement activities undertaken include sharing information with the community via direct letter box drops and posted newsletters, development and maintenance of Project website. These invited comments, issues, and questions to be emailed to the Project team through a dedicated email account or posted on the project map on the website (see Section 6). Engagement activities also included an online community survey and in person Community Information Session. The SIA was also informed by outcomes of the CCC meetings.

Community consultation used social research methods to collect qualitative and quantitative data to:

- validate baseline data and assumptions;
- identify/test impacts identified on the nearby neighbours and broader community;
- confirm identified impacts and identify potential management strategies; and

- provide communities with opportunities to express their concerns.

Wollongong Coal will continue to maintain opportunities for members of the community to comment on the Project as it navigates the approvals process.

Stage 3 – Social Impact Identification

With a clear understanding of the scope of the project, the social baseline and the input from the field study, expert social scientists identified the potential social impacts resulting from the Project. This analysis informed the socioeconomic risk assessment (Stage 4).

The identification of potential social impacts and benefits from the Project was completed through several different complementary approaches. These helped the triangulation of the findings and provide a degree of confidence on their accuracy.

The approaches used include:

- Consideration of environmental constraints – review of previously identified environmental impacts created by the Project and other similar projects in the local area as well as available literature to identify potential impacts.

- Consideration of field findings – findings from field studies contributed to the identification of potential impacts and benefits from the Project. Field studies were also be used to identify opportunities.

Stage 4 – Social risk assessment

The social risk assessment stage assessed each of the social impacts identified to predict the nature and scale of potential social impacts for the life of the Project and post closure. A social risk approach was be adopted to assess the consequence and likelihood of potential positive and negative social impacts with and without mitigation. The social risk assessment matrix used for the assessment can be found in Appendix B.

Stage 5 – Social impact management plans

A mitigation and management framework was then prepared for all potential social impacts and proposed enhancement strategies to allow for the identification of:

- required impact mitigation measures;

- potential benefits from Project construction and operation; and

- potential benefits from Project implementation.

Findings from Stages 1 to 5 were used to distil and analyse recommendations for the SIA report. This stage used a multidisciplinary approach lead by associate social scientists supported by environmental advisers.

Stage 6 – SIA reporting

Development of this SIA technical report.

4 Political and planning context

This chapter provides a summary of the relevant plans and strategies across the WCC area that inform the SIA's social risk assessment, and mitigation and management strategies.

4.1 Federal

The Project is located within the federal electorate of Whitlam, which is currently represented (in the House of Representatives) by Stephen Jones, member of the Australian Labour Party (ALP).

There are no specific federal legislative or regulatory instruments that directly impact on the SIA for the project, however, the release of the *Keep it in the regions report* (HRSCIISR 2018) recommends several measures aimed at increasing the potential for local communities to benefit economically from resourcing projects located near their community.

4.2 State

The NSW Parliament consists of a Legislative Assembly (lower house) and Legislative Council (upper house).

The Project sits within the NSW state electorate of Shellharbour. The current member for Shellharbour is Anna Watson of the ALP. Another state electorate of interest is Wollongong as it contains Wollongong City, in which many of the social services available to the local area are located. The current member for Wollongong is Paul Scully of the ALP.

The recognition, protection, and conservation of cultural heritage sites and protected areas fall under the *National Parks and Wildlife Act 1974* (NPW Act) and *National Parks and Wildlife Regulation 2009*, which provide for the management of Aboriginal land and objects. Heritage NSW of the Department of Premier and Cabinet is responsible for the administration, investigation, and enforcement of non-compliances with the legislation relating to Aboriginal cultural heritage pursuant to the *NSW Heritage Act 1977* (Heritage Act) and *Heritage Regulation 2012*.

The Department of Planning, Industry and Environment (DPIE) is responsible for administering the *Environment Planning and Assessment Act 1979* (EP&A Act) and its subordinate legislation and policies:

- Environmental Planning and Assessment Act Regulation 2000;
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004;
- State Environmental Planning Policy (Major Development) 2005;
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy (Aboriginal Land) 2019;
- Planning Legislation Amendment Bill 2019; and
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

The proposed Modification Report approval is sought under section 4.55(2) of the EP&A Act.

4.2.1 State Strategies

i Building Momentum: State Infrastructure Strategy 2018 – 2038

The State Infrastructure Strategy 2018 – 2038 (Infrastructure NSW 2018) sets out Infrastructure NSW's independent advice on the current state of NSW infrastructure, and the infrastructure needs and priorities over the next 20 years. It looks beyond current projects and identifies policies and strategies needed to provide infrastructure to meet the needs of a growing population and economy.

The strategy is comprised of three sections. These include:

- strategic directions: six cross-sectoral strategic directions are incorporated into the strategy to ensure good-practice throughout across infrastructure sectors and throughout infrastructure lifecycles;
- geographic infrastructure directions: the strategy recognises the different opportunities and needs experienced within NSW, Regional NSW, and Greater Sydney and Outer Metro, and outlines geographic-specific approaches for infrastructure planning, investment, and policy; and
- sectors: using the strategic and geographic infrastructure directions, policy and investment strategies are outlined across key infrastructure sectors (i.e. transport, energy, water, health, education, justice, culture, sport, and tourism).

ii Strategic Statement on Coal Exploration and Mining in NSW

The Strategic Statement on Coal Exploration and Mining in NSW (Department of Regional NSW 2020) outlines the NSW State Government's approach towards the future of coal exploration and mining which prioritises responsible coal production and diversification of coal-reliant regional economies. The Strategic Statement recognises the positive impacts of coal mining on local communities with the Project located within an area of historic and current mining. The Strategic Statement sets out a four-point action plan built around:

- improving certainty about where coal mining should not occur;
- supporting responsible coal production in areas deemed suitable for mining;
- addressing community concerns about the impacts of coal mining; and
- support diversification of coal-reliant regional communities to assist with the phase-out of thermal coal mining.

4.3 Local

The project is located in Wollongong LGA which has the highest proportion of directly impacted stakeholders. A summary of the relevant Mayors and Councillors (Cr) is provided in Table 4.1.

Table 4.1 Councillors, 2020

Role	Name	
Mayor	Cr Gordon Bradbery AM	
Deputy Mayor	Cr Tania Brown	
Councillors	Cr Leigh Colacino	Cr David Brown
	Cr Mithra Cox	Cr John Dorahy
	Cr Janice Kershaw	Cr Dom Figliomeni (Ward 3)
	Cr Jenelle Rimmer	Cr Ann Mattin (Ward 3)
	Cr Cath Blakey	Cr Cameron Walters (Ward 3)

The Council has local, regional, and strategic plans that articulate their vision for the future of their community. These are summarised in Table 4.2.

Table 4.2 Regional Planning Context

Plan/Strategy	Summary	Responsibility	Timeframe
Our Wollongong 2028 - Community Strategic Plan (WCC 2018a)	The Community Strategic Plan (CSP) outlines the community's vision and goals for the future. The Wollongong CSP recognises the need to protect the natural environment and to build an educated, creative, and connected community. The CSP goals emphasise environmental protection; the creation of a sustainable economy; and an engaged, healthy community with access to affordable transportation. Issues and challenges for the future are recognised in relation to population growth and climate change, which will create increased demand for infrastructure (renewal of community assets) and adequate social services.	WCC	2018–2028
Economic Development Strategy 2019–2029 (WCC 2019)	This Strategy proposes actions to support an innovative and sustainable economy in the WCC area with a strong focus on increasing the number of high-quality jobs in Wollongong. The Strategy recognises Wollongong as a regional capital and employment centre. Key factors in the strategy include: • increased opportunity for local employment and reduced costs and impacts of commuting; • target of 10,500 new jobs, with an emphasis on knowledge-based jobs sourced from the local skilled talent pool; • changing the outdated external perceptions of Wollongong as a 'steel city'; and • aspirations to be a vibrant coastal city capitalising on affordable living, the coastal lifestyle, a thriving arts and cultural scene, and quality public health and educational infrastructure.	WCC	2019–2029

Table 4.2 Regional Planning Context

Plan/Strategy	Summary	Responsibility	Timeframe
Illawarra-Shoalhaven Regional Plan 2036 (NSW Government 2015)	The Regional Plan provides a vision and direction for strategic and land use planning in the region in consideration of future needs for housing, jobs, infrastructure, a healthy environment, and connected communities. A product of comprehensive community engagement and a strong evidence base, the Regional Plan aims to: • foster a prosperous Illawarra-Shoalhaven region with a variety of housing choices to meet various needs and lifestyles; and • build strong, well-connected communities; and make appropriate use of agricultural and resource lands while protecting and enhancing the natural environment.	NSW Government (Planning & Environment)	2015–2036
WCC Environmental Sustainability Strategy 2014–2022 (WCC 2014)	The Environmental Sustainability Strategy outlines the environmental sustainability objectives of WCC and identifies activities and associated targets and indicators to improve and protect Wollongong's environment. The Strategy offers a commitment to sustainability in accordance with the definition provided by the United Nations and the Sustainable Development Goals. Five focus areas to improve Wollongong's environmental sustainability include: the protection of natural assets, the reduction of ecological footprint, improvement of the urban environment, the creation of a healthy future, and showing leadership and sustainable governance.	WCC	2014–2022
WCC Community Safety Plan 2016–2020 (WCC 2016)	The Community Safety Plan outlines WCC's approach to crime prevention and improving community safety. The importance of community safety is reflected in the Community Strategic Plan's goal to be a healthy community in a liveable city. The consideration of safety in the planning and design of any development contributes to the reduction and prevention of local crime. The priority crimes identified in the Wollongong area include malicious damage/graffiti, domestic violence and alcohol related assault, and anti-social behaviour. The Plan prioritises the increase of actual and perceived community safety.	WCC	2016–2020
Places for People– Wollongong Social Infrastructure Planning Framework 2018–2028 (WCC 2018b)	The vision presented by the Social Infrastructure Planning Framework is for residents, workers, and visitors to have access to quality, sustainable social infrastructure that meets their needs and reflects Wollongong's role as a leading regional city, now and into the future. Wollongong's social infrastructure refers to both the physical and human assets that are available to the community which foster social inclusion, build community life, develop social capital, and overall contribute to people's quality of life. Key trends in the provision of Local Government Social Infrastructure include: • a move towards co-location and multi-use facilities; • a focus on sustainability; • non-government partnerships in the delivery and management of facilities; • more accessible cultural and creative space; and • the co-location of early childhood centres with community health hubs.	WCC	2018–2028

5 Social baseline

This chapter provides a summary of the baseline information for the local and regional areas to identify key social conditions for the area of social influence for the Project that provide contextual information to the identification of social benefits and impacts. A complete baseline study that forms the basis for the SIA is provided in Appendix A.

5.1 Area of social influence

The primary area of social influence (local area) for the Project is Horsley – Kembla Grange Statistical Area 2 (SA2) encompassing the suburbs of Dombarton, Wongawilli, Huntley, Horsley, and Kembla Grange (see Figure A.1 in Appendix A). The regional area of social influence (regional area) is Illawarra Statistical Area 4 (SA4) to include potentially impacted communities such as Dapto, Wollongong (nearest major city), and Port Kembla. These communities have the potential to experience change during the establishment and operation of the Project.

The local area and majority of the regional area are located within the Wollongong LGA. Wollongong is a relatively large, urban town located on the South-East coast of NSW. The population of Wollongong LGA is projected to increase by 26.3% from 2016–2041.

5.2 Demographics

According to the Australian Bureau of Statistics (ABS) 2016 Census of Population and Housing, the local area has a total population of 8,659 people (ABS 2016) and a 2019 estimated resident population of 10,154 (ABS 2020), an increase of 7.2%. From 2011–2016, the population of the local area increased by 16.7%. Overall, the local area experienced a much greater population percentage increase than the regional area (6.3%) and NSW (8.1%). The online survey identified that 80.0% of respondents resided in Wongawilli community, with 20.0% living there for three – five years, 40.0% one – two years, and 20.0% less than one year.

The projected population of Wollongong LGA is estimated to increase from 210,394 in 2016 to 265,769 persons in 2041, representing a total increase of 26.3% and an average annual increase of 0.9%. This growth is lower than the projections for the whole of NSW, which is projected to increase by 36.7% by 2041, though a gradual positive trend is seen for both (DPIE 2019). The median age of persons in the local area is 35, compared to 39 in the regional area and 38 in NSW. The distribution of males and females in the local area is relatively even, with slightly more females than males (51.1% and 48.9% respectively) which is comparable with the regional area (50.8% and 49.2% respectively), and NSW (50.7% and 49.3% respectively).

5.3 Workforce and economy

In the local area, the top three occupations at the time of the 2016 Census were clerical and administrative workers (759 people/17.8%), technicians and trades workers (684 people/ 16.0%) and professionals (678 people/15.9%). The regional area and NSW have a higher percentage of professionals, and a lower percentage of clerical and administrative, and technician or trades workers compared to the local area. The top industries of employment in the local area are healthcare and social assistance (15.3%), retail trade (12.2%) and construction (8.9%).

In 2019, there were 377 registered businesses in the local area, none of which employed more than 200 employees. Of these registered businesses, 98.9% were classed as small businesses employing fewer than 20 people (ABS 2016). Most businesses in the local area were non-employing or employed 1–19 employees. 15 businesses in the local area

turned over $2 million or more in 2019, compared to 927 in Wollongong LGA. Most businesses were operating within the $50k to $2m range (ABS 2019). Of the 377 registered businesses in the local area, 25.2% were in construction.

The industry with the next highest percentage of registered businesses was professional, scientific and technical services (13.0%) followed by transport, postal and warehousing (10.9%). The main registered businesses by industry are also reflective of the top industries of employment and occupations in the local area (ABS 2016).

5.4 Social infrastructure and services

The local area is not well serviced in terms of social infrastructure and services (eg childcare and education services, health services, public transport services, community services, and recreation services), however, most services are accessible with minimal travel in the regional area. Within the regional area residents can access numerous childcare services, primary and secondary schools, and tertiary education institutions, health, community, and recreation services.

The local area and regional area are located within the Illawarra Shoalhaven Local Health District. The closest public hospital service to the local area, offering the most comprehensive services, is Wollongong Hospital, with more than 500 beds. Wollongong Hospital provides a range of medical services including obstetrics, surgical, medical, emergency, mental health, rehabilitation, and palliative care (AIHW 2020). Close to the local area there are also four private hospitals, one mental health centre, and one day surgery, all located in Wollongong. There is only one GP service in the local area, located in Horsley. The practice provides maternal, child, family health services, community health and specialist services in addition to GP services. There are many additional GPs and community health centres in surrounding suburbs outside of the local area, but within regional area, as well as an abundance of mental health and specialist health services.

Community services located in the regional area service the local area. These services are mainly concentrated in the suburbs of Wollongong which are accessible from the local area. Community services available to residents in the local area include services for aged and senior care, children, youth, disability and accessibility impaired, housing and homelessness, family and domestic violence, Aboriginal, and employment (WCC 2020; Ask Izzy 2020).

The only emergency service within the local area is the Dapto Rural Fire Brigade in Wongawilli. The next closest emergency services are two additional Rural Fire stations and one NSW Ambulance station situated in Dapto, within the regional area. The closest police station is also in Dapto and the closest State Emergency Service (SES) is in situated in Coniston, a 20-minute drive from Wongawilli.

Public transport in the local area is limited, with two buses running through Horsley and Wongawilli with limited services. More extensive public transport within the regional area is accessible in Dapto where both buses and train services are available at the train station.

5.5 Housing and accommodation

On 29 July 2020, there were 98 properties for sale and 6 properties for rent in the local area. These numbers suggest that the housing market in the area is tight, with minimal available properties to buy and very few to rent. Housing prices in the regional area have been steadily increasing from 2011–2017 with a dip in the market between 2017–2019, rising again in 2020. From March 2017 to June 2020, the residential vacancy rate in the local area experienced two peaks in 2017 (1.7%) and 2019 (1.8%) suggesting slightly more availability at those times but was consistently well below the equilibrium level of 3.0% (Brewsters Property Group n.d.). This indicates that there has been an undersupply of rental housing in the local area, reflective of the low number properties for rent in the local area (realestate.com 2020). The vacancy rate has decreased since January 2020 suggesting the property market in the local area has become even tighter during COVID-19 (REINSW 2020).

5.6 Health and well-being

Four major health risk factors that can be used as an indicator of physical population health are alcohol consumption, smoking, obesity, and asthma. The regional area population had a slightly higher percentage of the population who consumed alcohol at levels considered to be a high risk to health than NSW, at 16.2% and 15.5% respectively (PHIDU 2020). The percentage of the population in 2019 who smoke was above the state average with 15.8% of persons over 18 years being current smokers and 14.4% in NSW. In 2019 the percentage of persons in the regional area suffering from asthma 14.3% compared to 11.2% in NSW. There was a higher rate of obesity among the regional area population (33.4%) compared to NSW (30.9%). Self-assessed health is another measure that can reflect the overall level of a population's health, with 15% of the population in the regional area self-assessing their health as fair or poor compared to 14.1% of the population of NSW (PHIDU 2020).

Data relating to the number of people hospitalised for intentional self-harm is indicative of very poor and/or poorly managed mental health services in the local area. Whilst rates of hospitalisation for intentional self-harm in the regional area have been consistently lower than NSW, they have experienced a similar trend with increasing rates from 2001–2015, followed by a drop in rates from 2015–2019 (PHIDU 2019).

5.7 Vulnerable groups

Vulnerable groups within the local area generally requires the same amount of assistance as the rest of NSW, while the population within the regional area has a greater need for assistance compared to NSW, with 6.4% of the population of the regional area requiring assistance compared to 5.4% in NSW in one or more of the three core activities of self-care, mobility and communication due to a long-term health condition (lasting 6 months or longer), a disability (lasting 6 months or longer), or old age. The greater proportion of persons requiring assistance in the regional area is likely attributable to the provision of health and community services as people living in major cities are less likely to have problems accessing services such as doctors and disability services, while those in outer regional areas can experience difficulty accessing these services (Baxter, Hayes and Gray 2011). The local area is very close to the regional centre of Wollongong where most services are available.

The rate of homelessness in the local area is significantly lower than that in the regional area and NSW, with 9.2 homeless persons per 10,000, compared to 34.5 and 50.4 per 10,000, respectively.

5.8 Community values

The community vision as described by WCC in Our Wollongong 2028 CSP is "from the mountains to the sea, we value and protect our natural environment and we will be leaders in building an educated, creative and connected community" (WCC 2018). The CSP recognises the need to protect the environment and to build a strong community. The CSP goals emphasise environmental protection; the creation of a sustainable economy; and an engaged, healthy community with access to affordable transportation (WCC 2018).

5.9 Community strengths and vulnerabilities

As evidenced from the above social baseline (see full study in Appendix A), the key vulnerabilities in the local area community relate to the amount of temporary accommodation services, lack of capacity in the rental market, high percentage of low-skilled workers, limited public transport options, and poor health indicators. Opportunities to remedy these vulnerabilities may include improving accommodation capacity, approval and delivery of housing developments (particularly rental developments), improving or providing on the job training opportunities, provide more comprehensive public transport options, and improving health service provision.

6 Community and stakeholder engagement

This chapter summarises the activities and findings from the community engagement undertaken in relation to the Project as part of the modification engagement and as part of the data collection for this SIA.

Engagement and consultation such as interviews and community surveys are important tools for data collection to ensure that the identification of impacts is informed by the community. In addition, these activities provide a benefit to the community by ensuring they are informed, that their voices are heard, and they are included in the decision-making process (DPE 2017). Engaging with communities also improves community relations and allows companies to respond to issues and better mitigate and manage community concerns.

Failure to engage with the community may exacerbate existing community concerns, especially those of vocal special interest groups, as distrust of mining companies and lack of community participation in decision-making and planning tends to increase resistance to projects (Conde & Le Billon 2017). It has often been the case that failure to engage and consult with communities can lead to community members seeking information from other sources, interpreting mining companies' histories negatively, and forming alternative opinions on benefits or impacts of the project in question (Walsh, van der Plank & Behrens 2017).

It is recognised that meaningful consultation and engagement with the community can avoid/minimise concerns to ensure that the community has a say in developments that may affect aspects of their lives. "Responsible mining companies recognise that they need to proactively engage with communities to build strong relationships based on trust and respect… to minimise impacts and maximise benefits, building long-term mutually beneficial relationships" (ICMM 2020). It is also generally accepted that "…stakeholders that have been meaningfully consulted in the course of the planning process are more likely to accept process outcomes, even if those outcomes diverge from their own objectives" (Walsh, van der Plank & Behrens 2017 p.165).

The following sections summarise the activities undertaken for community and stakeholder engagement and the findings of these activities.

6.1 Engagement activities

The impacts and benefits outlined in this SIA have been informed by community engagement and consultation undertaken during the approvals process. The information collected during engagement and consultation is supported by findings from technical studies, previous SIA reports from the same regional area, academic research, and relevant government and agency reports.

The local community was informed of the Project via:

- the Community Consultative Committee (CCC) meetings;
- three community newsletters issued in August, October, and December 2020;
- establishment of a Project website active from 24 August 2020 to 26 December 2020; and
- newspaper advertisements in the Illawarra Mercury (print and digitally).

Each of the above providing updates to the community on the proposed Project, environmental assessments, and the planning and approvals process. The above methods were used to invite local residents and interested parties to the Community Information Day (CID) held on 16 December 2020 and to complete an online survey, providing opportunities for the community to have their say on the Project.

The SIA email account was advertised throughout the community and stakeholder engagement process, inviting community members to contact the Project team with any questions and to receive further information. Consultation with Registered Aboriginal Parties (RAPs) was undertaken for the Aboriginal cultural heritage assessment. Engagement activities also included consultation with relevant government agencies to inform them of the Project and receive feedback.

A summary of participation by engagement activity is provided in Table 6.1.

Table 6.1 Participation by engagement activity

Method	Event	Administered	Invited	Participated
CCC meetings (see Wollongong Coal website for meeting minutes)	CCC meeting (3 June 2020)	Face to Face	Four community Representatives, Independent Chair, WCC member, and Wollongong Coal Representatives	All CCC members and Chair attended in person. CCC meeting minutes were communicated via the Chair to CCC members
	CCC meeting (2 September 2020)	Online	Six community Representatives, Independent Chair, WCC member, and Wollongong Coal Representatives	Three CCC members and Chair attended online. CCC meeting minutes were communicated via the Chair to CCC members
	CCC meeting (2 December 2020)	Face to face	Six community Representatives, Independent Chair, WCC member, and Wollongong Coal Representatives	Six CCC members, Chair, WCC, and Wollongong Coal attended in person.
Community newsletters (Section 6.1.2)	1st Newsletter (August 2020)	Letterbox drop and online	Households in the area of social influence and Project website	Distributed to 3,614 addresses and Posted online for download by any person
	2nd Newsletter (October 2020)	Online	All stakeholders accessing Project website	Posted online for download by any person
	3rd Newsletter (December 2020)	Mail and online	Households in Wongawilli and Kembla Grange and Project website	Distributed to 862 addresses in Wongawilli and Kembla Grange, and posted online for download by any person
Project website (Sections 6.1.3)	(live from 24 August 2020 to 18 December)	Online	All interested stakeholders, particularly in the area of social influence	1,179 (unique users that visited the website 3,406 times) Five unique users made 10 comments on the Project website map

Table 6.1 Participation by engagement activity

Method	Event	Administered	Invited	Participated
Mass media (Section 6.1.4 and Appendix E)	Newspaper advertisement (Illawarra Mercury)	Print and online	Invitation to Community Information Day (CID) to all members of Wongawilli and surrounding communities	Printed on Saturday 5 December 2020 publication Digital ad on Illawarra Mercury website shown 50,000 times from 5 December 2020
CID (Sections 6.1.5)	CID (16 December 2020 between 8:00 am and 6:00 pm)	Face to face	All members of the area of social influence via newsletters, mass media (print/online newspaper adverts), CCC and Project website updates	30 attendants including 18 that registered their attendance (Appendix F)
Community Survey (Sections 6.1.6)	Administered between 3 December– 18 December 2020	Online	All stakeholders, particularly in the area of social influence	Five responses received
SIA email account (Section 6.1.7)	Email correspondence	Email	All persons receiving/accessing community newsletters	One community member emailed the account
RAP consultation (Section 6.1.8)	Site survey and draft review	Face to face	All RAPs were invited to attend surveys and review both the survey methodology and assessment report	12 individual RAPs registered interest in the Project and were consulted
Government agency consultation	Email sent informing relevant departments of Project and invitation to meeting with Project team	Email and face to face	Relevant government deparments (DPIE and relevant DPIE Divisions, Dam Safety NSW, EPA, Heritage NSW, Resources Regulator, Transport for NSW (TfNSW), WaterNSW, and WCC	Refer to Section 6.1.9

6.1.1 Community Consultative Committee

The CCC is a group of key persons who perform an advisory role with Wollongong Coal. They keep the community informed of Wollongong Coal's activities, but also seek the community's views on issues and ensure that these issues are communicated to Wollongong Coal. The first meeting of the CCC for the Colliery was held in August 2012, whilst the first meeting mentioning the proposed modification was held in March 2020. The Project was discussed with members of the CCC at meetings on 2 September 2020 and 2 December 2020.

i June 2020

In attendance at the 3 June 2020 meeting were the Independent Chair, four Community Representatives, WCC Special Projects Manager, previous Group Environment and Approvals Manager for Wollongong Coal, previous Wolloongong Coal CEO, Wollongong Coal Chief Operating Officer and the previous Environment Manager of the Colliery. One of the Community Representative was absent, along with the General Manager of the Colliery.

The meeting largely discussed the ongoing operations of the Colliery following it being placed in care and mainateance and the environmental management programs undertaken. Initial information regarding MOD2 avaible at the time was discussed at the meeting. MOD2 is broadly referred to as the 'Wonga South Project' within the CCC meeting minutes avaible via the Wollongong Coal website.

ii September 2020

In attendance at the 2 September 2020 meeting were the Independent Chair, three Community Representatives, previous Group Environment and Approvals Manager for Wollongong Coal, General Manager of the Colliery, and Environment Co-ordinator of the Colliery. Three of the Community Representatives were absent, along with the WCC Special Projects Manager, and Wollongong Coal CEO.

At the meeting in June 2020, Wollongong Coal were asked to present a video at the following meeting (in September) to explain the variation between longwall mining and continuous mining, the question was deferred to the next meeting held in person, links were provided to videos that may be of interest to the Committee. Wollongong Coal provided the Committee with updates on the company and performance, safety performance, environmental management, audits and reports, proposal of MOD 2, North West Domain – Major SSD Project, and activities taking place on site.

The CCC Community Representatives queried Wollongong Coal on several issues relating to the Project:

- inability to find PA 09-016 online;
- relationship between Environment Protection Licence (EPL) reports and air and noise monitoring reports; and
- new information on MOD 2 being provided to the community.

Each of these queries was responded to by Wollongong Coal,see Wollongong Coal website for full meeting minutes).

iii December 2020

In attendance at the 2 December 2020 CCC meeting were the Independent chair, six Community Representatives, the WCC Special Projects Manager, Group Environment and Approvals Manager for Wollongong Coal, General Manager of the Colliery, and Environment Co-ordinator of the Colliery. The Wollongong Coal CEO was absent.

The presentation on differences between longwall and bord and pillar (first workings) mining methods requested in June 2020, and deferred to next meeting at meeting in September 2020, was presented to the CCC. This was followed by discussion of the approvals process for MOD 2 by the Group Environment and Approvals Manager in which he notified the CCC members that the modification application would be submitted before Christmas. He also informed the CCC of the third newsletter to be posted the following week, and CID to be held on 16 December 2020. During this discussion it was raised that some members (unclear if community members or CCC members) had not received the first two newsletters. One Representative noted that he would arrange for the necessary information to be posted on the Wongawilli Facebook page and the Approvals Manager informed the CCC that the newsletters were also available on the Project website.

Following the Approvals Manager's presentation on the Project the Community Representatives queried:

- if the need to upgrade the Colliery's Management Plans would be triggered by approval of the Project (it would);
- when the environmental assessments would be made available to the public (following submission to DPIE they would be put on public exhibition and available for public comment);
- expected production of 2 mtpa (Colliery Manager stated approval has been granted for 2 mtpa over five years, though would not be possible to extract more than 1 mtpa); and
- what first workings or place-change meant (other terms for bord and pillar mining).

See the Wollongong Coal website for full meeting minutes.

6.1.2 Community newsletters

Three community newsletters (see Appendix C) were distributed throughout the approvals process (in August, October, and December 2020). The purpose of the newsletters was to inform the local community of the Project including background information, planning and approvals process and updates on the environmental assessments undertaken. The newsletters were also used to invite the local community and interested parties to the CID on 16 December 2020, link to the online survey, and contact details of the Project team (phone and email). All three community newsletters were made available for download from the Project website.

i Community newsletter 1 – August 2020

The first community newsletter (see Appendix C Section C.1) was delivered via letterbox drop to households in the area of social influence. The newsletter was delivered to 3,614 addresses in the local area (all households in the suburbs of Wongawilli, Huntley, Horsley, Dombarton, and Kembla Grange) between 25 and 28 August 2020. It was also made available for download from the Project website. The newsletter included background on the Colliery and Project description, map of the Project area, overview of the Project compared to currently approved operations, discussion of the planning and approvals process, where to go for further information, how to be involved (have your say) in the process, and contact details of the Project team.

ii Community newsletter 2 – October 2020

The second community newsletter (see Appendix C Section C.2) was made available to download from the Project website in October 2020. Similar to the first newsletter, it included background on the Colliery, Project description, planning and approvals process, contact details, and engagement and consultation information. In addition, it included information on the environmental assessments to be undertaken for the modification application (traffic, subsidence and geotechnical, historical heritage and Aboriginal cultural heritage, noise, air quality and greenhouse gas, groundwater, surface water, social impact, and economic).

iii Community newsletter 3 – December 2020

The third and final newsletter (see Appendix C Section C.3) was posted to 862 addresses in the suburbs of Wongawilli and Kembla Grange in the local area from Monday 7 December 2020. The newsletter was also made available for download from the Project website. It included similar background content on the Colliery, Project description, planning and approvals process, contact details, engagement and consultation information, how to access further information, and a summary of the environmental assessments (including progress updates/initial findings). The third newsletter included the next steps in the approvals process, was used as a means of invitation to the CID held on 16 December 2020, and invited interested persons to complete the community survey available online (accessible via link or QR code).

6.1.3 Project website

The Project website was created using Social Pinpoint with the purpose of informing interested parties on the Project and providing opportunities for input in the approvals process. The website was active from 24 August 2020 – 26 December 2020 providing community members with information regarding the Project activities, approvals process, environmental assessments, access to newsletters, contact details of the Project team, and an interactive map allowing community members to leave comments regarding the Project (see Figure 6.2).

As of 20 December 2020, 1,183 unique users visited the Project website, with 3,420 total visits (average of 2.9 visits per user) (see Figure 6.1). As shown in Figure 6.1, the page has regular peaks of visitors suggesting continued interest

in the Project, these are particularly noticeable when the newsletters were made available for download or distributed. Five unique users left 10 comments on the Project map (see Figure 6.2 and Appendix D Section D.2).

A large increase in visits and unique users was experienced from the beginning of December 2020 after the final newsletter was made available and updates were made on the Project website. There was also a significant increase from Monday 7 – Friday 10 December, likely due to print and online newspaper advertisement (see Section 6.1.4 and Appendix E) on Saturday 5 December and physical posting (to 862 addresses in Wongawilli and Kembla Grange) of the third newsletter during the week starting Monday 7 December, each inviting community members to the CID. Four comments were made on the Project map (two each from two unique users) (see Appendix D Section D.2) in the week following each of the activities mentioned above.

Following the CID on 16 December, there was another peak in activity on the 17 December with 80 visits and 23 new unique users on the website. There were also three comments made on the Project map on 17 December (from one unique user). Project website views and map engagement data are shown in Figure 6.1 and Figure 6.2.

Figure 6.1 Project website views, 20 December 2020

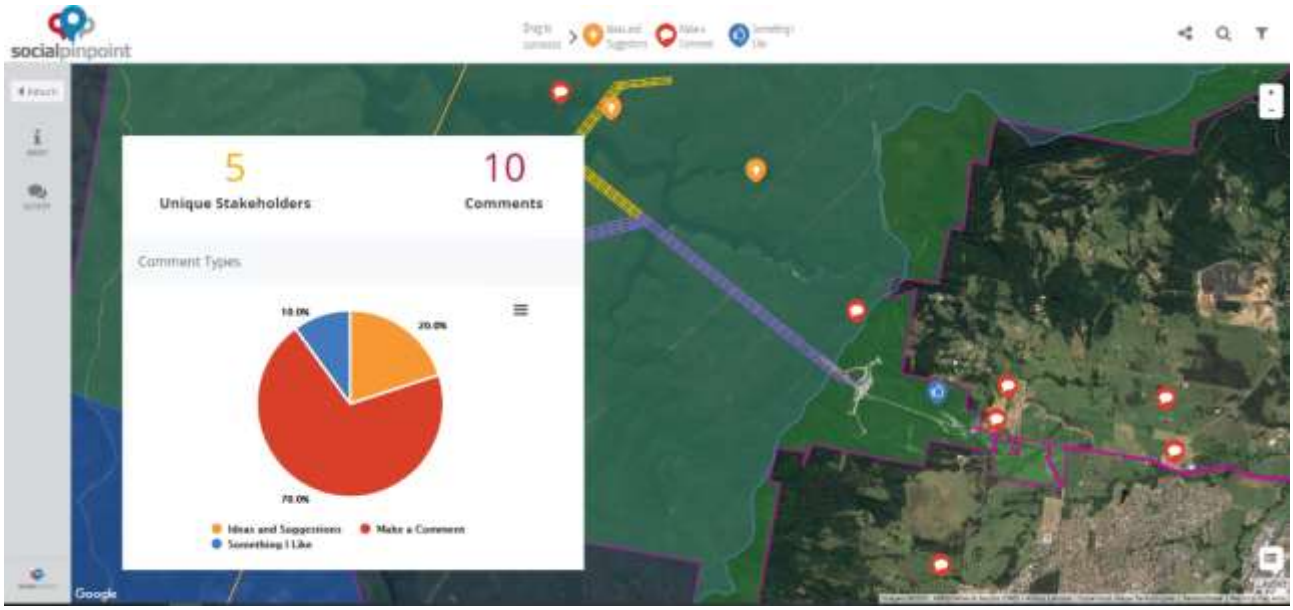

Figure 6.2 Project website comments, 20 December 2020

6.1.4 Mass media

A newspaper advertisement was published on Page 14 of the Illawarra Mercury on Saturday 5 December 2020 (see Appendix E Figure E.1) informing and inviting the community to the CID, directing community members to the Project and Wollongong Coal websites for further information, and to the online survey as an alternative option for providing feedback (see Appendix G). The Illawarra Mercury is the main print newspaper for the regional area and has an average readership for its Saturday publication of 39,757 readers and total monthly readership of 518,571 readers (print and digital) (ACM 2020).

In addition to the print advertisement, an invitation to the CID was posted online on the Illawarra Mercury website (see Appendix E Figure E.2) reaching 50,000 users of the website from Saturday 5 December 2020. The online advertisement included a link to the Project website for community members to access further information on the Project.

WIN News Illawarra covered the CID the evening of the event, providing a further overview of not only the event but MOD2 to the broader community.

6.1.5 Community information day

Low levels of community feedback prior to CID in December 2020 was not taken or assumed as approval or acceptance of the Project as "little opposition to a project may not equate to a social licence to operate as it can actually result in… apathy which is driven by a lack of trust, feelings of disenfranchisement, or a silent protest" (Walsh, van der Plank & Behrens 2017, p.170). As such, the CID was organised to allow further opportunities to engage in more traditional face to face setting and learn more about the Project and to provide their feedback for the SIA.

The CID was held at Wongawilli Community Hall (1 Wongawilli Road, Wongawilli, see Figure 6.3) on Wednesday 16 December 2020 between 8.00 am – 6.00 pm, allowing members of the community to attend a drop-in session to discuss the Project with members of the Project team, including environmental technical specialists and the SIA lead. Community members were invited to provide feedback on the Project to inform the SIA through physical/online survey or by engaging in face to face discussion with the team.

Figure 6.3 Wongawilli Community Hall and CID set up

The CID was promoted via the third newsletter, print advertisement in the Illawarra Mercury and online advertisement on the Illawarra Mercury website, CCC meeting on 2 December, and posted on the Wongawilli Facebook page by a CCC member.

The CID had 30 community members attended throughout the day, including an interest group (Protect Our Water Alliance - POWA), a WCC Councillor, and residents of Wongawilli, Dapto and Horsley suburbs (see Figure 6.3 and Figure 6.4) (see Appendix F for attendance register). While members of POWA took the opportunity to demonstrate against coal mining and mining in particular under water catchments engaging with the Project team are shown in Figure 6.4.

Figure 6.4 CID stakeholders learning about the Project and expressing their concerns

6.1.6 Online community survey

An online survey was created on Survey Monkey and was available for community members to provide feedback on the Project (see Appendix G). The online survey was promoted via the third newsletter, the Project website and via a QR code in the newspaper advertisement published on Page 14 of the Illawarra Mercury on Saturday 5 December 2020 (see Appendix E Figure E.1). The survey included 16 questions designed to retrieve information regarding past interactions with Wollongong Coal, awareness of the Colliery and Project, feelings about the Project, any potential impacts or benefits from the Project, issues or concerns about the Project. As well as the suburb of residence of the respondents, how long they have lived there, their age, gender, and other identifiers, and whether they would like to be contacted further about the Project. The survey will remain live to allow the community to

provide on going feedback regarding the MOD2. Survey data included within this SIA was collected between Thursday 3 December – Friday 18 December 2020.

Response to the survey was much lower than expected, with five community members completing. Due to a low number of responses insight from findings (see Section 6.2) has not been assumed to be representative of the sentiments of the whole community, rather they have been analysed as individual community member perspectives on the Project.

The demographics of the respondents were three males and two females, with three aged between 25–34 years and two between 35–44 years. Four of the five respondents identified as residents of Wongawilli, with one of these also identifying as a business owner and landholder. Four of the five respondents were from Wongawilli in the local area, and one was from Figtree in the regional area (roughly 20-minute drive from Wongawilli). All of the respondents had lived in their community for less than five years, with one between three to five years, two for one to two years, and two for less than one year.

6.1.7 SIA email account

A dedicated SIA email account was used for email correspondence with community members throughout the approvals process. The email address was published in each of the three newsletters, on the Project website and in the posters used at the CID, inviting members of the community to contact the SIA team for further information on the Project and to express their comments and concerns.

A member of the community and former employee of the Colliery contacted the Project team via the SIA email address in September 2020 with questions regarding water supply, wastewater, vent shafts and fans, and impacts on new residents in recent Wongawilli housing developments. The Project team responded to this email providing specific information and directing them to the Project website for further information. The community member responded with further comments about power supply and maintenance of the ventilation fan, which were also responded to by the Project team (see Appendix H for full email correspondence).

6.1.8 Registered Aboriginal Parties

The Aboriginal cultural heritage assessment included consultation with 12 RAPs in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010). RAPs were invited to participate in a site survey of the study area to identify any Aboriginal items, places or sites that could be potentially impacted by the project and were provided a copy of the draft Aboriginal cultural heritage assessment to confirm it reflects the survey methodology and assessment findings.

6.1.9 Government agency consultation

Engagement activities included consultation, face to face, virtually and via correspondence, with relevant government departments including:

- DPIE (16 January 2020, 15 October 2020, and 28 October 2020);
- DPIE Water (21 December 2020 and 22 December 2020);
- DPIE Biodiversity and Conservation Division (21 December 2020 and 22 December);
- Dam Safety NSW (4 December 2020, 18 December and 21 December 2020);
- EPA (28 October 2020 and 3 December 2020);
- Heritage NSW (21 December and 22 December);

- Resources Regulator (17 December 2020);
- Transport for NSW (22 December 2020)
- WaterNSW(29 April 2020, 4 December 2020, 7 December 2020);
- WCC (representative at CCC meeting 2 December 2020 (and sent 2 September 2020 minutes) and 18 December 2020).

Further details on government agency consultation for the modification can be found in Section 6 of the Modification Report.

6.2 Community consultation findings

As outlined above, community members were provided several methods to communicate their feedback on the proposed modification to the Project team to inform the SIA. This section presents the findings from the engagement activities outlined in Section 6.1.

The Project attracted significant stakeholder and community interest as shown in the number of visits and visitors to the website (Section 6.1.3). In addition, interest was promoted by the multiple number of engagement activities described above (Section 6.1). However, the low number of responses to the online community survey and comparatively limited attendance to the CID mean the results of consultation are not representative of the community, who may or may not be in support of the Project. Those community members who attended the CID expressed support for the Project and those who raised concerns were against coal mining in general (voiced by members of POWA) or based on misinformation about the Project and minimised upon further discussion with the Project team. A comparatively small number of community members that expressed concerns over the Project provided their feedback via the website and survey, as outlined below.

6.2.1 Wollongong Coal and the Project

The online community survey requested the respondents to answer questions regarding past interactions with Wollongong Coal and knowledge of the existing Colliery and of the proposed modification. Only one of the respondents had previously had any interaction with Wollongong Coal, with the topic of discussion being reopening of the mine. The respondent rated their satisfaction with Wollongong Coal's response to any issues raised as "not at all satisfied". One respondent from Wongawilli raised concerns over the studies completed being available for public review and comment and what the current and future access arrangements to the site are. The Project team responded to these concerns via email as the respondent provided their email address for further contact regarding the Project.

Two respondents rated their awareness of the existing Colliery as 'poor' while three had 'good' awareness of the Colliery. Awareness of the Project varied across the respondents, with two having 'poor' awareness, one 'fair', one 'good', and one 'very good'. Of the survey respondents, two felt 'strongly opposed' to the Project, while three had 'neutral' feelings.

6.2.2 Air quality

The Project's impact on air quality was raised as a concer by one community member on the Project website map, and rated by respondents to the online community survey.

The community member map comment regarding air quality queried whether train wagons would have covers to minimise expelled dust from the coal being transported, noting their concern for emissions of "…coarse (PM10) and fine (PM2.5) particles…" and their impact on "…respiratory and cardiovascular health problems, causing asthma, hospital admissions and premature death" (see Appendix D Figure D.12).

The online community survey asked respondents to rate air quality on a scale from very negative to very positive (see Appendix G Question 8). Air quality was rated 'negative' by four of the five respondents, the fifth rating air quality 'neutral' (see Figure 6.5).

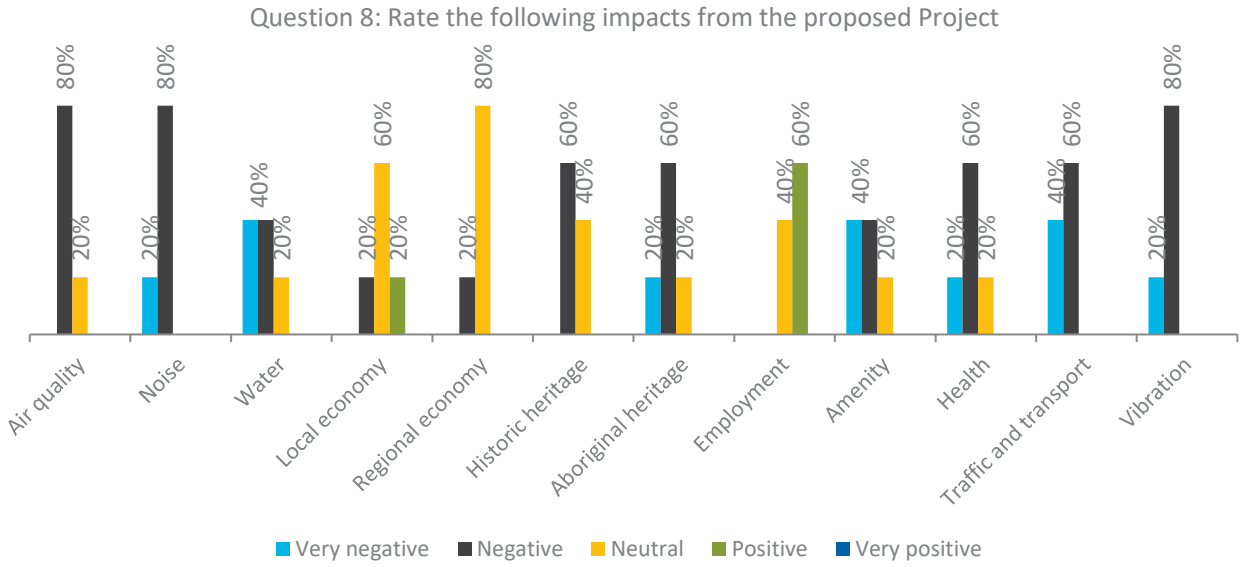

Figure 6.5 Online community survey – Question 8 responses

6.2.3 Noise

Noise levels from the Colliery as a result of the Project was raised as a concern by one community member at the CID, on the Project website, and in the community survey.

At the CID, a community member that had been a resident of Wongawilli for the past 20 years, expressed concern over the hours and days of operation of the Project, and noted that in the past, while the Colliery was in operation, they could hear noise from the coal bin at the stockpile/loading facility while bins were being loaded. They noted that this impacted on their amenity when occurring overnight or on weekends, particularly noting past experience of noise impacts on Sundays. The Project team provided the community member with proposed operating hours for the Project (weekdays during the day and no work on Sundays or public holidays) which alleviated the community member's concerns.

The Project website received one comment regarding noise (see Appendix D Section D.2). The community member queried "how has noise from mine operations been considered given the significant increase in residential dwellings since the mine last operated?" (see Figure D.6). The Project team responded to this comment stating that a noise impact assessment had been undertaken to assess the impact of noise emitted by the Colliery on direct neighbours and the local area, including the new residential estates off Wongawilli Road.

All respondents to the online community survey rated noise negatively with one rating noise 'very negative' (see Figure 6.5).

6.2.4 Water

Water was raised a concern for community members in the CID, on the website, and in the online community survey.

The CID was attended by an interest group known as Protect Our Water Alliance (POWA) with the intention of protesting coal mining in the Illawarra region and raising concerns over mining threatening both surface and groundwater from the Lake Avon catchment (see Figure 6.6). The same group has voiced their concerns about mining under the water catchment during the public exhibition of Wollongong Coal's proposal to extend the life of their Russell Vale Colliery

Source: Latifi 2020 (Photo credit: Adam McLean)

Figure 6.6 POWA interest group at CID

The Project website map received three comments regarding water from a community member and one from the Illawarra Residents for Responsible Mining (IRRM) (see Appendix D Figure D.4, Figure D.7, Figure D.8, and Figure D.10). The community member raised concerns over upland swamps and their catchments being cracked by subsidence and losing their ability to hold water and act as carbon sinks, noting this would be a "…catastrophic ecological collapse [and] must be prevented]" (see Figure D.8). A second comment from the same community member was concerned with the timing of previous approval and how that would affect consideration of the Independent Panel on Mining in the Catchment's findings and stating that assessment should consider "…the mass balance of water movements, including that lost from the surface to the coal seam" (see Figure D.10). The third comment queried the maintenance and management of sediment dams and run-off (see Figure D.7). The comment from IRRM was an 'ideas and suggestions' comment stating that mining in the catchment should cease, noting the recent drought and importance of the Avon Reservoir as the water supply for Wollongong, they also stated that "Wollongong Coal Ltd has no social license to operate" (see Figure D.4).

In Question 8 of the online community survey two of the respondents rated water as 'very negative', two as 'negative', and one as 'neutral' (see Figure 6.5).

6.2.5 Local and regional economies

Community feeling on local and regional economy impacts of the Project varied, with one positive comment on the Project website map, and varied responses on the online community survey.

On the Project website map, one community member commented that the Project would provide "great economic opportunities for our local economy" (see Figure D.3). This comment was liked by eight other community members and disliked by five.

The online community survey asked respondents to rate local economy and regional economy separately. Potential local economy impacts were rated 'positive' by one respondent, 'negative' by one, and 'neutral' by two. Potential regional economy impacts were rated 'neutral' by all but one respondent that rated them 'negative' (see Figure 6.5).

6.2.6 Heritage

Heritage was one of the potential impacts required to be rated by respondents of the online community survey, divided into historical heritage and Aboriginal cultural heritage. Three respondents rated historic heritage as 'negative' while two rated it as 'neutral'. Aboriginal cultural heritage was rated as 'very negative' by one respondent, 'negative' by three, and 'neutral' by one (see Figure 6.5).

6.2.7 Employment

Employment was raised once on the Project website map comments and was potential employment impacts of the Project were rated in the online community survey.

A community member noted concern over the number of jobs to be available as a result of the Project, referencing a newspaper article from when the Colliery went into care and maintenance that stated 45 jobs would be lost. The community member was concerned by the Project 'claiming' that 145 additional jobs would be created through the Colliery reopening and queried whether this number was inflated (see Figure D.11).

In the online community survey, three respondents rated potential employment impacts as 'positive' and two rated it 'neutral' (see Figure 6.5).

6.2.8 Amenity

Potential amenity impacts of the CID were raised by two community members at the CID and were rated in the online community survey.

During the CID, the Project team discussed amenity impacts of the Project with a couple from Horsley in the local area. The couple stated that lights from the Colliery at night were a positive impact for them as they lit up the escarpment and made for positive visual amenity for the local community.

Amenity was rated by respondents of the online community survey. Potential amenity impacts were rated as 'very negative' by two respondents, 'negative' by two, and 'neutral' by one (see Figure 6.5).

6.2.9 Health

As previously discussed, health concerns from coal dust presented by train wagons transporting coal to Port Kembla were raised by a community member (see Section 6.2.2 and Figure D.12). Health was also rated by respondents of the online community survey, with one rating potential health impacts as 'very negative', three as 'negative', and one as 'neutral' (see Figure 6.5).

6.2.10 Traffic and transport

Potential traffic and transport impacts were raised as a concern by one community member briefly in the online community survey as well as more extensively in the Project website community map comments and were also ranked by respondents of the online community survey.

On the online community survey, one respondent queried vehicle access arrangements for vehicles accessing the Colliery, currently and into the future, and also made the same query on the Project website map with inclusion of concerns over increased traffic as Wongawilli and Kembla Grange continue to expand and road safety for increased numbers of pedestrians on Wongawilli Road (see Figure D.5). The Project team responded to the community member's concerns and questions via email and response on the Project map stating that a traffic impact assessment (TIA) had been undertaken to consider any potential traffic and transport related issues.

The online community survey requested respondents rate the potential traffic and transport impacts. Three respondents rated them 'negative' and two 'very negative' (see Figure 6.5).

6.2.11 Vibration

Potential vibration impacts from the Project were rated by online community survey respondents. The rating were all negative, with one respondent rating vibration 'very negative' and four 'negative' (see Figure 6.5).

6.2.12 Coal mining

Concerns about coal mining in general, not simply relating to the Project, were raised by community members during engagement activities with the POWA protesting coal mining in the Illawarra region particularly under the water catchment and the impacts of coal mining on climate change at the CID and comments on the Project website.

Two community members on the Project website left comments about ceasing coal mining in the region. The IRRM (as mentioned previously mentioned) made a comment about ending mining in the water catchment due to concerns over water (see Figure D.4). Another community member commented that "it is time to close and rehabilitate coal mines. There is no need to grant this extension" (see Figure D.9). They went on to suggest that the government should be working with mining companies to transition workers into other industries and rehabilitate mines, stating that if the proposal does not have a time frame and detailed plan for transition and rehabilitation that it should not be considered (see Figure D.9).

7 Social impacts and benefits assessment

This chapter provides a ranking of the potential social impacts of the Project by assessing the proposed change and likely consequences to the current social conditions experienced by the community and the effectiveness of mitigation and management strategies.

In order to prioritise the identified social impacts, a risk-based framework has been adopted (see Appendix B). The findings from technical reports prepared for the modification as well as the perceptions of stakeholders identified from the community and stakeholder engagement and consultation have been considered when conducting the social risk ranking to ensure an integration of expert and community knowledge in impact assessment and the development of appropriate impact mitigation, amelioration, and enhancement strategies.

Assessment of social impacts is complex and as such requires the balancing of a range of factors and often competing interests. This SIA is reflective of this and has:

- assessed some aspects of the proposed Project as both negative and positive as they relate to different groups of people;
- identified potential negative impacts and mitigation strategies for the local community while documenting;
- considered the impacts on vulnerable groups and provided management strategies to ensure that any existing disadvantages are not exacerbated; and
- considered each community's access to critical resources, such as housing and health care, and how this affects their resilience.

The social impacts below have been assessed on a worst-case scenario initially and then the residual effect is assessed on the basis that mitigation and management strategies are successfully implemented. For the purpose of this report the following assessment uses the terms unmitigated and mitigated when referring to negative impacts and un-enhanced or enhanced when referring to positive impacts.

The following data and information have been used to identify potential impacts and their associated risks:

- data collected as part of the social baseline;
- findings from the stakeholder engagement and consultation activities;
- findings from technical reports;
- previous SIA reports from the same regional area;
- academic research; and
- relevant government and agency reports.

A social impact workshop was conducted by the Project team to assess potential impacts using a social risk framework (i.e. likelihood and consequence) shown in Appendix B. Using a social risk framework allows the assessment of the level of significance of a social impact as negligible, low, medium, high or unacceptable based on a combination of likelihood and consequence. Both negative and positive impacts/benefits have been considered.

7.1 Way of life impacts

This section provides an assessment of the unmitigated and mitigated way of life impacts on the local and regional communities as a result of the Project. The following matter was assessed as having a potential social impact on how the communities' live, work, play, and interact:

- road delays due to increased traffic.

7.1.1 Road delays due to increased traffic – unmitigated

The Project includes a reduction in the approved workforce from 300 to 150 FTE employees, however, currently only approximately 5 employees are on site as the Colliery has been in care and maintenance since May 2019. Therefore, the Project would increase the workforce from 5 to a maximum of 150 workers which would increase traffic to and from the site at peak shift changeover times (6.30–7.30 am and 2.30–3.30 pm). Expected shift sizes are expected to be:

- 26 workers and staff on the day shift from 7:00 am–3:00 pm;
- 15 on the afternoon shift from 3:00 pm–11:00 pm;
- 15 on the night shift from 11:00 pm–7:00 am; and
- weekends would be 6 workers and staff, from 7:00 am–3:00 pm only.

Traffic on the local road network (Princes Highway, West Dapto Road, Wongawilli Road, Darkes Road, Shone Avenue, and Jersey Farm Road) is expected to increase from the current 5 employees travelling to and from site while the Colliery is in care and maintenance, to a maximum of 150 staff travelling in light and heavy vehicle as a result of the Project.

The expected traffic movements on weekdays are as below:

- 122 light vehicle trips per day for staff and visitors (broken up as per shift numbers above); and
- 20 heavy vehicle trips per day for deliveries and maintenance.

The expected vehicle traffic movements on weekends is:

- 12 vehicle trips (6 staff travelling to and from site); and
- 10 heavy vehicle trips per day.

Most trips are expected to be from the Princes Highway via Wongawilli Road/West Dapto Road, with a small proportion of workers using Darkes Road and Shone Avenue. This road is currently undergoing an upgrade from south of Jersey Farm Road to Shone Avenue where Wongawilli Road becomes West Dapto Road (WCC 2020).

An increase of roughly 142 trips per weekday and 32 trips on weekends (broken up by shift changes) would have minor impact on the local area community. The likelihood is determined to be almost certain with negligible consequences, as such the risk has been assessed as Low – 6.

7.1.2 Road delays due to increased traffic – mitigated

As noted within the TIA (see Appendix G of the modification report), traffic impacts associated with the project have been determined to be minor with traffic conditions on the local road network remaining satisfactory. Mitigation measures for increased traffic impacting on the way of life for nearby residents may be mitigated by reduced hours of production out of hours and on weekends. Successful implementation of these mitigation measures would reduce the likelihood to possible. As such, the residual risk is assessed as Negligible – 3.

A summary of the assessment is provided in Table 7.1.

Table 7.1 Summary of way of life (road delays)

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Road delays due to increased traffic	Residents of the local area (particularly in housing estates off Wongawilli Road)	Construction and operation	Local area	Low – 6	Negligible – 3

7.2 Access to and use of infrastructure, services, and facilities impacts

This section provides an assessment of the impacts to communities' access to and use of infrastructure, services, and facilities, as a result of the Project. The following matter was assessed as having a potential social impact on the communities' access to and use of infrastructure and access to groundwater, such as registered bores and the water catchment managed by WaterNSW.

7.2.1 Access to groundwater

The Environment and Communities References Committee (ECRC) state that "…changes to the groundwater pressure in an aquifer can alter water flow directions from adjacent formations as water flows towards the area that has been depressurised" (ECRC 2018). This could lead to localised drawdown of the water table for nearby bore users, impacting on access to groundwater. The Committee also highlights the potential for depressurisation to cause water degradation due to mixing of aquifer flows (e.g. mixing of saline and freshwater aquifers) (ECRC 2018).

The groundwater impact assessment (GIA) (see Section I of modification report) has highlighted that during mining groundwater will be drawn down to the base of the Bulli and Wongawilli Seams. Groundwater modelling has predicted there will be negligible groundwater drawdown in the upper units of the alluvium/weathered zone or Hawkesbury Sandstone and consequently there are unlikely to be any losses or diversions of surface water. There is negligible subsidence predicted due to extraction associated with the Project, due to the design of the additional driveage. With no subsidence impacts predicted changes in hydraulic properties of the strata overlying the Bulli Seam is unlikely.

The GIA reviewed the registered bores near the Project area which indicated that the water supply bores were located within the Hawkesbury Sandstone, Bulgo Sandstone, or alluvium flanking the Nepean River or Mount Hunter Rivulet. Since it is predicted that there will be negligible groundwater drawdown within the Hawkesbury Sandstone, Bulgo Sandstone, or alluvium it is considered there will be negligible impact on water supply bores due to the Project.

As such, the potential impact on access to groundwater is assessed as Negligible – 1 with rare likelihood and negligible consequences for the local and regional communities. No mitigation measures are required.

A summary of the assessment is provided in Table 7.2.

Table 7.2 Summary of access to and use of infrastructure, services and facilities (groundwater)

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Access to groundwater	Groundwater users	Construction and operation	Local and regional area	Negligible – 1	Negligible – 1

7.3 Culture impacts

This section provides an assessment of the mitigated/unmitigated and unenhanced/enhanced culture impacts on the local and regional communities as a consequence of the Project. Historical heritage is the matter assessed as having a potential social impacts or benefits on the community's shared beliefs, customs, values and stories, or connection to land, places, and buildings.

Impacts to Aboriginal sites, places, or objects have also been considered, however the Aboriginal cultural heritage assessment (see Appendix N of modification report) has determined that no impacts are expected as a result of the Project.

7.3.1 Loss of historic heritage – unmitigated

Elliot Whiteing (2019) note that the history of mining in the area is a large part of the local community identity. Stakeholder engagement and consultation activities confirmed residents of the area recognise mining as part of their heritage. Mining history is associated with sense of place in the area according to the Dendrobium CCC (Elliot Whiteing 2019). Despite this, it is recognised that some of the population in Wongawilli is very new and may not share the same values on the mining history as persons having lived in the regional area for longer periods.

The historic heritage assessment and state of heritage impact (see Appendix M of modification report) has determined that the Project is likely to have partial direct impacts on historic heritage of the Colliery. The existing conveyor at the Colliery is part of a large complex of structures identified as B9 in the Wollongong Coal's Conservation Management Plan (CMP). The project is inclusive of some alteration to the fabric of B9 where the proposed new conveyor connects to the existing conveyor at the upper pit top. In addition, the proposed works are also in close proximity to the Dumper House (B4), which has high significance and primary archaeological significance. Direct impacts may occur to this building without mitigation due to the use and movement of machinery that could inadvertently damage the building.

Given the potential importance of mining history to the region, impacts on historic heritage would have marginal effects on the community and impacts are possible. As such, loss of historic heritage is assessed as having Low – 6 risk.

7.3.2 Loss of historic heritage – mitigated

Recommendations for mitigation of this impact include archival recording (of Wongawilli Pit Top part of the study area), protection of Dumper House (using high visibility bunting), and an unexpected finds procedure (requiring cessation of work, contacting an archaeologist, and contacting Heritage NSW should any relics be discovered). If the appropriate mitigation measures are employed successfully, it is considered that the works associated with the NWMD modification is acceptable from a heritage perspective, and that any loss of heritage significance through the proposed works will be appropriately managed if the recommendations are followed.

The residual risk if mitigation procedures are followed is assessed as Negligible – 5 as consequences would remain marginal whilst likelihood would be reduced to rare.

A summary of the assessment is provided in Table 7.3.

Table 7.3 Summary of culture (historical heritage)

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Residual
	Loss of historic heritage	Residents of the local area	Construction, operation and post closure	Local area	Low – 6	Negligible – 5

7.4 Health and well-being impacts

This section provides an assessment of the unmitigated/ mitigated health and well-being impacts on the local and regional communities as a consequence of the Project. Four matters have been assessed as having a potential social impact on the community's physical and mental health:

- noise;
- dust;
- emissions (dust and greenhouse gases (GHG)); and
- road safety.

7.4.1 Health impacts from noise – unmitigated

The potential health risks of noise and vibration from mining activities not only include the physical impacts on hearing, such as tinnitus, but also its impacts on disturbance of sleep, cognitive effects, and decreased mental well-being due to annoyance (DH 2018). Mining operations environmental noise such as road traffic and train movements can also have direct health impacts on sleep disturbance, cardiovascular disease, cognitive impairment, tinnitus, and annoyance (DH 2018). Noise can have more severe impacts for vulnerable groups within the population including people with pre-existing medical conditions; people in rehabilitation in hospital or at home; those with complex cognitive tasks; visual or hearing impaired individuals; babies and children; and elderly populations (DH 2018).

As described in the baseline study (see Appendix A Section A.9) health outcomes in the Illawarra Local Health District are generally poorer than NSW as a whole, with generally higher percentages of alcohol consumption at levels posing long-term health risk, daily smoking, asthma, and obesity (Ministry of Health 2019). This suggests that a proportion of the population in the local area are likely more vulnerable to potential health impacts.

As noted in Section 1 the Colliery workforce is expected to be 150 FTE, with traffic noise impacts in the local area as a result of these new workers accessing the site likely to be noticeable, particularly for new residents in the estates along Wongawilli Road. However, road traffic noise will mainly be concentrated around shift changes in mornings and afternoons.

Noise from former operations was reported during consultation as bearable and part of the background noise of Wongawilli since the mine has been in operation, however, noise during the night and weekends from those former operations was reported as disruptive and inconvenient.

Operation of the Project will consist of surface (pit top) conveyors and train loading to occur during site hours of 7am–6pm Monday to Friday and 8am–4pm on Saturdays, with no operation on Sundays or public holidays, while two trains per day (four pass-by events) are expected to take, on average, up to four hours to load coal.

The noise and vibration impact assessment (NVIA) (see Appendix E of the modification report) has determined that given the mine is currently in care and maintenance there will likely be a noticeable increase in operational, road traffic, and rail noise when operations recommence. Notwithstanding, road traffic noise generated by mine-related traffic is predicted to be at least 4 decibels (dB) below the relevant noise goal. Rail noise from up to two trains during the daytime period is predicted to comply with the rail noise goal of 60 dB and is also below the current rail noise limit provided in PA 09 – 0161.

Given that the mine is currently in care and maintenance, road and rail noise will likely be noticeable for new residents in housing estates off Wongawilli Road. As such, unmitigated, health impacts from noise are assessed as having a risk of High – 12, as likelihood is almost certain whilst consequences would be moderate.

7.4.2 Health impacts from noise – mitigated

Successful incorporation of feasible and reasonable mitigation measures is predicted to result in a significant reduction in the number of properties predicted to be significantly impacted by the Colliery operational noise compared to approved operations. Feasible and reasonable mitigation of this impact outlined in the NIVA (see Appendix E of the modification report) is inclusive of reduced out of hours operations and on weekends, and mitigation measures including undergrounding the crusher, new/improved enclosure for rail loud out bin, noise suppression kit for dozer/new dozer, noise suppression kit for front-end loader (FEL)/new FEL, improvements to screen/sizer and elevator enclosures, and extension of 6m high rail barrier further north to the rail load out bin.

Should these measures be implemented successfully, the residual risk of noise impacts on health is assessed as Low – 6 as both likelihood and consequence would be reduced to unlikely and marginal, respectively.

A summary of the assessment is provided in Table 7.4.

Table 7.4 Summary of health and well-being (noise)

Impact	Issue	Affected parties	Duration	Extent	Unmitigated	Residual
	Health impacts from noise	Neighbouring residents	Construction and operation	Immediate local area	High – 12	Low – 6

7.4.3 Health impacts from expelled dust – unmitigated

Those with asthma and other respiratory conditions are more vulnerable to effects of poor air quality. Data for the Illawarra Shoalhaven Local Health District (LHD) suggests that rates of hospitalisation for asthma in the regional area are often higher than that of NSW (Ministry of Health 2019).

This suggests that a portion of residents within the local area may be more vulnerable to poor air quality conditions and the presence of dust as a result of the Project with particles less than 10 µm in diameter, accounted for in the air quality impact assessment (AQIA) by PM10 and PM2.5, being fine enough to enter the human respiratory system and can therefore lead to adverse human health impacts (see Appendix F Section 3.2.1 of the modification report). Through community engagement and consultation some concerns were expressed over potential dust emissions from coal trains.

The AQIA (see Appendix F of the modification report) has determined that sources of atmospheric emissions associated with the Project include conveying and transfer of ROM coal from conveyor, transfer points, rail loading bins, coal loading to rail wagons, ROM coal stockpiling, handling and loading by FEL, management of the ROM coal stockpile, underground emissions from NWMD mining operations and diesel fuel combustion by on-site plant and equipment.

The likelihood of impacts from dust is almost certain, and consequences would be marginal, as such the unmitigated risk of dust expelled from project operations is assessed as Medium – 8.

7.4.4 Health impacts from dust – mitigated

There are existing controls in place at the Colliery which aim to reduce particulate matter emissions, including enclosures, water sprays, chemical and residual wetting agents, and a stockpile water spray system. Assuming successful mitigation, these controls can reduce emissions by 50% to 80% depending on the activity and control (see Section 6.3.1 of Appendix F of the modification report).

The AQIA has determined that the project operations will not result in exceedance of any applicable criteria at any neighbouring assessment location. As such, the residual risk is assessed as Negligible – 2.

A summary of the assessment is provided in Table 7.5.

Table 7.5 Summary of health and well-being (dust)

Impact	Issue	Affected parties	Duration	Extent	Unmitigated	Residual
HEALTH & COMMUNITY WELLBEING	Health impacts from expelled dust	Neighbouring residents	Construction and operation	Immediate local area	Medium – 8	Negligible – 2

7.4.5 Health impacts from GHG emissions – unmitigated

Greenhouse gas (GHG) emissions can have direct consequences on human health, including "…decreased lung function, increased respiratory symptoms, increased chronic obstructive pulmonary disease, increased cardiovascular and cardiopulmonary disease, and increased mortality" (Keywood, Emmerson & Hibberd 2016), and also contribute to climate change. The World Health Organisation (WHO) state that climate change affects the social and environmental determinants of health including air, water, food, and shelter (WHO 2020).

According to the baseline (see Appendix A Section A.9), the health outcomes of the Illawarra Shoalhaven LHD population area generally poorer than those of the NSW population (Ministry of Health 2019). This suggests that a proportion of the local and regional population may be vulnerable to a decline in the air quality as a result of GHG emissions.

A GHG assessment for the project was included in the AQIA (see Appendix F of the modification report). The results of the dispersion modelling highlighted the predicted impacts from Colliery operations will not result in exceedance of any applicable criteria at any neighbouring assessment location. The scale of annual scope 1 and 2 GHG emissions generated by the Colliery represents a minimal proportion of NSW and Australia's emissions; 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.

The unmitigated risk of GHG emissions from the Project has been assessed as Low – 6 as the likelihood of emissions is almost certain whilst consequences would be negligible given the minor scale of Project emissions within NSW and Australia total emissions, and that they will not result in exceedance of any applicable criteria at any neighbouring assessment location.

7.4.6 Health impacts from GHG emissions –mitigated

No mitigation measures have been outlined and as such the residual risk remains Low – 6.

A summary of the assessment is provided in Table 7.6.

Table 7.6 Summary of health and well-being (GHG emissions)

Impact	Issue	Affected parties	Duration	Extent	Unmitigated	Residual
	Health impacts from GHG emissions	Local and regional communities	Construction and operation	Local and regional area	Low – 6	Low – 6

7.4.7 Public safety impacts from increased traffic – unmitigated

Increased road movements to and from the Colliery may result in increased road safety impacts. The area consists of new housing developments suggesting there may be a number pedestrians, including children, in the area.

There is also a community hall with a children's playground located at the end of Wongawilli Road near one of the entrances to the mine site meaning it is likely there will be children in close proximity to the road at this location. Increased traffic poses a risk to children and pedestrians, particularly during morning and afternoon shift changes between 6.30–7.30 am and 2.30–3.30 pm.

According to Google Maps (2020) satellite imagery, there does not appear to be a designated safe pedestrian road crossing at any point on Wongawilli Road or West Dapto Road, though this may be included in current Council works to upgrade the existing road.

Whist data specifically for crashes in the local area is not available, Transport NSW (2020) provides a map of crashes by LGA, which indicates that between 2015 – 2019, there have been 10 road incidents on West Dapto Road and Wongawilli Road consisting of five non-casualty towaways, one minor injury, one moderate injury, and three serious injuries. There were also two non-casualty towaways on Darkes Road between the Princes Highway and West Dapto Road, and one serious injury crash on Shone Avenue from Horsley (Transport NSW).

The unmitigated risk of public safety impacts on the local road network is likely and could have moderate impacts making the risk is Medium – 10.

7.4.8 Public safety impacts from increased traffic –mitigated

The TIA identifies that the Project is not expected to have any negative impacts on other road users and or on road safety on the local road network (see Appendix G of the modification report), while Council upgrades taking place on Wongawilli Road (previously owned by the Wongawilli Colliery) between Shone Avenue and the community hall, will further improve movement and public safety from increased traffic.

Residual risk is assessed as Low – 7 as likelihood would be reduced to rare whilst consequence would remain moderate.

A summary of the assessment is provided in Table 7.7.

Table 7.7 Summary of health and well-being (road safety)

Impact	Issue	Affected parties	Duration	Extent	Unmitigated	Residual
	Public safety from increased traffic	Residents in the local area	Construction and operation	Local area	Medium – 10	Low – 7

7.5 Surroundings impacts

This section provides an assessment of the unmitigated/mitigated surrounding impacts on the local and regional communities as a consequence of the Project. The following two matters are assessed as having a potential social impact on the community's access to and use of ecosystems, public safety and security, access to and use of natural and built environment, aesthetic value, and/or amenity:

- threat to native species; and
- noise and vibration.

7.5.1 Loss of native species' habitats – unmitigated

As evidenced in the regional plans and strategies in section 4.3 and in the social baseline study (see Appendix A Section A.4), the local and regional communities highly value their natural environment and the native flora and fauna within it. The WCC website (2020) states that flora in the regional area is a valuable part of the area's identity. The Project proposes the removal of 0.03 ha (hectares) (300 square meters) of native vegetation. The native vegetation and affected species have intrinsic value for the local community as native flora and fauna to the Illawarra Escarpment, suggesting that the community may be impacted by potential loss of native species' habitat in their area.

The biodiversity development assessment report (BDAR) (see Appendix L of the modification report) highlighted the potential for new surface infrastructure to impact on native vegetation containing native fauna species' microhabitats and whilst no threatened fauna species were recorded during site survey, the BDAR assumes the presence of the following four species identified by the Biodiversity Assessment Method calculator:

- Large-eared Pied Bat;
- Little Bent-winged Bat;
- Large Bent-winged Bat; and
- Pink Robin.

Given the minor area of native vegetation proposed to be removed (300 square metres) it is likely that the impact on the local community will be minimal. The unmitigated risk of loss of native species' habitats is assessed as Low – 6 as the likelihood of removal of native vegetation is almost certain though the consequence would be negligible due to the minor extent of vegetation proposed to be removed.

7.5.2 Loss of native species' habitats –mitigated

Mitigation measures in the BDAR report include multiple actions to avoid or minimise project impacts, (see Section 6 in Appendix L of the modification report). The Project is also required to offset impacts to both native vegetation and threatened species at the subject land through the transfer and retirement of biodiversity credits or by paying into the BCT Offset Fund, as well as the implementation of construction environmental management measures to mitigate potential impacts to microbats. The successful implementation of these mitigation measures would ensure the species have substantial habitat remaining to not impact on their survival in the region and consequently impacting a natural asset valued by the community.

Successful implementation of these mitigation measures would mean that residual risk would be Negligible – 3 as consequences would remain negligible while likelihood would be reduced to possible.

A summary of the assessment is provided in Table 7.8.

Table 7.8 Summary of surroundings (native species)

Impact	Issue	Affected parties	Duration	Extent	Unmitigated	Residual
	Loss of native species' habitats	Residents in the regional area/ potentially any environmentally concerned persons	Construction and operation	0.03 hectares in local area	Low – 6	Negligible – 3

7.5.3 Amenity impacts from noise and vibration – unmitigated

The Wollongong 2022: Our Community Strategic Plan 2012 – 2022 outlines the value that the regional community place on amenity in the Wollongong area, stating the love for Wollongong's "…natural beauty, access to beaches and coast line, the escarpment backdrop and lifestyle and amenity this affords…" (WCC 2012, p.12). Given this, it can be assumed that the amenity of the region is one of the key drivers of liveability for the local and regional communities, and most likely a main reason for the large increase in housing development in Wongawilli.

As the Colliery has been in care and maintenance since May 2019, mine related noise and vibration is likely to be a new impact for any new residents residing in the housing estate that has been built off Wongawilli Road since that time. It is likely that the local amenity that this new population would have enjoyed during this care and maintenance period will be impacted by the recommencement of operations at the mine under the proposed modification, despite predictions that noise levels from the approved operations can be met.

The unmitigated risk of this impact is assessed as Medium – 8 as consequence would be marginal and it is almost certain to occur.

7.5.4 Amenity impacts from noise and vibration – mitigated

Mitigation of this impact is outlined in the NVIA (see Appendix E of the modification report) is inclusive of reduced hours of operation out of hours and on weekends, and mitigation measures outlined in noise assessment including undergrounding of the crusher, new/improved enclosure for rail loud out bin, noise suppression kit for dozer/new dozer, noise suppression kit for FEL/new FEL, improvements to screen/sizer and elevator enclosures, and extension of 6m high rail barrier further north to the rail load out bin. Successful incorporation of these mitigation measures is predicted to result in a significant reduction in the number of properties predicted to be significantly impacted by project operational noise compared to approved operations.

Residual risk is assessed as Low – 6 as consequences would remain the same whilst likelihood would be reduced to unlikely/possible.

A summary of the assessment is provided in Table 7.9.

Table 7.9 Summary of surroundings (noise and vibration)

Impact	Issue	Affected parties	Duration	Extent	Unmitigated	Residual
	Amenity impacts from noise and vibration	Residents in the local area	Construction and operation	Local area	Medium – 8	Low – 6

7.6 Person and property rights impacts

This section provides an assessment of the person and property rights impacts on the local and regional communities as a consequence of the Project. Access to licenced groundwater is the matter assessed as having a potential social impact on the community's livelihoods and property rights.

7.6.1 Impact on livelihood from access to groundwater

As previously stated, the Project has considered potential groundwater impacts to third party users such as livestock farming and irrigation. Drawdown affecting bore user access to groundwater would impact on economic livelihoods of any persons in the local and regional area that may rely on groundwater to raise livestock or irrigate crops. These people may need to drill new, deeper wells, or purchase alternative water sources at personal cost (ECRC 2018). This impact could affect farmers in the regional area mostly through loss of income, though also by increased stress and potential loss of stock/crops.

The GIA (see Appendix I of the modification report) review of the registered bores near the Project area indicated that the nearest water supply bores were located within the Hawkesbury Sandstone, Bulgo Sandstone, or alluvium flanking the Nepean River or Mount Hunter Rivulet. It is predicted that there will be negligible groundwater drawdown within the Hawkesbury Sandstone, Bulgo Sandstone, or alluvium and as such, negligible impact on water supply bores due to the Project is expected.

As such, this impact is assessed as Negligible – 1 as the likelihood is considered rare and consequences negligible. No mitigation measures are required.

A summary of the assessment is provided in Table 7.10.

Table 7.10 Summary of surroundings (noise and vibration)

Impact	Issue	Affected parties	Duration	Extent	Unmitigated	Residual
	Impacts on livelihood from access to groundwater	Groundwater users	Operation and post-operation	Local and regional area	Negligible – 1	Negligible – 1

7.7 Cumulative impacts

There are several concurrent development projects operating or intended to operate in and around the local area. These projects may contribute cumulative impacts to the Project. A summary of SSD projects as identified through the NSW DPIE Major Projects website, including workforce forecasts in construction and operational phases, is given in Table 7.11.

Table 7.11 Concurrent development projects

LGA	Project name	Anticipated timeframe/ project life	Development type	Status	Determination date	Construction workforce	Operational workforce
Wollongong	Kembla Grange Resource Recovery Facility	Not stated	Waste collection, treatment, and disposal	Determination	Original EIS 07/03/2016 Mod 2 15/05/2020	[6 for mod 2]	[40 for original EIS] [32 for mod 2]
Wollongong/ Shellharbour City	West Dapto (Horsley) Water Infrastructure	2015 – n.d.	Sewerage collection, treatment, and disposal	Determination	14/06/2013	Not stated	Not stated

Source: DPIE 2020, Major Projects

7.7.1 West Dapto (Horsley) Water Infrastructure

The West Dapto Water Infrastructure SSD is part of a long term commitment from Sydney Water (2020) to provide the West Dapto Urban Release Area and Adjacent Growth Areas with drinking water and wastewater infrastructure. These areas are expected to have roughly 30,000 new homes and 500 ha of non-residential development by 2048 (Sydney Water 2020).

An Environmental Assessment (EA) was submitted in September 2012 which was approved with conditions (DPIE 2020). The original EA was modified in January 2016 to only include infrastructure required in Kembla Grange, Sheaffes/Wongawilli, and West Horsley (Sydney Water 2020). The project will be rolled out in stages in line with the relevant land release development stages.

To date, three stages have been completed delivering water to Dapto Road, Shone Avenue, West Dapto Road, Sheaffes Road, near Smiths Lane, and provide key wastewater infrastructure in the area. Construction on the current project commenced in March 2018 with an expected completion date of October 2020 (Sydney Water 2020).

8 Mitigation and management

This section provides a summary of the identified social impacts along with the corresponding unmitigated and mitigated risk rankings and proposed mitigation and management strategies (Table 8.1).

This section also provides a monitoring and management framework.

Table 8.1 Summary of mitigation and management strategies

Impact	Affected area	Affected stakeholders	Unmitigated Risk	Residual risk	Proposed mitigation and management strategies	Responsibility
Way of life impacts						
Road delays due to increased traffic	Local area	Residents in local area	Low – 6	Negligible – 3	Reduced hours of production on weekends and out of hours	Wollongong Coal Ltd.
Access to and use of infrastructure, services, and facilities impacts						
Access to groundwater	Local and regional area	User bores in the regional area	Negligible – 1	Negligible – 1	No mitigation required	--
Culture impacts						
Loss of historic heritage	Local area	Residents of the local area	Low – 6	Negligible – 5	Archival recording, high visibility bunting, and unexpected finds procedure	Wollongong Coal Ltd.
Health and well-being impacts						
Health impacts from increased noise	Local area	Residents in the local area	High – 12	Low – 6	Reduced out of hours operation and mitigation measures outlined in noise assessment	Wollongong Coal Ltd.
Health impacts from expelled dust	Local area	Residents in the local area	Medium – 8	Negligible – 2	Dust suppression measures outlined in AQIA	Wollongong Coal Ltd.
Health impacts from GHG emissions	Local area	Residents in the local area	Low – 6	Low – 6	No mitigation measures	Wollongong Coal Ltd.
Road safety from increased traffic	Local area	Residents in the local area	Medium – 10	Low – 7	Council upgrades to Wongawilli Road (previously owned by the Colliery)	Wollongong City Council

Table 8.1 Summary of mitigation and management strategies

Impact	Affected area	Affected stakeholders	Unmitigated Risk	Residual risk	Proposed mitigation and management strategies	Responsibility
Surroundings impacts						
Loss of native species' habitats	Regional area	All within regional area/ potentially any person anywhere concerned with environment	Low – 6	Negligible – 3	Actions to avoid or minimise impacts and offsetting one vegetation zone through the transfer and retirement of biodiversity credits or by paying into the BCT Offset Fund	Wollongong Coal Ltd.
Amenity impacts from noise and vibration	Local area	Residents in local area	Medium – 8	Low – 6	Reduced hours of operation and mitigation measures outlined in NVIA	Wollongong Coal Ltd.
Person and property rights impacts						
Economic impacts from groundwater depressurisation	Local area	Groundwater users in local and regional area	Negligible – 1	Negligible – 1	No mitigation required	Wollongong Coal Ltd.

8.1 Monitoring and management framework

It is proposed that the existing Colliery monitoring and management framework be updated to ensure that the identified social impacts are monitored over time to measure the effectiveness or otherwise of the proposed mitigation and management measures, including the changing conditions and trends in the local and regional areas over the same period.

It is proposed that the monitoring and management framework identifies the following key aspects:

- track progress of mitigation and management strategies;
- assess actual project impacts against predicted impacts;
- identify how information will be captured for reporting to impacted stakeholders including landholders, communities and government on progress and achievements;
- key performance indicators, targets, and outcomes;
- identify responsible parties; and
- mechanisms for ongoing adaption of management measures when and if required.

To ensure the effectiveness of the management measures, it is recommended that a continuous improvement approach be adopted allowing for the review and adaption of impacts, management measure and outcomes.

9 Conclusion

This SIA report supports the proposed modification of PA 09-0161. It documents the assessment methods and results, the initiatives built into the project design to avoid and minimise potential impacts to the local and regional communities, and the mitigation and management measures proposed to address any residual impacts not able to be avoided.

This SIA has identified key vulnerabilities in the local area community, relating to the limited amount of temporary accommodation services, lack of capacity in the rental market, high percentage of low-skilled workers, limited public transport options, and poor health indicators. Opportunities to remedy these vulnerabilities may include improving accommodation capacity, approval and delivery of housing developments (particularly rental developments), improving or providing on the job training opportunities, provide more comprehensive public transport options, and improving health service provision.

The social impacts identified and assessed in this SIA are road delays due to increased traffic, access to groundwater, loss of historic heritage, health impacts from noise, expelled dust, and GHG emissions, public safety impacts from increased traffic, loss of native species' habitats, amenity impacts from noise and vibration, impact on livelihoods from access to groundwater, and disregard of the community in decision-making processes.

Road delays due to increased traffic in the local area has been assessed as Low – 6 unmitigated due to low expected shift numbers. Mitigation measures include reduced hours of production on weekends and out of hours. Successful implementation of these mitigating actions would make the residual risk Negligible – 3.

Impacts on access to groundwater for the local and regional area has been assessed as Negligible – 1 with no mitigation measures required.

Loss of historic heritage relating to the existing conveyor at the Colliery and to Dumper House located nearby construction activities has been assessed as Low – 6 unmitigated given possible marginal impact on the community. Mitigation for this impact includes archival recording of Wongawilli Pit Top, protection and avoidance of Dumper House during construction, and an unexpected finds procedure. Successful implementation of these measures would result in Negligible – 5 residual risk.

Health impacts from noise has been assessed as High – 12 unmitigated, as the likelihood of impact is almost certain, and consequences would be moderate. Mitigation measures to reduce this risk include reduced out of hours operations and on weekends, and mitigation measures including undergrounding the crusher, new/improved enclosure for rail loud out bin, noise suppression kit for dozer/new dozer, noise suppression kit for FEL/new FEL, improvements to screen/sizer and elevator enclosures, and extension of 6m high rail barrier further north to the rail load out bin. Successful implementation of such mitigation measures would result in Low – 6 residual risk.

Health impacts from expelled dust has been assessed as Medium – 8 unmitigated (almost certain with marginal consequences). There are existing controls in place at the Colliery which aim to reduce particulate matter emissions, including enclosures, water sprays, chemical and residual wetting agents, and a stockpile water spray system. Assuming successful mitigation, these controls can reduce emissions by 50% to 80% depending on the activity and control. Successful implementation of these controls would result in Negligible – 2 residual risk.

Public safety impacts from increased traffic has been assessed as Medium – 10 as impacts are likely and would have moderate consequences. The Project is not expected to have any negative impacts on other road users and or on road safety on the local road network, while Council upgrades taking place on Wongawilli Road (previously owned by the Wongawilli Colliery) between Shone Avenue and the community hall, will further improve movement and public safety from increased traffic. As such, residual risk would be Low – 7.

Loss of native species' habitats has been assessed as s the likelihood of native vegetation is almost certain though the consequence would be negligible due to the minor extent of vegetation proposed to be removed. The mitigation measures proposed by the BDAR include offsetting impacts to one vegetation zone at the subject land through the transfer and retirement of biodiversity credits or by paying into the BCT Offset Fund, as well as the implementation of construction environmental management measures to mitigate potential impacts to microbats. Successful implementation of these mitigation measures would mean that residual risk would be Negligible – 3 as consequences would remain negligible while likelihood would be reduced to possible.

Amenity impacts from noise and vibration has been assessed as Medium – 8 as consequence would be marginal and it is almost certain to occur. Mitigation of this impact is inclusive of reduced hours of operation out of hours and on weekends, and mitigation measures outlined in noise assessment including undergrounding of the crusher, new/improved enclosure for rail loud out bin, noise suppression kit for dozer/new dozer, noise suppression kit for FEL/new FEL, improvements to screen/sizer and elevator enclosures, and extension of 6m high rail barrier further north to the rail load out bin. Residual risk would be Low – 6.

Impact on livelihood from access to groundwater has been assessed as Negligible – 1 with no mitigation measures required.

10 Acronyms

Table 10.1 Acronyms

Acronym	
ABS	Australian Bureau of Statistics
ALP	Australian Labour Party
AQIA	Air quality impact assessment
BDAR	Biodiversity development assessment report
CCC	Community Consultative Committee
CCL	Consolidated Coal Lease
CID	Community information day
CMP	Conservation Management Plan
Cr	Councillor
CSP	Community Strategic Plan
dB	Decibels
DPIE	Department of Planning, Industry and Environment
EA	Environmental Assessment
ECRC	Environment and Communities Reference Committee
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence
FEL	Front-end loader
FTE	Full time equivalent
GHG	Greenhouse gases
GIA	Groundwater impact assessment
ha	Hectare
Heritage Act	*NSW Heritage Act 1977*
IAIA	International Association for Impact Assessment
IECA	Illawarra Escarpment Conservation Area
IFC	International Finance Corporation
IPC	Independent Planning Commission
IRRM	Illawarra Residents for Responsible Mining
JSPL	Jindel Steel and Power Limited
km	Kilometres

Table 10.1 Acronyms

Acronym	
km^2	Square kilometres
LGA	Local Government Area
LHD	Local Health District
ML	Mining Lease
MOD 2	Proposed modification of consent application
Mtpa	Million tonnes per annum
MNUC	Main North Underground Conveyor
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NVIA	Noise and vibration impact assessment
NWMD	North West Mains Development
PA	Project Approval
PAA	Project application area
POWA	Protect Our Water Alliance
RAPs	Registered Aboriginal Parties
ROM	Run of mine
SA2	Statistical Area 2
SA4	Statistical Area 4
SES	State Emergency Service
SIA	Social impact assessment
SIA *Guideline*	*Social impact assessment guideline: for State significant mining, petroleum production and extractive industry development 2017*
SSD	State significant development
TfNSW	Transport for NSW
TIA	Traffic impact assessment
WCC	Wollongong City Council
WHO	World Health Organisation

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Appendix A

Social Baseline Study

A.1 Purpose

A social baseline study is a requirement of the New South Wales *Social impact assessment guideline for State significant mining, petroleum production and extractive industry development 2017* (the Guideline) (DPE 2017). The baseline study describes the existing population and social conditions of potentially affected communities within the social impact assessment (SIA) area of social influence which form the benchmark against which the social impacts are assessed. The Guideline states that a social baseline is crucial to understand the relevant pre-existing social pressures (DPE 2017). Although all social indicators assessed in the social baseline study will not necessarily be impacted, it is imperative to obtain a thorough understanding of the social conditions and trends in the social area of influence. Gaining a broad understanding of the area of social influence allows us to differentiate between, and measure, a change that is likely to occur as a result of the project as opposed to what would have likely occurred without the project (IAIA 2015). Accordingly, this social baseline identifies the area of social influence for the Wongawilli Colliery Modification 2 project (the Project) and its existing known and predicted social conditions for its community.

A.2 Area of social influence

The project is located within the Horsley – Kembla Grange Statistical Area 2 (SA2). The key state suburbs within this SA2 are Dombarton, Wongawilli, Huntley, Horsley, and Kembla Grange. This area has been selected as the local area of social influence for the Project as these are the suburbs most likely to be directly impacted.

The Project is also likely to have a broader reach due to use of infrastructure, supply chains, haulage routes, transportation of goods, materials and equipment, and the movement of its workforce, some of which may have drive-in-drive-out and/or fly-in-fly-out arrangements (DPE 2017). These factors require the area of social influence to include regional areas likely to be impacted by the Project which will extend to Illawarra Statistical Area 4 (SA4). This SA4 forms the regional area of social influence. Within the regional area of social influence, the suburb of Dapto has been identified as a further key suburb of interest due to its proximity to the Project and local area.

The local area and majority of the regional area are situated in the Wollongong Local Government Area (LGA).

These communities have been mapped to the ABS categories used for data collection (see Table A.1) and the local and regional area of social influence (herein referred to as **local area** and **regional area**), illustrated in Figures A.1 and A.2.

Table A.1 Area of social influence

Area of social influence	Geographic area	ABS data category	Referred to in report as:
Local area of social influence	Dombarton suburb	Horsley-Kembla Grange SA2 - State suburbs (SSC)	Local area
	Wongawilli suburb		
	Huntley suburb		
	Horsley suburb		
	Kembla Grange suburb		
Regional area of social influence	Illawarra	Illawarra SA4	Regional area
State of NSW	State of NSW	NSW STE	NSW

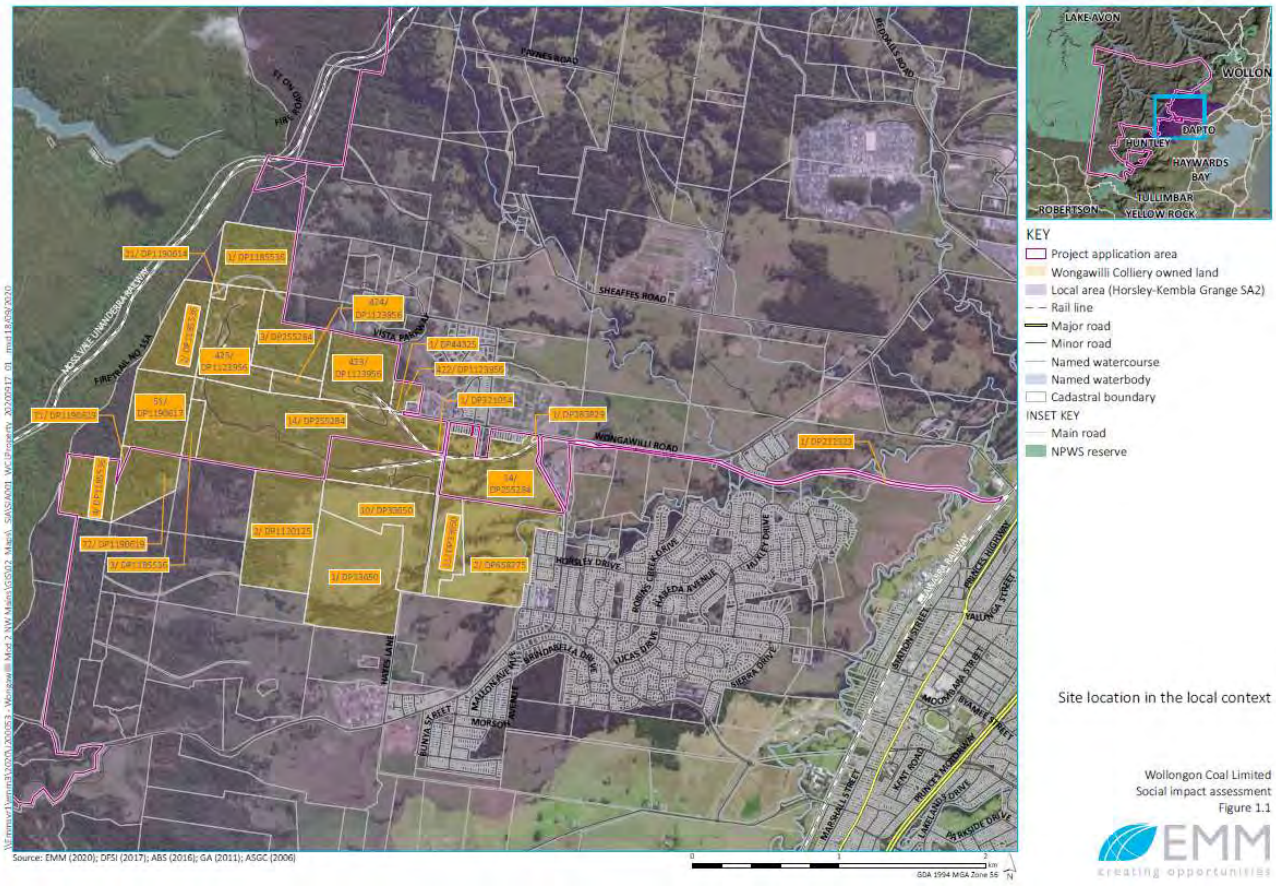


Figure A.1 Site land parcels in the local context

Figure A.2 Site location in the regional context

A.3 Demographic profile

According to the 2016 Census of Population and Housing, the local area has a total population of 8,659 people and a 2019 estimated resident population of 10,154 (ABS 2020), an increase of 7.2%. From 2011-2016, the population of the local area increased by 16.7%. Overall, the local area experienced a much greater population percentage increase than the regional area (6.3%) or NSW (8.1%).

The population trends within the area of social influence are presented in Table A.2.

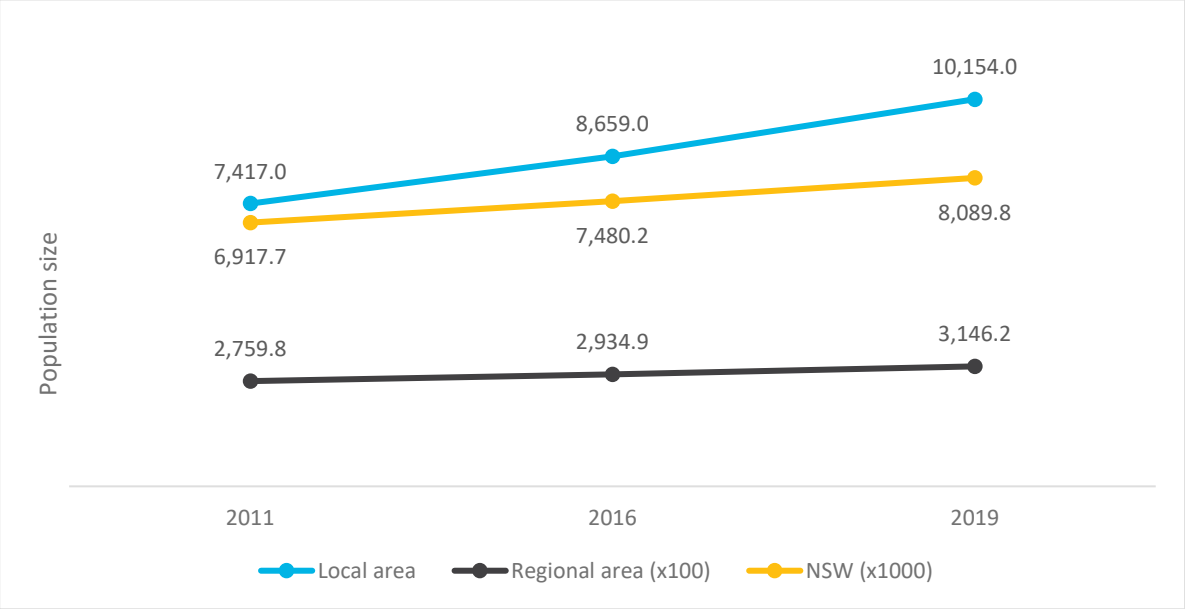
Table A.2 Population trends, 2011 – 2016

	2006[1]	2011	2016	2019[2]	Total % change 2011-2016	Total % change 2016 – 2019
Local area	--	7,417	8,659	10,154	**16.7%**	**17.2%**
Regional area	--	275,983	293,494	314,6178	**6.3%**	**7.2%**
NSW	**6,549,174**	**6,917,656**	**7,480,228**	**8,089,817**	**14.2%**	**16.9%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles; ABS 2020, 3218.0 – Regional Population Growth, Australia 2018 – 2019.

Notes: 1. As the local and regional areas are SA2 and SA4 there is no data available for these areas from 2006 due to change of statistical divisions as of 2011.
2. Estimated resident population is based on Census counts by place of usual residence (excluding short-term overseas visitors in Australia), with an allowance for Census net undercount, to which are added the estimated number of Australian residents temporarily overseas at the time of the Census.

The population trends from 2011 – 2019 are presented Figure A.3.



Source: ABS 2016, Census of Population and Housing: General Community Profiles; ABS 2020, 3218.0 – Regional Population Growth, Australia 2018 – 2019.

Figure A.3 Population trends, 2006–2019

Projected population data for the area is only available for the LGA level. Trends for the LGA are assumed to be similar in the local and regional areas.

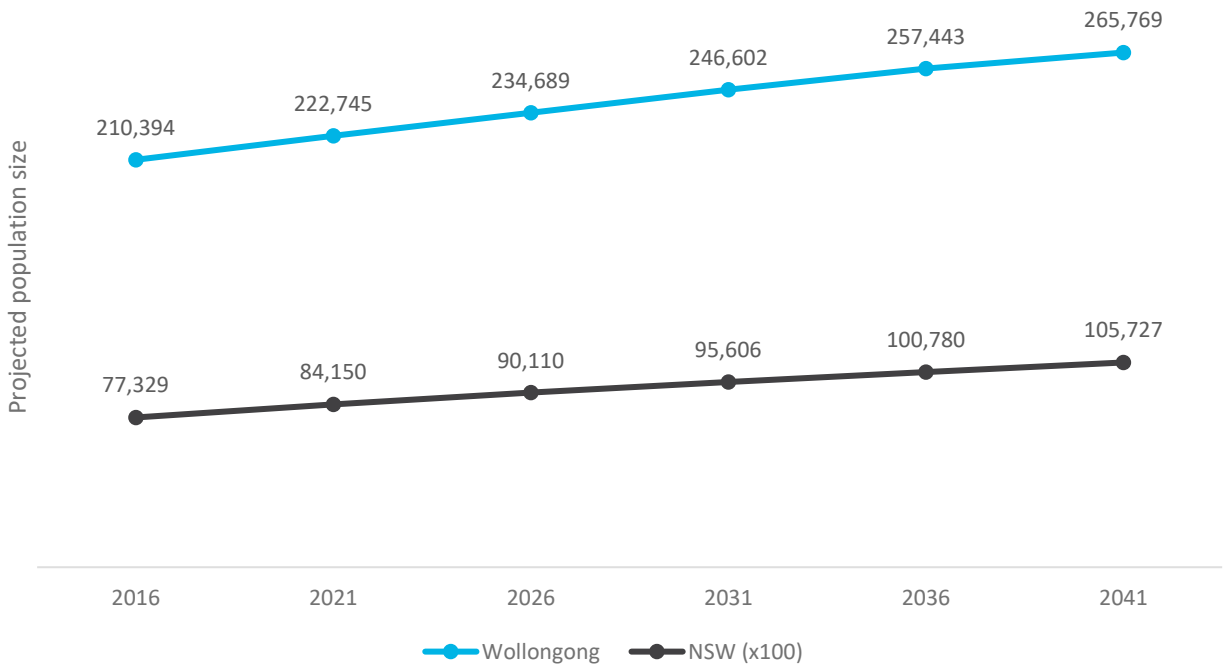
The projected population of Wollongong LGA is estimated to increase from 210,394 in 2016 to 265,769 persons in 2041, representing a total increase of 26.3% and an average annual increase of 0.9%. This growth is lower than the projections for the whole of NSW, which is projected to increase by 36.7% by 2041, though a gradual positive trend is seen for both.

The projected population in Wollongong LGA and NSW is presented in Table A.3 and illustrated in Figure A.4.

Table A.3 Projected population, 2016 – 2041

	2016	2021	2026	2031	2036	2041	Total change 2016 – 2041	Total % change 2016 – 2041	Average annual growth rate 2016 – 2041
Wollongong LGA	210,394	222,745	234,689	246,602	257,443	265,769	55,375	26.3%	0.9%
NSW	**7,732,858**	**8,414,978**	**9,011,010**	**9,560,567**	**10,077,964**	**10,572,696**	**2,839,838**	**36.7%**	**1.5%**

Source: DPIE 2019, NSW 2019 Population Projections: ASGS 2019, LGA projections.



Source: DPIE 2019, NSW 2019 Population Projections: ASGS 2019 LGA projections; QGSO 2019, Queensland Government population projections

Figure A.4 Projected population, 2016–2041

A.3.1 Population by age and sex

There is some variability in age distribution across the local area of social influence, the regional area of social influence, and NSW. The local area has a younger population profile with almost one third (31.2%) of the population being 19 years or younger, compared to one quarter (25.5%) in the regional area and over a fifth (21.6%) in NSW. A particularly large proportion of the local area population is in the 5–14 years age group (16.8%). This large young population is indicative of a need for childcare and education facilities which are limited within the local area, though more accessible at the regional level (see Section A.5). There is a smaller proportion of the population aged over 65 years (10.9%) compared to NSW (16.3%), with a very small proportion aged over 85 (1.0%), suggesting the limited aged care facilities in the local area may be sufficient (see Section A.5.6). Most of the population in the area are aged between 25–54 years (41.7%).

The age group distribution and median age is presented in Table A.4.

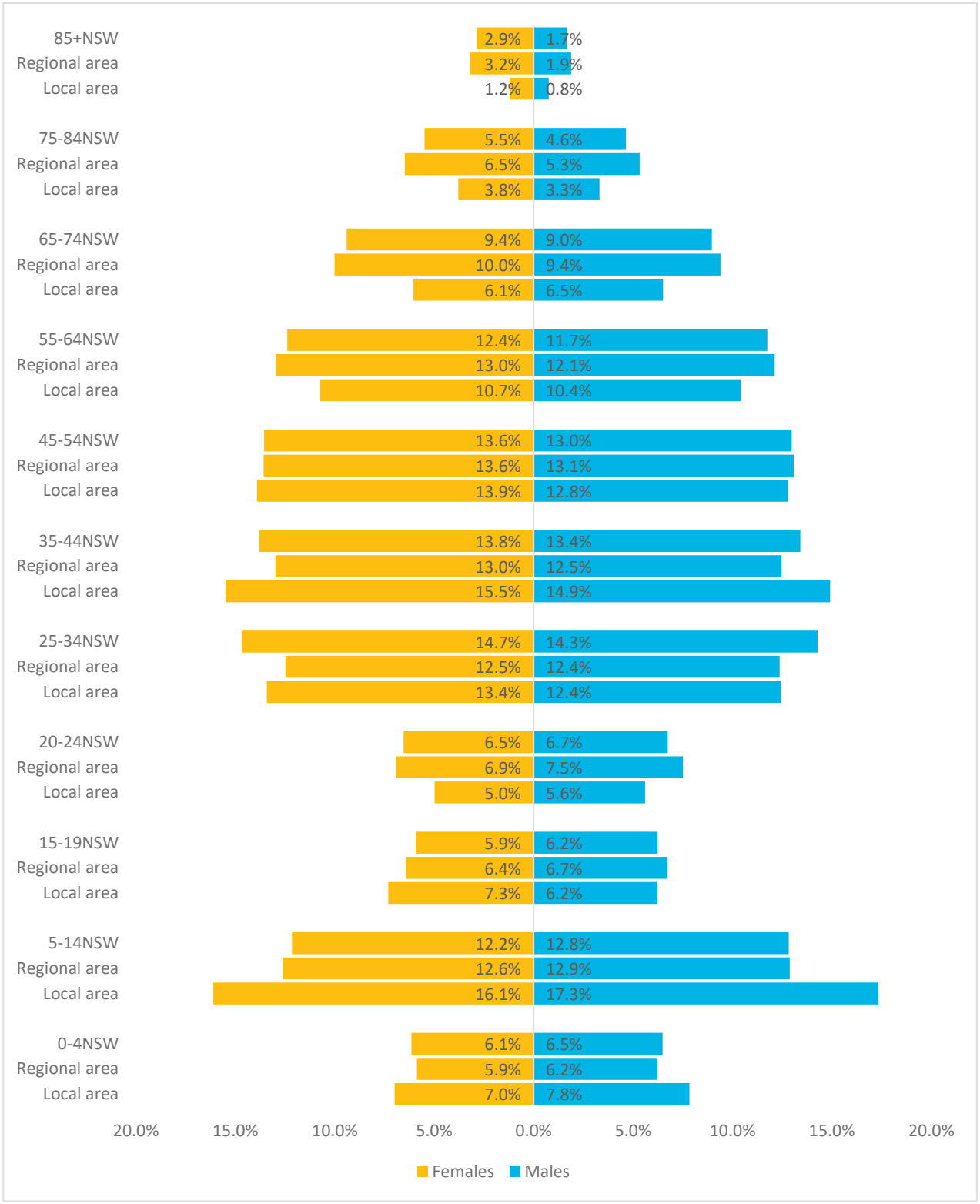
Table A.4 Age group distribution and median age, 2016

Age group	Local area	Regional area	NSW
0 – 4 years	7.4%	5.9%	6.2%
5 – 14 years	16.7%	12.5%	12.3%
15 – 19 years	7.7%	6.5%	6.0%
20 – 24 years	5.3%	7.1%	6.5%
25 – 34 years	12.9%	12.2%	14.3%
35 – 44 years	15.2%	12.5%	13.4%
45 – 54 years	13.4%	13.1%	13.1%
55 – 64 years	10.6%	12.3%	11.9%
65 – 74 years	6.3%	9.5%	9.1%
75 – 84 years	3.6%	5.8%	5.0%
85 years and older	1.0%	2.5%	2.2%
Total	**100.0%**	**100.0%**	**100.0%**
Median age of persons 2016	**35**	**39**	**38**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Note: ABS 2016 Census data contains small random adjustments to cell values to protect the confidentiality of data. These adjustments may cause the sum of rows to differ from table totals.

The distribution of males and females in the local area is relatively even, with slightly more females than males (51.1% and 48.9% respectively) which is comparable with the regional area (50.8% and 49.2% respectively), and NSW (50.7% and 49.3% respectively). The distribution of the population by age and sex is presented in Figure A.4.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure A.4 Population distribution, 2016

A.3.2 Aboriginal and/or Torres Strait Islander population

In the local area there are 211 Aboriginal and/or Torres Strait islander persons constituting 2.4% of the population. Of those, 97 are male and 118 are female. In the regional area of social influence, Aboriginal and/or Torres Strait Islander persons constitute 2.8% of the population. In comparison to NSW (3.0%) there is minimal variation in the local and regional area's Indigenous populations.

The proportion of persons identifying as Aboriginal and/or Torres Strait Islander is presented in Table A.5, and age group distribution is illustrated in Figure A.5.

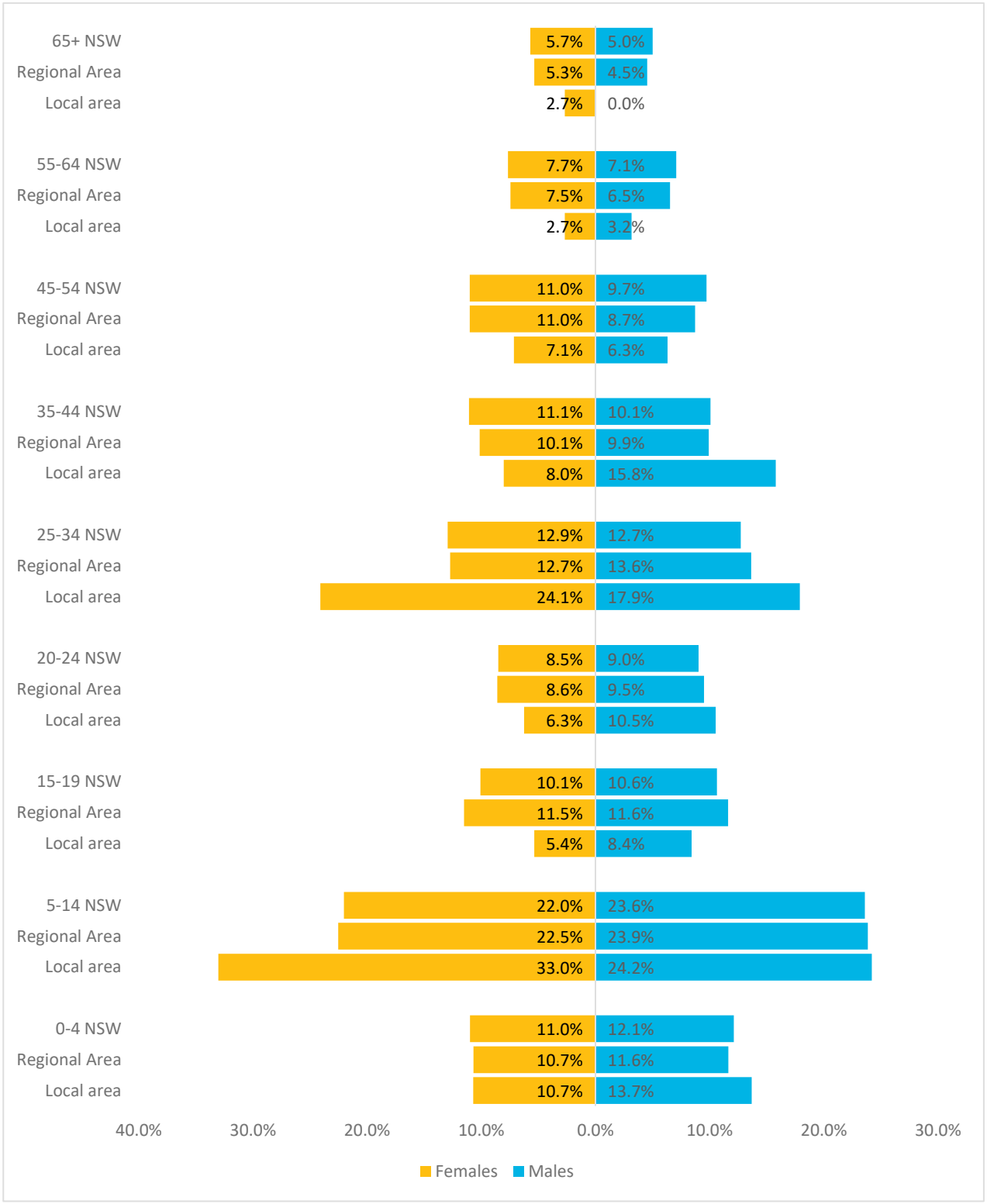
Table A.5 Indigenous persons as percentage of population, 2016

	Indigenous population
Local area	2.4%
Regional area	2.8%
NSW	**3.0%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

The largest demographic in the Indigenous community in the local area is children aged 5–14 years. There is a significantly higher proportion of females than males in age categories: 5-14 (33% and 24.2% respectively) and 25-34 (24.1% and 17.9% respectively). There is an unusually small proportion (13.8%) of the Aboriginal and/or Torres Strait islander population in the 15-19 years age group. In the local area there are no Aboriginal and/or Torres Strait Islander males aged 65+, and only a small proportion of females (2.7%). The Indigenous population's smaller proportion of the population living beyond 65 years aligns with the lower life expectancy among Indigenous Australian's nationally (AIHW 2019), with much of this gap explained by the relationships between increased socioeconomic disadvantage, worsened mental health outcomes, and related health risk behaviours, including greater proportions of smoking and alcohol use (AHMAC 2017).

The distribution of Indigenous populations within the area of social influence is presented in Figure A.5.



Source: ABS 2016, Census of Population and Housing: General Community Profiles

Figure A.5 Population distribution of Aboriginal and/or Torres Strait Islander persons, 2016

A.3.3 Vulnerable groups

The level of disadvantage or advantage in the population is indicated in the Socio-Economic Indexes for Areas (SEIFA) which focuses on low-income earners, relatively lower education attainment, high unemployment, and dwellings without motor vehicles. SEIFA is a suite of four summary measures that were created from Census data, including:

- the Index of Relative Socio-Economic Disadvantage (IRSD);
- the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD);
- the Index of Economic Resources (IER); and
- the Index of Education and Occupation (IEO).

Each index is a summary of a different subset of Census variables and focuses on a different aspect of socio-economic advantage and disadvantage. Low rankings are deemed most disadvantaged and high rankings least disadvantaged within a decile ranking system where the lowest 10% of areas within Australia are given a decile number of 1 and the highest 10% of areas are given a decile number of 10.

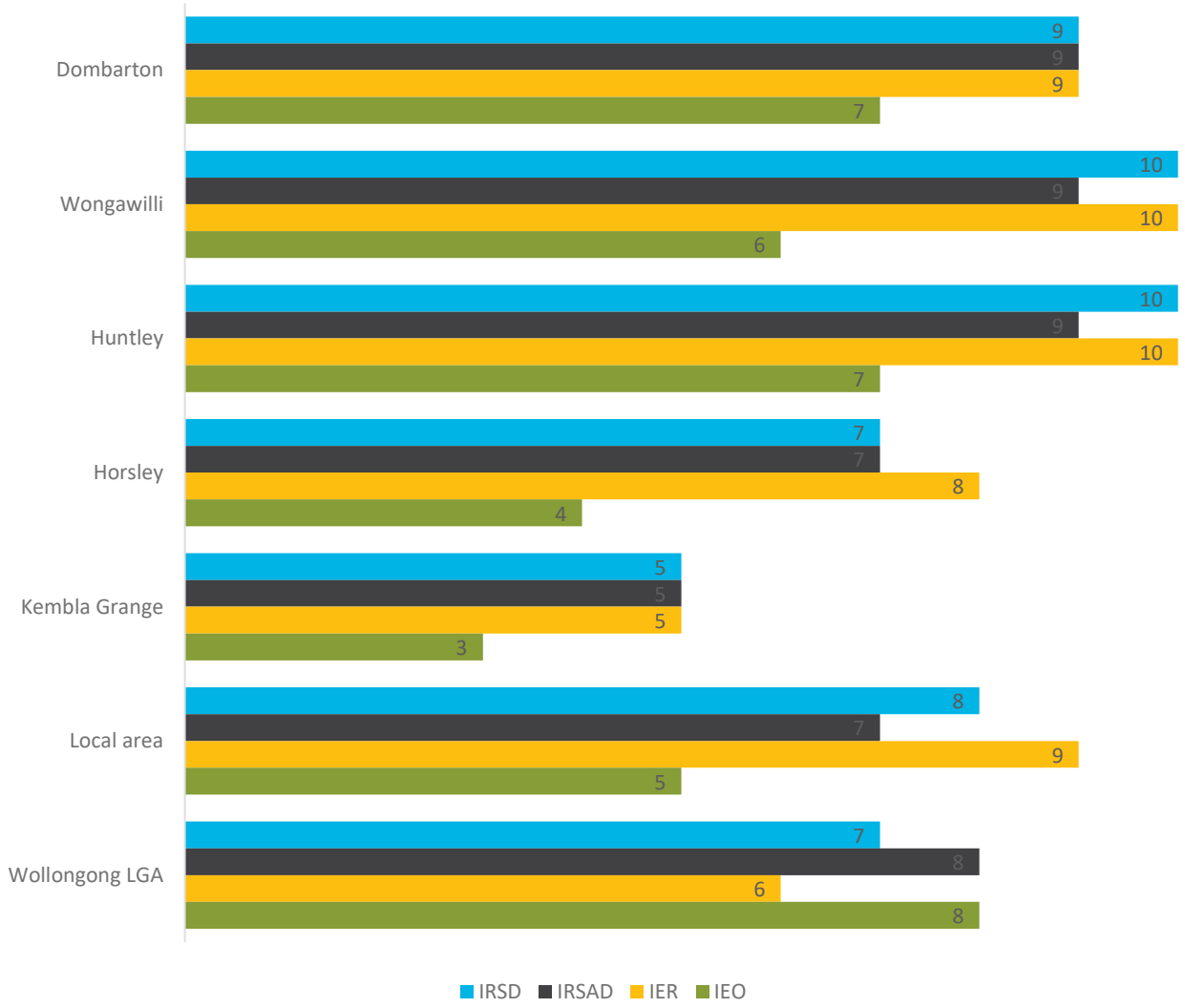
Data for SEIFA indexes for each suburb in the local area has been included to determine the relative socio-economic disadvantage or advantage within the local area. Data for the indexes is not available at the SA4 level and therefore Wollongong LGA (as the next largest statistical area with available data) is included as a point of reference for this analysis. Trends with Wollongong LGA are assumed to be similar to those in the regional area.

According to the 2016 SEIFA, the local area is in the top 50% of communities in Australia in terms of disadvantage, for all measures besides IEO where it is in the 5th decile. The local area falls within decile 8 for the IRSD, 7 for the IRSAD, and 9 for the IER. This means that there are likely many households with middle to high socioeconomic status, and many households with high incomes. The regional area also exhibits higher levels of advantage according to the 2016 SEIFA with Wollongong LGA falling above the 5th decile for all the indexes.

A decile ranking of 5 for the IEO is possibly attributable to the local area having fewer people with qualifications (see Section A.5.2) and few in highly skilled occupations (see Section A.6.1). A low IEO could also indicate a higher number of unemployed persons compared to other areas of NSW, however, this is not the case for the local area as the unemployment rate was lower than that of NSW and the regional area in 2016 (see Section A.6.1).

Within the local area, Dombarton, Wongawilli, and Huntley ranked within the top 20% in the state for IRSD, IRSAD, and IER, while Horsley and Kembla Grange ranked between 50% and 80% in these indexes. These two suburbs also ranked in the bottom 50% for IEO, suggesting there may be lower education and occupation status of persons in the area.

The rankings of the communities within the area of social influence for each of the four summary measures are demonstrated in Figure A.6.



Source: ABS 2016, 2033.0.55.001 – Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA).

Figure A.6 SEIFA deciles in the area of social influence by suburb, SA2, and LGA, 2016

A.3.4 Cultural diversity

The local area is significantly less diverse than the rest of NSW, with a vast majority of the population born in Australia (80.6%) in solely English-speaking households (86.3%). The regional area is also less diverse than that of NSW, where 65.5% of the population was born in Australia and 65% only speaking English at home. There is a more evenly balanced instance of generational Australians in the local area, as 56.1% of the population stated that both of their parents were born in Australia, compared to 45.4% pf people in NSW. The proportion of households where a non-English language is spoken is significantly lower in the local area (9.7%) in comparison to those in NSW (26.5%).

Cultural diversity in the local and regional areas is presented in Table A.6.

Table A.6 Country of birth, 2016

	Born in Australia	Both parents born in Australia	English only spoken at home	Households where a non-English language is spoken
Local area	80.6%	56.1%	86.3%	9.7%
Regional area	74.2%	52.7%	80.5%	12.0%
NSW	**65.5%**	**45.4%**	**68.5%**	**26.5%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.3.5 Disability

The population within the local area generally requires a similar amount of assistance to the rest of NSW, and only marginally less than that of the regional area. In the local area, 5.5% of people had a need for assistance in 2016 in one or more of the three core activities of self-care, mobility and communication due to a long-term health condition (lasting 6 months or longer), a disability (lasting 6 months or longer), or old age. Core activity need for assistance in the area of social influence is demonstrated in Table A.7.

Table A.7 Core activity need for assistance, 2016

	Has need for assistance	Does not have need for assistance
Local area	5.5%	91.5%
Regional area	6.4%	88.0%
NSW	**5.4%**	**87.7%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

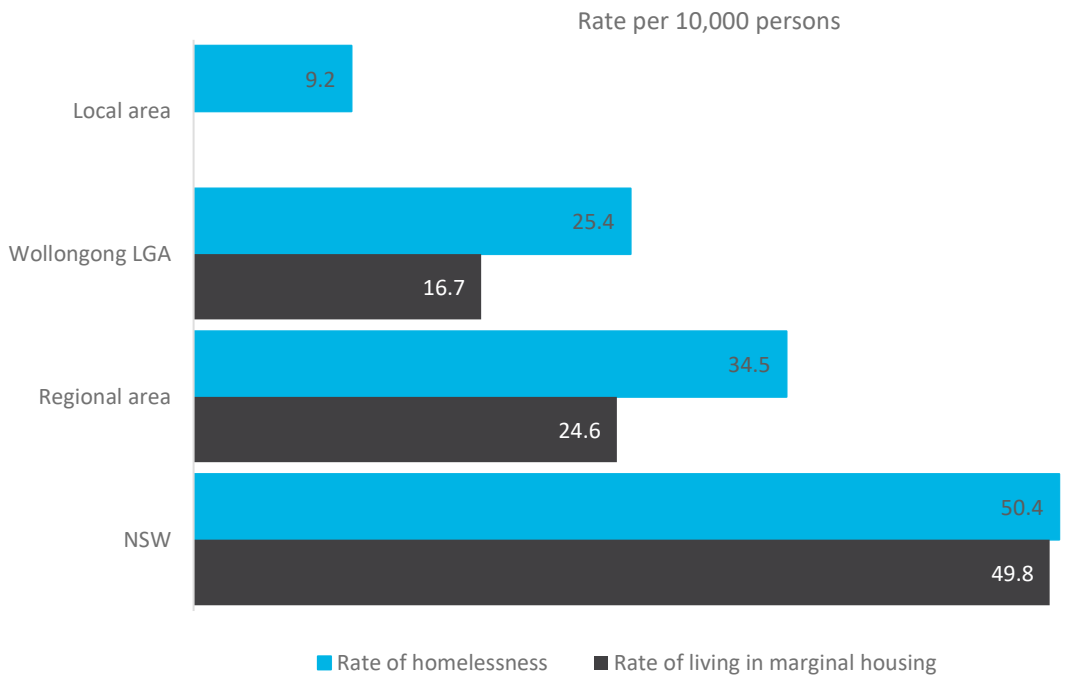
Note: ABS 2016 Census data contains small random adjustments to cell values to protect the confidentiality of data. These adjustments may cause the sum of rows to differ from table totals.

A.3.6 Homelessness

According to the 2016 Census estimations on homelessness, rates of homelessness in the local area are lower than regional area and NSW rates, with a rate of 9.2 homeless persons per 10,000 persons in the local area compared to a rate of 34.5 in the regional area and 50.4 homeless persons in NSW.

The rate of persons living in other marginal housing, including crowded dwellings, improvised dwellings, and marginal housing in caravan parks is lower in Wollongong LGA (16.7 per 10,000 persons) and the regional area (24.6 per 10,000 persons) compared to NSW (49.8 per 10,000 persons).

Rates of homelessness in the area of social influence are presented in Figure A.7.



Source: ABS 2016, 2049.0 – Census of Population and Housing: Estimating Homelessness.

Note: No data available for the local area for those living in marginal housing, trends are expected to be similar as those for homelessness.

Figure A.7 Rates of homelessness per 10,000 persons, 2016

A.4 Community culture, values, and aspirations

The community vision as described by Wollongong City Council (WCC) in *Our Wollongong 2028* Community Strategic Plan is "*From the mountains to the sea, we value and protect our natural environment and we will be leaders in building an educated, creative and connected community"* (WCC 2018). The Community Strategic Plan (CSP) recognises the need to protect the natural environment and to build an educated, creative, and connected community. The CSP goals emphasise environmental protection; the creation of a sustainable economy; and an engaged, healthy community with access to affordable transportation (WCC 2018).

A.4.1 Indigenous history

The Dharawal people are the traditional custodians of the land today known as Wollongong. They have inhabited the coastal areas between Sydney and as far south as Bega, including Illawarra and Wollongong for at least 20,000 years before European settlers arrived (Organ & Speechley 1997). The name Wollongong allegedly originated from the Aboriginal word *woolyungah* meaning five islands. Other nation groups of traditional custodians in the Illawarra region include, but are not limited to, the Yuin, Wiradjuri, Kamilaroi Bundjalung, Dunghutti and Gumbayggir nations (WCC 2020).

The area of Wongawilli is said to have been used by Indigenous inhabitants for foraging activities, utilizing the area as a high vantage point instead of a camping ground (VistaPark 2020). At the time of the *2016 ABS Census of Population and Housing,* Aboriginal and/or Torres Strait Islander people made up 2.8% of the Illawarra regional population. This figure is an accurate depiction of the Indigenous population which constituted 2.9% of peoples in NSW and 2.8% of peoples in Australia (ABS 2016).

A.4.2 Non-Indigenous history

The area of Illawarra was first settled in 1815 with the land in the Wongawilli region granted to the settlers within 13 years. These lands were cleared and used for mixed farming, with factory based dairy farming emerging later in the nineteenth century (VistaPark 2020). The name Wongawilli is locally believed to be Aboriginal in origin meaning 'windy gully'; colloquial meaning may come from the definition of 'willi willi' as a small cyclone or wind gust (Wongawilli Colonial Dance Club 2020). The primary land use in the area is dairy cattle and farming (Wongawilli Colonial Dance Club 2020).

Mining activity was first established in 1906 despite coal being first discovered in the region some 20 years earlier in the 1880's (VistaPark, 2020). The Wongawilli Colliery, today WCL Wongawilli Colliery, was established by G & C Hoskins Limited in 1916 (Wollongong Coal, 2020). The mine contributed to the growth of the population and settlement at Bankbook Hill with the miners establishing the first church and school. The Wongawilli Public School (now a residential property) which opened in 1928 on the corner of Smiths Lane and Wongawilli Road, suggesting that the population was expected to expand down both roads (VistaPark 2020). The school operated from 1928 to 1976 (Wongawilli Colonial Dance Club 2020).

The existing Wongawilli township developed from a parcel of land owned by the mine owners consisting of 25 lots with 8 constructed houses. 8 of these sites were purchased from outside of the mining community with the rest purchased by miners. Differing land sizes possibly reflects the status of those seeking a home in the area (VistaPark 2020).

The current suburb of Wongawilli is made up of 44 households with a population of 141 people. The population is made up of technicians and trade workers, managers, professionals, clerical and administrative workers, sales workers, machinery operators and drivers, community and personal service workers, and labourers (ABS 2016).

A.5 Social Infrastructure

A.5.1 Childcare and early learning

There are three approved childcare services identified in the local area. Each of the three childcare service providers are centre-based, where the services range from long day care, preschool, and outside of school hours care (OSHC). The childcare services available in the local areas are presented in Table A.8.

Table A.8 Childcare services, 2019

Suburb	Service name	Type	Service	Number of places
Local area of social influence				
Dapto	Dapto OSHClub	Centre-Based Care	OSHC	90
Horsley	Little People's Early Learning Centre	Centre-Based Care	Long day care/ OSHC	90
	Little People's Early Learning Centre (Horsley)	Centre-Based Care	Long day care	49

Source: https://www.acecqa.gov.au/resources/national-registers/services.

A.5.2 Education

At the time of the 2016 Census, the proportion of persons attending preschool, infants/primary and secondary educational institutions in the local area was generally higher than that of the regional area and NSW. However, the proportion of persons in the local area attending technical or further educational institutions is marginally lower than those in the regional area and NSW. The proportion of persons in the local area attending University or other tertiary institutions (11.2%) is significantly lower than in the regional area and NSW (18.1% and 16.2%, respectively). This is also reflected in the SEIFA index for the local area, particularly in the IEO with a decile of 5 (see Section A.3.3). The higher rate of University or tertiary institutional attendance in the regional area is due to the proximity of the University of Wollongong to the local area. The high proportion of attendees in tertiary or other types of educational institutions in NSW reflects the tendency for young people to migrate to larger cities or metropolitan areas to pursue educational opportunities.

Educational institution attendance in the area of social influence, as a percentage of total attendees, is demonstrated in Table A.9.

Table A.9 Educational institution attendance, 2016

	Preschool	Infants/primary	Secondary	Technical or further educational institution	University or other tertiary institution	Other type of educational institution
Type of education institution attending 2016 (% of persons attending an educational institution)						
Local area	8.7%	34.3%	28.5%	5.3%	11.2%	10.4%
Regional area	6.6%	26.6%	20.8%	6.4%	18.1%	19.5%
NSW	5.7%	26.1%	20.1%	6.2%	16.2%	23.0%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

i Primary and secondary

There is one school in the local area. This school is a government primary school with 741 students ranging from kindergarten to Year 6. As there is no secondary school in the local area, students must travel within the regional area to attend secondary school. There is a wider range of schools accessible within the regional area with capacity to provide schooling for those within the local area with minimal travel required. It is evident that there are sufficient schools in the regional area to support the small population of the local area (See Section A.3). Schools within selected suburbs within roughly a 25-minute drive from Wongawilli have been included in the table below.

Information on primary and secondary schools in the local area and selected suburbs in the regional area are presented in Table A.10.

Table A.10 Schools in the local and regional area, 2020

Suburb	School	Sector	Type	Year range	Student enrolments	Full-time equivalent teaching staff
Local area						
Horsley	Dapto Public School	Government	Primary	U, K – 6	741	41.3
Regional area						
Dapto	Dapto High School	Government	Secondary	U, 7 – 12	916	71.7
	Koonawarra Public School	Government	Primary	U, P – 6	220	18.9
	Lakelands Public School	Government	Primary	K – 6	327	17.7
	Mount Brow Public School	Government	Primary	K – 6	21.2	388
	St John's Catholic Primary School	Non-government	Primary	K – 6	603	33.8
Farmborough Heights	Cedars Christian College	Non-government	Combined	K – 12	627	47.4
Berkeley	Berkeley Public School	Government	Primary	K – 6	348	19.6
	Berkeley West Public School	Government	Primary	K – 6	220	13.2
	Illawarra Sports High	Government	Secondary	U, 7 – 12	766	67.0
Lake Heights	Lake Heights Public School	Government	Primary	K – 6	129	8.9
Cringila	Cringila Public School	Government	Primary	K – 6	129	12.3
Warrawong	Warrawong Public School	Government	Primary	U, K – 6	287	20.8
	Warrawong High School	Government	Secondary	U, 7 – 12	558	67.9
	St Francis of Assisi Catholic Primary School	Non-government	Primary	K – 6	205	12.5
Wollongong	Mount St Thomas Public School	Government	Primary	K – 6	344	18.5
	Alesco Illawarra	Non-government	Special	9 – 12	82	12.2
	Edmund Rice	Non-government	Secondary	7 – 12	1027	73.8
	Lindsay Park Public School	Non-government	Primary	K – 6	393	19.9

Table A.10 Schools in the local and regional area, 2020

Suburb	School	Sector	Type	Year range	Student enrolments	Full-time equivalent teaching staff
	Smiths Hill High School	Government	Secondary	7 – 12	730	54.7
	St Mary Star of the Sea College	Non-government	Secondary	7 – 12	1083	86.8
	Wollongong Public School	Government	Primary	K – 6	510	27.0
	Wollongong West Public School	Government	Primary	K – 6	181	13.3
North Wollongong	Para Meadows School	Government	Special	U	106	24.6
West Wollongong	St Therese Catholic Primary School	Non-government	Primary	K – 6	377	19.6
	The Illawarra grammar School	Non-Government School	Combined	K – 12	777	89.5
Towradgi	Wollongong Flexible Learning Centre	Non-government	Special	7 – 10	70	7.2
Fairy Meadow	Wollongong High School of the Performing Arts	Government	Secondary	U, 7 – 12	1,208	87.7

Source: ACARA 2020, My School.

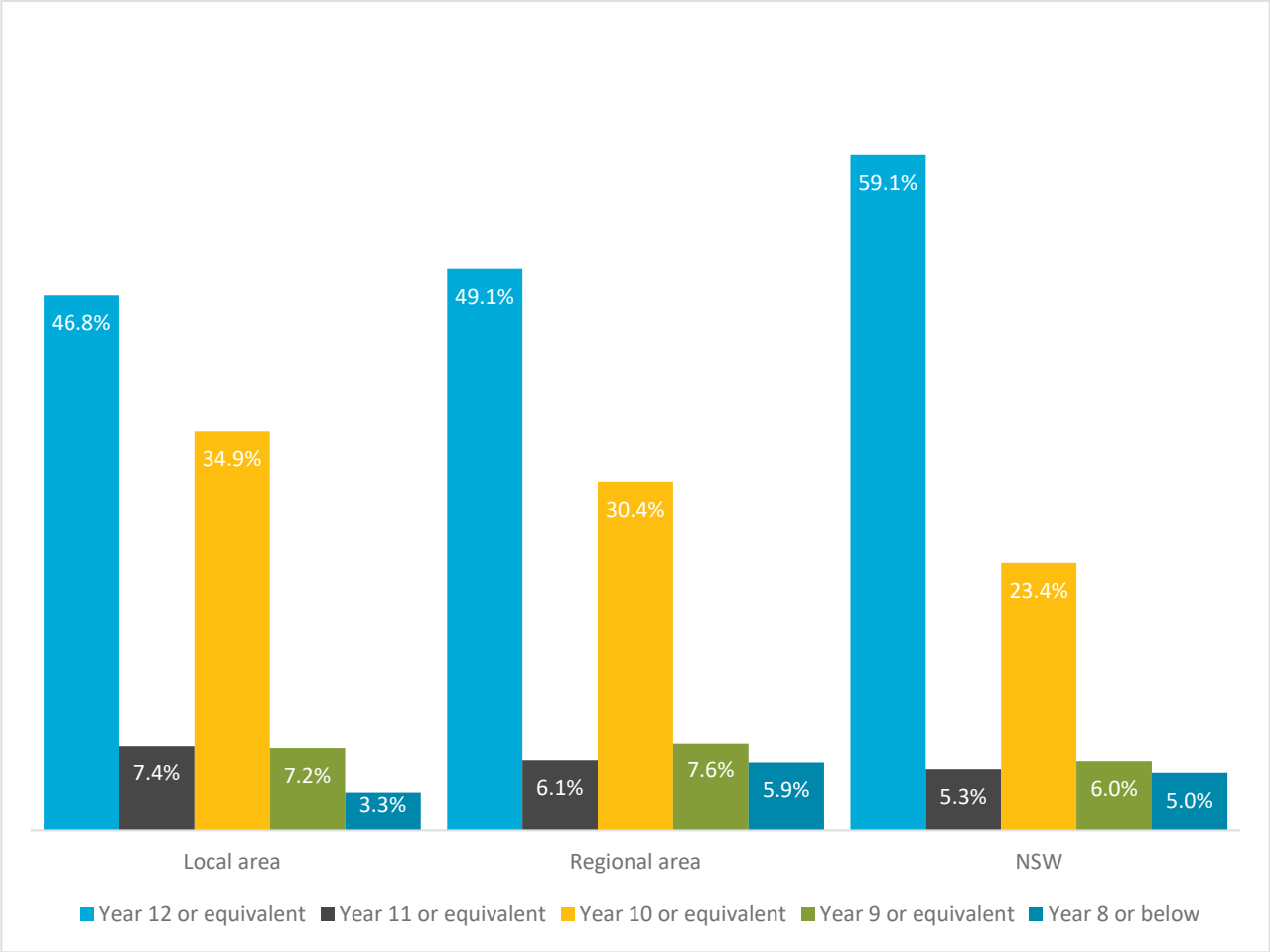
The local area has a higher proportion of the population who have only completed Year 10 or Year 11 (42.3%) when compared to the regional area (36.5%) and NSW (28.7%). However, the local area has a lower percentage of persons who have completed Year 12 or equivalent (46.8%) compared to the regional area (49.1%) and NSW (59.1%). The lower educational achievement in the local area is reflective of the relative disadvantage indicated in the IEO SEIFA index rankings (see Section A.3.3).

The highest level of schooling completed within the area of social influence is presented in Table A.11 and Figure A.8.

Table A.11 Highest level of schooling completed for persons 15 years and over, 2016

	Year 12 or equivalent	Year 11 or equivalent	Year 10 or equivalent	Year 9 or equivalent	Year 8 or equivalent
Local area	46.9%	7.5%	34.9%	7.3%	3.4%
Regional area	49.1%	6.1%	30.4%	7.6%	5.9%
NSW	**59.1%**	**5.3%**	**23.4%**	**6.0%**	**5.0%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure A.8 Highest level of schooling completed for persons 15 years and older, 2016

ii Tertiary

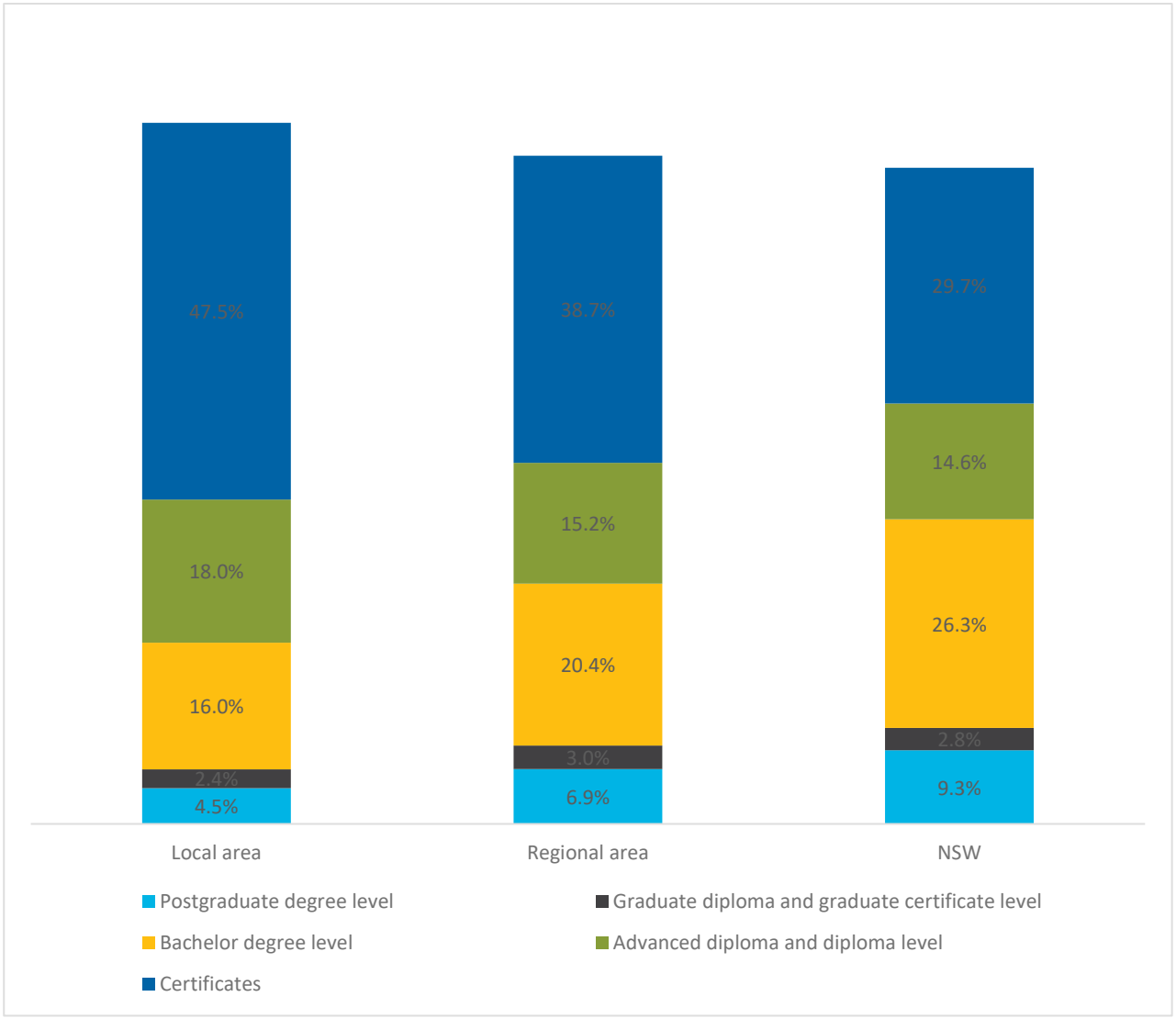
There are no tertiary institutions in the local area. However, there are some tertiary institutions in the proximate regional area, including the University of Wollongong and TAFE NSW – Wollongong.

Of those people with a non-school qualification throughout the area of social influence, 47.5% of the local area and 38.7% of the regional area have attained certificate qualifications, a higher rate than those in NSW. The proportion of persons in the local area with bachelor or postgraduate degree level qualifications (4.5%) is marginally lower than those in the regional area (6.9%) and significantly lower than those in NSW (9.3%). The significant proportion of persons in the local area with certificate or diploma level qualifications is consistent with the highest concentration of local businesses in the construction industry.

The proportion of persons over 15 with a non-school qualification is presented in Table A.12 and Figure A.9.

Table A.12 Proportion of persons over 15 years old with a non-school qualification, 2016

	Postgraduate degree level	Graduate diploma and graduate certificate level	Bachelor degree level	Advanced diploma and diploma level	Certificates
Local area	4.5%	2.4%	16.0%	18.0%	47.5%
Regional area	6.9%	3.0%	20.4%	15.2%	38.7%
NSW	9.3%	2.8%	26.3%	14.6%	29.7%



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure A.9 Proportion of persons over 15 with a non-school qualification, 2016

A.5.3 Health services

The local area is located within the Illawarra Shoalhaven Local Health District (LHD).

The Illawarra Shoalhaven LHD is presented in Figure A.10.

Source: NSW Health, 2020.

Figure A.10 Illawarra Shoalhaven LHD and hospitals, 2020

i Hospital service

There are no hospitals in the local area, however persons in the local area can receive medical care at a number of hospitals accessible at a short distance in the regional area.

The hospitals in the regional area are presented in Table A.13.

Table A.13 Hospitals in the regional area, 2020

Hospital	Location	Type	Number of beds
Port Kembla Hospital	Wollongong	Public	15 (palliative care)
Figtree Private Hospital	Wollongong	Private	68
Wollongong Private Hospital	Wollongong	Private	151
Wollongong Day Surgery	Wollongong	Private	--
Wollongong Hospital	**Wollongong**	**Public**	**>500**
Illawarra Mental Health Services	Wollongong	Public	197
Shellharbour Hospital	Shellharbour	Public	60
Shellharbour Private Hospital	Shellharbour	Private	60
Bulli Hospital	Wollongong	Public	54
Lawrence Hargrave Private Hospital	Wollongong	Private	18

Table A.13 Hospitals in the regional area, 2020

Hospital	Location	Type	Number of beds
Coledale Hospital	Wollongong	Public	<50

Source: AIHW 2020, MyHospitals

The nearest hospital to the local area is Port Kembla Hospital, however this hospital only provides limited services such as non-emergency surgical, non-emergency medical, rehabilitation, palliative, and other subacute ad non-acute care. As such, Wollongong Hospital as the largest hospital in the regional area with more than 500 beds and providing a range of medical services including obstetrics, surgical, medical, emergency, mental health, rehabilitation, and palliative care, is analysed further below.

The number of patients admitted to Wollongong Hospital increased from 2011–2013 and remained fairly consistent from 2013–2017. The largest proportion of admissions to the hospital were for non-emergency medical services, followed by medical emergencies, and non-emergency surgical. Numbers of admissions for all services have been relatively consistent from 2011–2017.

Number of admissions to Wollongong Hospital from 2011–2017 are presented in Table A.14.

Table A.14 Number of admissions to Wollongong Hospital, 2011 – 2017

Admission category	2011 – 2012	2012 – 2013	2013 – 2014	2014 – 2015	2015 – 2016	2016 – 2017
Childbirth	2,304	2,290	2,298	2,383	2,501	2,439
Medical (emergency)	22,850	23,519	19,785	21,271	21,027	21,745
Medical (non-emergency)	12,112	12,677	14,380	13,927	13,420	13,459
Mental health	639	818	747	765	812	953
Other acute (emergency)	1,076	1,183	1,049	1,098	1,234	1,191
Other acute (non-emergency)	985	1,004	1,216	1,185	1,062	1,164
Other subacute and non-acute	116	213	426	532	346	304
Palliative	6	156	314	352	392	325
Rehabilitation	26	715	826	927	837	728
Surgical (emergency)	3,276	3,126	2,905	3,005	3,365	3,222
Surgical (non-emergency)	4,383	4,608	5,253	5,424	5,723	6,129
Total	**47,773**	**50,309**	**49,199**	**50,869**	**50,719**	**51,659**

Source: AIHW 2020, MyHospitals.

ii Primary health services

This section summarises primary health services in the local area available through the National Health Services Directory.

a General practitioner services

There is one general practitioner (GP) service available in the local area, Horsley Community Doctors. The practice offers basic GP services as well as community health, maternal, child, and family health, and other specialist services. Persons requiring additional health services such as Aboriginal health, mental health, or aged care services must travel a short distance to access services available in the regional area.

GP practices in the local area are summarised in Table A.15.

Table A.15 GP practices in the local area

Suburb	Service name	GP services	Community health services	Aboriginal health services	Mental health services	Maternal, child, and family health services	Aged care services	Other specialist services
Horsley	Horsley Community Doctors	✓	✓	x	x	✓	x	✓

Source: Health direct Australia 2020, National Health Services Directory; Illawarra Shoalhaven LHD 2020

b Mental health services

Persons within the local area are required to travel outside of the local area to access mental health services in the regional area of social influence. In addition to the mental health services offered through GP practices there are mental health services offered through psychology and counselling practices and hospitals within the regional area.

c Specialist services

Some specialist services are available at the Horsley Community Doctors, however access to most specialist services will require travel to the regional area where specialist services are offered by a range of health service providers, including GPs, hospitals, and stand-alone specialist service providers.

A.5.4 Emergency services

The only emergency service within the local area is the Dapto Rural Fire Brigade in Wongawilli. The next closest emergency services are two additional Rural Fire stations and one NSW Ambulance station situated in Dapto, within the regional area. The closest police station is also in Dapto and the closest State Emergency Service (SES) is in situated in Coniston, a 20-minute drive from Wongawilli.

A.5.5 Transport infrastructure

i Modes of travel

In the local area, the primary means of travel for persons using one method is by car (93.4%) %). A minority of the local area population use public transport (3.4%) as their primary mode of travel, and a smaller percentage again using other modes. The percentage of the local population who travel by car is higher than that of the regional area

and NSW (75.0% and 76.9% respectively). Public transportation is used more widely with in NSW with 14.8% choosing this mode of travel. These figures can be attributed to the lesser frequency and availability of public transport services within the local area compared to the largely urban population of NSW where public transport is more available and accessible.

Modes of travel to work in the area of social influence are summarised in Table A.16.

Table A.16 Modes of travel, 2016

	Car (as driver, as passenger)	Public transport (train, bus, ferry, tram)	Truck	Motorbike/scooter	Bicycle	Walking	Other	Total
Local area	93.4%	3.4%	1.0%	0.6%	0.4%	0.8%	0.4%	100.0%
Regional area	75.0%	6.2%	1.0%	0.5%	0.6%	3.1%	0.5%	100.0%
NSW	76.9%	14.8%	1.2%	0.8%	0.9%	4.8%	0.7%	100.0%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

ii Public transport

Access to public transport in the local area is limited, with relative ease of access to two bus lines and less ease of access to the Dapto Station train services. The 31 bus to the nearest city of Wollongong can be taken from several stops throughout Horsley. The 32 – Dapto to Brooks Reach bus travels between Dapto, Horsley, and Wongawilli (TfNSW 2020). Whilst there is a train line connecting directly to Wongawilli, it is a private line operated by the Wongawilli Colliery through a 3rd party train operator to haul extracted coal to the nearby port (Aurizon 2020). The nearest train access to the local area is Dapto Station from which the 31 bus can be taken to several locations in Horsley (Rome2Rio 2020).

iii Air

The closest airport is Shellharbour Airport, 17- minute drive from Wongawilli, and accessible via bus and train from the local area, however, there are limited commercial services to and from this airport. The airport offers direct flights to Melbourne Monday to Friday in the morning, and Monday, Tuesday, Thursday, Friday, and Sunday in the afternoon. There are also flights direct to Brisbane from Monday to Friday.

International and more extensive national flights are accessible only an hour and 15-minute drive away at Sydney's domestic and international airports.

The regional area also has a heliport in the regional area in Wollongong that is accessible via bus and train, or a 20-minute drive from Wongawilli.

iv Road network

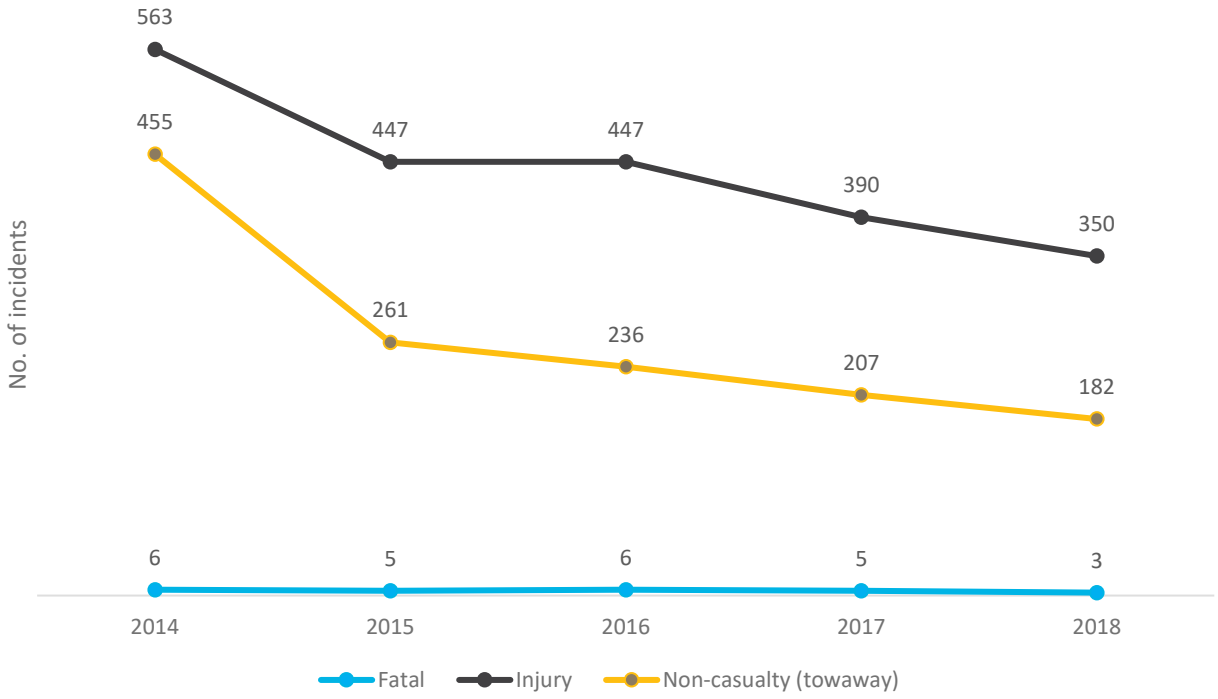
Wongawilli is situated 20-minutes outside of Wollongong on the east coast of NSW. The town, along with each of the other suburbs in the local area, is accessible from the Princess Highway. West Dapto Road or Darkes Road further south lead into Wongawilli. West Dapto Road becomes Wongawilli Road when it reaches the edge of the small town at Shone Avenue. Wongawilli Road is the main road in the town providing access to the residential streets and is also the main access road for the Wongawilli Colliery (with a side access road accessible via Jersey Farm Road).

The road network in the local area is in the process of ongoing works to update Wongawilli Road from the community hall to Stone Avenue aimed to provide "safer access for pedestrians, bicyclists, residents and visitors" (Wollongong City Council 2020).

v Road incidents

The number of road incidents resulting in fatality has remained relatively consistent between 2014 -2018. However, road incidents resulting in some form of injury or non-injury (towaway) have decreased significantly over the same period. Most crashes result in some level of injury.

Crash trends for the regional area are presented in Figure A.11.



Source: TfNSW 2019.

Figure A.11 Crash trends in Wollongong LGA, 2014–2018

A.5.6 Community services

There are no community services available in the local area (Ask Izzy 2020). However, the regional area is well serviced by a variety of community services.

Additional information related to selected services is presented in the sections below.

i Aboriginal community services

There are no Aboriginal community services in the local area. However, there Aboriginal community services available in the regional area include Aboriginal health services, child and family services, and counselling services in the nearby town of Dapto. To access housing and accommodation; education; youth; justice, representation, and cultural; and self-help and support services the local population can travel a short distance to Wollongong.

ii Child and family services

There are no child and family services available in the local area of social influence. Travel within the regional area is necessary to access the appropriate services. There are several child and family services offering education; counselling and mediation; foster care; childcare; and child and family support services available in Dapto, a short distance outside of the local area.

iii Youth community services

There are no youth community services available in the local area. Travel within the regional area is necessary to access services including counselling; referral; youth crisis; recreational activities; and youth support.

iv Housing and homelessness services

There are no housing and homelessness services in local area. Travel within the regional area is necessary to access public housing; transitional accommodation; crisis accommodation; short-term accommodation; housing referrals; and support services.

v Employment services

Disability Employment Services, through Family Services Australia, provides employment placement, training services in the local area. Resume and interview preparation, and wage subsidies are available at a short distance in the regional area.

vi Disability services

There are two facilities in the local area providing a range of disability services. Family Services Australia provides employment services and disability support services whilst HammondCare provides social and community participation, advocacy support, and disability support. There are many more disability services available within the regional area.

vii Aged care services

There are two aged care services in the local area. Home Care Packages by HammondCare provides support services, while Dementia Specific Residential Aged Care also by HammondCare offers high-level and low-level care in a residential facility. Those requiring residential respite care or self-contained independent living services will need to travel a short distance into the regional area.

viii Domestic violence services

There are no domestic violence services available within the local area. There are some domestic violence services available within the regional area of Illawarra. Travel within the regional area is required to access drug and alcohol, counselling, referral, prevention and intervention, and domestic violence support services.

A.5.7 Arts and cultural community facilities

There are two community halls (Wongawilli Community Hall and Horsley Community Centre) and one museum (the Australian Motorlife Museum) in the local area (Wollongong City Council 2020). However, the regional area has a wide range of facilities available and hosts a variety of arts and cultural events.

A.5.8 Recreation services

There are some recreation services and facilities in the local area, including five community parks, one walking trail, one basketball court, skate park, soccer field and golf club, and two sporting clubs/fields. The regional area offers a larger range of parks, sporting, and recreation facilities a short distance from the local area including Illawarra Escarpment State Conservation Area and Macquarie Pass National Park.

The recreational and sporting facilities within the local social area of influence are presented in Table A.17.

Table A.17 Parks and sporting facilities in the local area, 2020

Parks facilities		**Sporting facilities**	
Facility	**Count**	**Facility**	**Count**
Community park	✓	Netball courts	x
Community reserve	x	Basketball courts	✓
Botanical and city gardens	x	Sporting grounds (cricket/rugby/hockey)	✓
Dog parks	x	Collections of tennis courts	x
Walking tracks and trails	✓	Cycling path	x
Campgrounds and caravan parks	x	Skate parks	✓
National and state parks	x	Bowling greens and clubs	x
Indigenous site trails	x	Multipurpose courts	x
		Soccer field	✓
		Aquatic centres	x
		Golf club	✓

Source: Google Maps 2020

A.6 Workforce and income

The following workforce and income statistics were sourced from 2016 ABS Census data. Given the profound impacts of COVID-19 on normal business operations and non-essential employment, it must be noted that drastic changes from these most recent statistics have likely occurred. According to the ABS (2020) there has been a significant decrease in employment in Australia from January 2020 to May 2020 when employment began to rise again (see Figure A.12). The impacts of COVID-19 on the labour market are ongoing and as such, there is difficulty in measuring the full extent of those impacts currently in and into the future.

Source: ABS 2020, Labour Force, Australia

Figure A.12 Employment in Australia, 2016–2020

A.6.1 Employment

The unemployment rate in the local area was 4.6% in 2016, lower than the regional area (6.9%), and NSW (6.3%). Youth unemployment was also lower in the local area (11.6%) when compared to the regional area (15.8%) and NSW (13.6%). Labour force participation in the local area was high (68.0%) compared to the regional area (57.0%) and NSW (59.2%).

Unemployment and labour force participation rates in 2016 are presented in Table A.18.

Table A.18 Unemployment and labour force participation rates, 2016

	Unemployment rate	Youth unemployment rate	Labour force participation rate (15 years and older)
Local area	4.6%	11.6%	68.0%
Regional area	6.9%	15.8%	57.0%
NSW	**6.3%**	**13.6%**	**59.2%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

In the local area, the top three occupations at the time of the 2016 Census were clerical and administrative workers (759 people/17.8%), technicians and trades workers (684 people/16.0%), and professionals (678 people/15.9%). The regional area and NSW have a higher percentage of professionals, and a lower percentage of clerical and administrative, and technician or trades workers compared to the local area. These figures are consistent with the proportion of people with non-school qualifications as a bachelor degree or higher qualifications are usually required for professional occupations (see Section A.5.2).

A greater proportion of the population in the local area had attained certificate or diploma level qualifications, which coincides with the two most dominant occupations being clerical and administrative work, and technicians and trades workers. Of the 684 technicians and trades workers in the local area, only 34 were associated with mining, while the most dominant industries of employment for those occupations are construction (183 people) and manufacturing (116 people).

The occupations within the area of social influence are presented in Table A.19.

Table A.19 Occupations, 2016

	Managers	Professionals	Technicians and trades workers	Community and personal service workers	Clerical and administrative workers	Sales workers	Machinery operators and drivers	Labourers
Local area	10.6%	15.9%	16.0%	12.2%	17.8%	10.9%	7.5%	7.9%
Regional area	10.4%	21.3%	15.4%	12.5%	13.5%	9.4%	6.8%	9.1%
NSW	**13.5%**	**23.6%**	**12.7%**	**10.4%**	**13.8%**	**9.2%**	**6.1%**	**8.8%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.6.2 Income

The individual median weekly income in the local area ($700) was moderately higher than that of the regional area ($591) and slightly higher than NSW ($664). Household median weekly income in the local area was significantly higher ($1,836) than the regional area ($1,352) and NSW ($1,486).

Median incomes in the area of social influence are presented in Table A.20.

Table A.19 Median income, 2016

	Individual **(median income $ weekly)**	Household **(median income $ weekly)**
Local area	700	1,836
Regional area	591	1,352
NSW	**664**	**1,486**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.7 Housing and accommodation

A.7.1 Housing type and structure

In the local area, almost all private dwellings are separate houses (96.5%). Although the majority of dwellings are also separate houses in the regional area (72.5%), and NSW (66.4%), there is a higher proportion of semi-detached, townhouses, and apartments in comparison to the local area. This is reflective of the relatively high SEIFA decile scores in the local area which identified many households with middle to high socioeconomic status, and many households with high incomes (see Figure A.5). This means that there are likely many households with middle to high socioeconomic status, and many households with high incomes. The regional area also exhibits higher levels of advantage according to the 2016 SEIFA with Wollongong LGA falling above the 5th decile for all the indexes.

Housing type and structure is presented in Table A.21.

Table A.20 Housing type and structure, 2016

	Separate house	Semi-detached, row or terrace house, townhouse	Flat or apartment	Other dwelling	Total private dwellings	Total occupied dwellings
Local area	96.5%	3.4%	0.2%	0.1%	2,794	96.1%
Regional area	72.5%	12.7%	13.3%	0.9%	114,956	91.6%
NSW	**66.4%**	**12.2%**	**19.9%**	**0.9%**	**2,889,057**	**90.1%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Families comprise most households local and regional area and across NSW, followed by lone person households, then group households. However, there are more family households (87.5%) and fewer lone person households (12%) in the local area compared to the regional area and NSW.

Household composition is presented in Table A.22.

Table A.21 Household composition, 2016

	Family households	Group households	Lone person households
Local area	87.5%	1.0%	12.0%
Regional area	72.3%	3.7%	24.0%
NSW	**72.1%**	**4.2%**	**23.7%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.7.2 Tenure

In the local area, most dwellings are owned with a mortgage (52.6%). This figure is significantly higher than the mortgage rate in the regional area (29.5%) and in NSW (32.3%). However, the proportion of rented dwellings in the local area (13.9%) is much lower than that of the regional area (26.2%) and in NSW (31.8%). The vast proportion of outright ownership and ownership with mortgage is reflective of the SEIFA decile scores which indicated a high access to economic resources in the local area and low levels of socioeconomic disadvantage (see Figure A.5).

Tenure within the area of social influence is presented in Table A.23.

Table A.22 Tenure (based on total private dwellings), 2016

	Owned outright	Owned with a mortgage	Rented	Other tenure
Local area	27.9%	52.6%	13.9%	0.3%
Regional area	32.5%	29.5%	26.2%	0.9%
NSW	**32.2%**	**32.3%**	**31.8%**	**0.9%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.7.3 Mortgage repayment and rent

Rent and mortgage repayments constitute a significant proportion of household costs. In the local area, mortgage repayments are almost equal to those in the regional area and in NSW. The median weekly rent cost in the local area ($408) is substantially higher than the regional area ($330) and slightly higher than in NSW ($380). The higher weekly rent cost in the local area could be attributed to larger dwellings and property size.

Mortgage and rent repayments are presented in Table A.23.

Table A.23 Mortgage repayment and rent, 2016

	Mortgage repayments (median mortgage repayments $ monthly)	Rent (median rent $ weekly)
Local area	1,950	408
Regional area	1,950	330
NSW	**1,986**	**380**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Housing stress is considered to occur when households in the lower 40% of income distribution spend more than 30% of their income in housing costs (rent or mortgage payments) (AHURI 2019).

In the local area there is a significantly smaller proportion of households with rent payments greater than or equal to 30% of their household income (6.0%) when compared to the regional area (12.3%) and NSW (12.9%). However, a larger proportion have mortgage payments greater than or equal to 30% of household income in the local area (10.9%) than the regional area (6.5%) and NSW (7.4%). This could be attributed to the lower proportion of rental tenure and the higher proportion of ownership with mortgage in the local area.

Housing affordability in the area of social influence is demonstrated in Table A.24.

Table A.24 Housing affordability, 2016

	Households where rent payments are greater than or equal to 30% of household income (%)	Households where mortgage payments are greater than or equal to 30% of household income (%)
Local area	6.0%	10.9%
Regional area	12.3%	6.5%
NSW	**12.9%**	**7.4%**

Source: ABS 2016, Quickstats

A.7.4 Housing and rental market trends

i Mortgage repayment and rent trends

In the local area, median mortgage repayments decreased by -2.5% from 2011-2016. During this time, median rent payments in the local area increased by 23.6%, which is a smaller increase than in the regional area (32%) or NSW (26.7%).

Mortgage and rent repayment growth rates in the area of social influence are presented in Table A.26.

Table A.25 Mortgage repayment and rent growth rates, 2006 – 2016

	Mortgage repayments		Rent repayments	
	2006 – 2016	**2011 – 2016**	**2006 – 2016**	**2011 – 2016**
Local area	--	-2.5%	--	23.6%
Regional area	--	0.0%	--	32.0%
NSW	**3.1%**	**-0.4%**	**8.1%**	**26.7%**

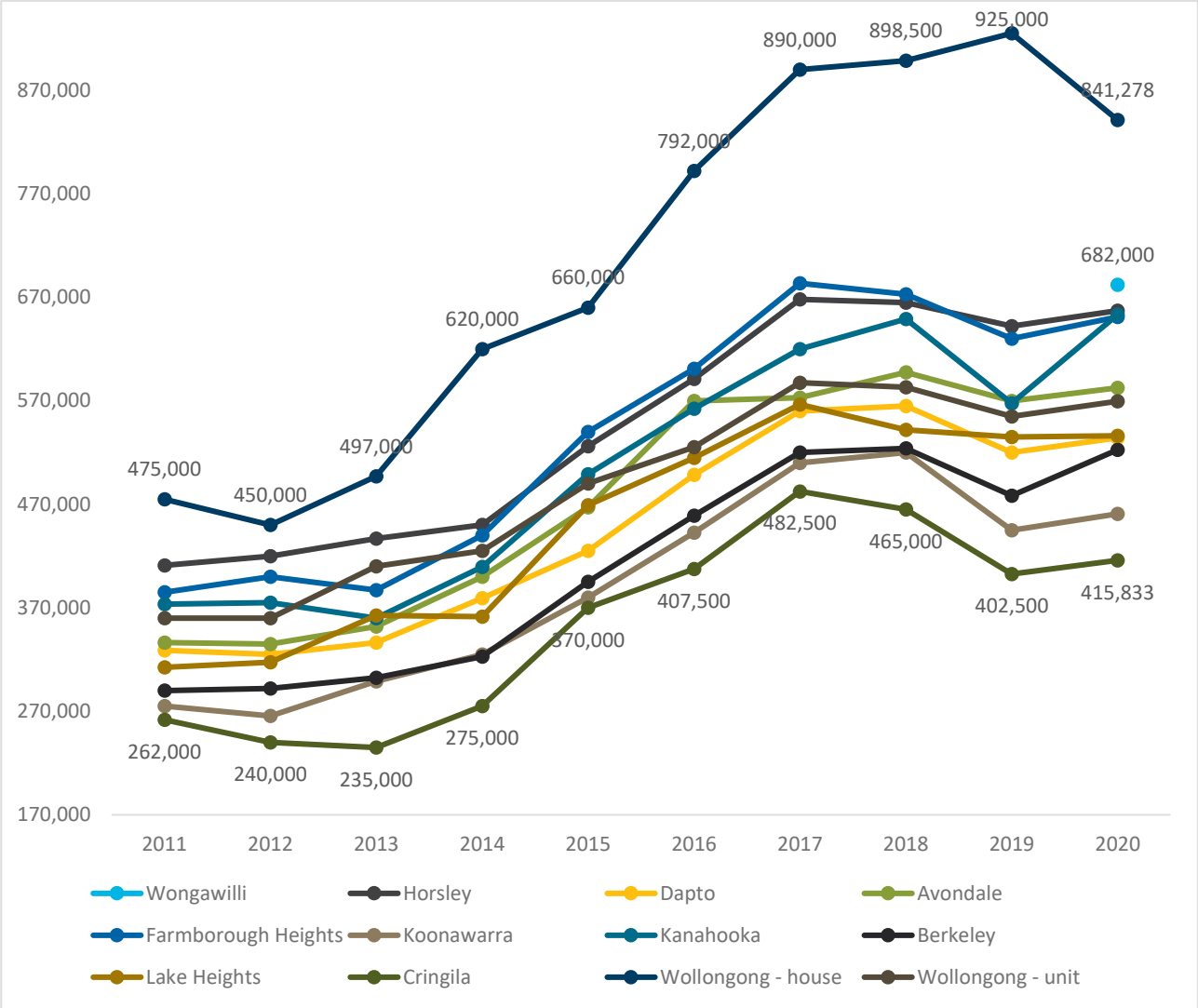
Source: ABS 2016, Census of Population and Housing: General Community Profiles.

ii Median property price trends

Annual property price data was not available for any suburb in the local area besides Horsley. As such, suburbs from the regional area in close proximity to the local area have been analysed. Trends within the local area are expected to be similar to those in the suburbs included.

The trends in the housing market have been generally increasing from 2011–2017, with a drop in the market from 2017–2019. The highest price growth occurred in Wollongong, with house prices increasing from $475,000 in 2011 to $925,000 in 2019. Pricing in all areas besides houses in Wollongong rose from 2019–2020. Houses in Wongawilli in 2020 sold for roughly $682,000.

Housing price trends the local area and regional area from 2011–2020 are demonstrated in Figure A.13.



Source: REA Group 2020, realestate.com.au/neighbourhoods.

Note: 2020 data has been calculated as the average of monthly reported prices in 2020.

Figure A.13 Median property price trends for houses, 2011–2019

On 29 July 2020, there were 98 properties for sale and 6 properties for rent in the local area. These numbers suggest that the housing market in the area is tight, with minimal available properties to buy and very few to rent.

Properties for sale and for rent within the local area of social influence are presented in Table A.26.

Table A.26 Properties for sale and rent, 29 July 2020

Suburb	Number of properties for sale	Number of properties for rent
Wongawilli	16	0
Dombarton	0	0
Huntley	0	0
Horsley	32	5

Table A.26 Properties for sale and rent, 29 July 2020

Suburb	Number of properties for sale	Number of properties for rent
Kembla Grange	50	1
Total	**98**	**6**

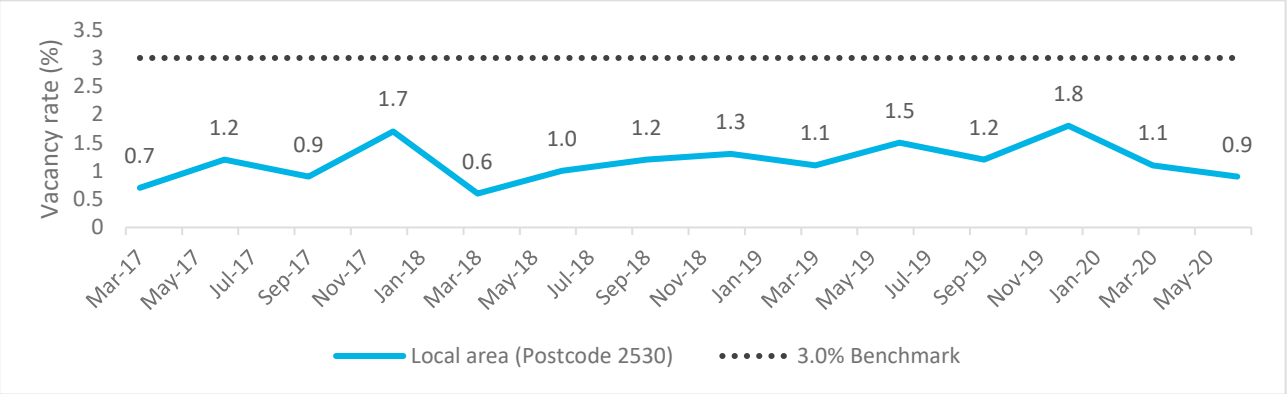
Source: REA Group 2020, realestate.com.au/neighbourhoods.

iii Residential vacancy rates

SQM Research define vacancy rates "…as a % of overall rental properties that are 'listings that have been advertised for 3+ weeks (and are still currently advertised as at the time of collation)" (Brewsters Property Group n.d). A higher vacancy rate indicates that there are a higher proportion of vacant (unoccupied) units, based on the total number of units in an area. Vacancy rates under 3% are low and indicate a tight rental market with an undersupply rental options while vacancy rates above 3% indicate an oversupply of rental options. A rental market with a vacancy rate of 3% is considered 'healthy' as 3% is "…the equilibrium point at which the market id evenly balanced between landlords and renters" (Brewsters Property Group n.d).

From March 2017 to June 2020, the residential vacancy rate saw two peaks in vacancy in December 2017 and December 2019 but was consistently well below the equilibrium level of 3.0%. This indicates that there has been an undersupply of rental housing in the local area, reflective of the properties for rent in Table A.37. The vacancy rate has decreased since January 2020 suggesting the property market in the local area has become even tighter during COVID-19.

The residential vacancy rate trends for the local postcode (2530) are illustrated in Figure A.14.



Source: REINSW 2020, Vacancy Rates Survey Results March 2020

Notes: The postcode for the suburbs within the local area is 2530, which is inclusive of suburbs outside of the local area, however, trends are assumed to be similar.

Figure A.14 Residential vacancy rate trends, 2019

A.7.5 Tourist (short stay) accommodation

There are 3 short-stay accommodation facilities in the local area, each are guesthouse of vacation home style. There is much more abundant tourist accommodation available in the regional area. Tourist accommodation available in the local area is summarised in Table A.27.

Table A.27 Tourist accommodation, 2020

Suburb	Tourist accommodation	Type of accommodation
Dapto	Crowley House	Vacation Home
Horsley	66 on Wonga	Entire guesthouse
Horsley	Illawarra self-contained B&B guesthouse	Entire guesthouse

Source: Booking.com 2020; Airbnb 2020.

A.7.6 New housing and rental supply

Housing forecasts for the regional area of Wollongong LGA predict a total increase of 28,200 dwellings between 2016–2041 in response to population growth and shifting patterns in household structure and number (DPIE 2019).

Household requirement and population growth forecasts in the regional area are presented in Table A.29.

Table A.28 Household requirement and population growth forecasts, 2016 – 2041

	2016	2021	2026	2031	2036	2041
Total population	210,400	222,800	234,750	246,650	257,500	265,750
Total households	81,300	87,150	92,650	98,150	103,300	107,400
Average household size (persons)	2.54	2.51	2.48	2.46	2.44	2.41
Required dwellings	87,950	94,300	100,250	106,150	111,750	116,150
Total dwelling change (required new dwellings)	--	6,350	5,950	5,900	5,600	4,400

Source: DPIE 2019, Wollongong City Council 2019 NSW Population Projections.

Notes: Average household size is taken from NSW DPIE 2019 but there is a mathematical discrepancy – average household size is not equal to the total population divided by the total number of households.

Regional area here is Wollongong LGA though we expect trends to be similar to regional area.

Recent growth in housing supply can be estimated from residential building approval figures for the regional area. In the year ending June 2019, there were 430 approvals for new houses and 634 approvals for other residential buildings (equalling a total of 1,064 new residential building approvals for the year). This represents a decrease of 568 residential building approvals from the previous year. There have also been 1,018 residential buildings approved to be built in the regional area in the financial year 2019–2020 as of May 2020 fiscal year-to-date (FYTD).

The total residential building approvals in the regional area are presented in Table A.30.

Table A.29 Total residential building approvals in the regional area

Year (ending June 30)	Number			Changes on prior year		
	Houses	Other	Total	Houses	Other	Total
2019-20 May FYTD	472	656	1,128	--	--	--
2018-19	430	634	1,064	-80	-488	-568
2017-18	510	1,122	1,632	16	704	720
2016-17	494	418	912	-103	-348	-451
2015-16	597	766	1,363	81	-66	15
2014-15	516	832	1,348	40	522	562
2013-14	476	310	786	1	197	198
2012-13	475	113	588	175	-152	23

Source: profile.id 2019.

Notes: Data for Wollongong City Council as no data available for specific local area suburbs.

To determine if residential building approvals in the local area will adequately support expected demand for new dwellings, the median of the total residential building approvals from 2012–2019, equalling 485 approvals per year, is used to create a reasonable estimation of residential building approvals into the future. The median of the total number of residential approvals from 2012–2019 provides a conservative estimate of the expected trends for building approvals in the local area into the future, as it considers the fluctuations present in the previous approval rates. Although it is possible that actual residential approval totals could be higher or lower, without complete certainty in the factors that are driving approval decisions year on year, the median provides a reasonable degree of confidence in these estimations.

The projected residential building approvals from 2016–2041 are demonstrated in Table A.31.

Table A.30 Estimates of future building approvals in the regional area, 2016 – 2041

	2016 – 2021[1]	2021 – 2026[2]	2026 – 2031	2031 – 2036	2036 – 2041
Estimated residential building approvals	2,391	2,425	2,425	2,425	2,425

Notes: 1. 2016 – 2021 includes number of actual approvals from 2016 – 2020, and an estimate of 485 residential approvals per year from 2020 – 2021.
2. Projections from 2021 – 2041 are based on an estimate 485 residential approvals per year.

A.8 Local business and industry

Health care and social assistance is the top industry of employment in the local area (15.3%) as in the regional area (14.7%) and in NSW (12.5%). Other top industries of employment in the local area are retail trade (12.2%) and construction (8.9%). The major industries of employment in the local area do not differ greatly from the regional area and NSW, however, the education and training industry is more prominent in the regional area (10.9%) and in NSW (8.4%). The high rate of employment in the health care and social assistance sector could be attributed to workers who travel outside of the local area for work.

The top industries of employment within the area of social influence are available in Table A.31, with the top three industries in each area highlighted.

Table A.31 Major industries of employment, 2016

Industry	Local area	Regional area	NSW
Agriculture, Forestry and Fishing	0.3%	0.5%	**2.1%**
Mining	2.3%	2.0%	**0.9%**
Manufacturing	7.0%	6.0%	**5.8%**
Electricity, Gas, Water and Waste Services	1.1%	1.1%	**0.9%**
Construction	8.9%	9.5%	**8.4%**
Wholesale Trade	2.2%	2.0%	**3.1%**
Retail Trade	12.2%	10.1%	**9.7%**
Accommodation and Food Services	7.1%	7.5%	**7.1%**
Transport, Postal and Warehousing	4.8%	4.6%	**4.7%**
Information Media and Telecommunications	1.0%	1.1%	**2.2%**
Financial and Insurance Services	5.0%	3.5%	**4.9%**
Rental, Hiring and Real Estate Services	1.2%	1.5%	**1.8%**
Professional, Scientific and Technical Services	4.5%	5.3%	**8.1%**
Administrative and Support Services	2.8%	3.4%	**3.5%**
Public Administration and Safety	7.6%	7.3%	**6.0%**
Education and Training	7.8%	10.9%	**8.4%**
Health Care and Social Assistance	15.3%	14.7%	**12.5%**
Arts and Recreation Services	1.1%	1.4%	**1.5%**
Other Services	4.1%	4.0%	**3.7%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

In 2019, there were 377 registered businesses in the local area, none of which employed more than 200 employees. Of these registered businesses, 98.9% were classed as small businesses employing fewer than 20 people (ABS 2016). Most businesses in the local area were non-employing or employed 1–19 employees. 15 businesses in the local area turned over $2 million or more in 2019 compared to 927 in Wollongong LGA.

Registered businesses in the local area and Wollongong LGA are presented by employment size in Table A.33 and by turnover range in Table A.34.

Table A.32 Registered businesses by employment size, 2019

Area	Non-employing	1-19 employees	20+ employees	Total
Local area	215	158	4	377
Wollongong	7,777	5,760	362	13,899

Source: ABS, 2019, 8165.0—Counts of Australian Businesses, including Entries and Exists, June 2014 to June 2018.

Table A.33 Registered businesses by turnover range, 2019

Area	$0 to less than $50k	$50k to less than 200k	$200k to less than $2m	$2m or more	Total
Local area	85	163	114	15	377
Wollongong LGA	**2,825**	**4,999**	**5,148**	**927**	13,899

Source: ABS, 2019, 8165.0—Counts of Australian Businesses, including Entries and Exists, June 2014 to June 2018.

Of the 377 registered businesses in the local area, 25.2% were in construction. The industry with the next highest percentage of registered businesses was professional, scientific and technical services (13.0%) followed by transport, postal and warehousing (10.9%). These proportions are reflective of the industries of employment and occupations in the local area (see Sections A.8 and A.6).

Registered businesses by industry are presented in Table A.35.

Table A.34 Registered businesses by industry, 2019

Industry	No.	%
Agriculture, forestry and fishing	13	3.4%
Manufacturing	14	3.7%
Electricity, gas, water and waste services	3	0.8%
Construction	95	25.2%
Wholesale trade	6	1.6%
Retail trade	18	4.8%
Accommodation and food services	10	2.7%
Transport, postal and warehousing	41	10.9%
Information media and telecommunications	5	1.3%
Financial and insurance services	33	8.8%
Rental, hiring and real estate services	23	6.1%
Professional, scientific and technical services	49	13.0%
Administrative and support services	15	4.0%
Public administration and safety	3	0.8%
Education and training	4	1.1%

Table A.34 Registered businesses by industry, 2019

Industry	No.	%
Health Care and Social Assistance	23	6.1%
Arts and recreation services	3	0.8%
Other services	16	4.2%
Currently unknown	3	0.8%
Total number	**377**	**100.0%**

Source: ABS, 2018, 8165.0—Counts of Australian Businesses, including Entries and Exists, June 2014 to June 2018.

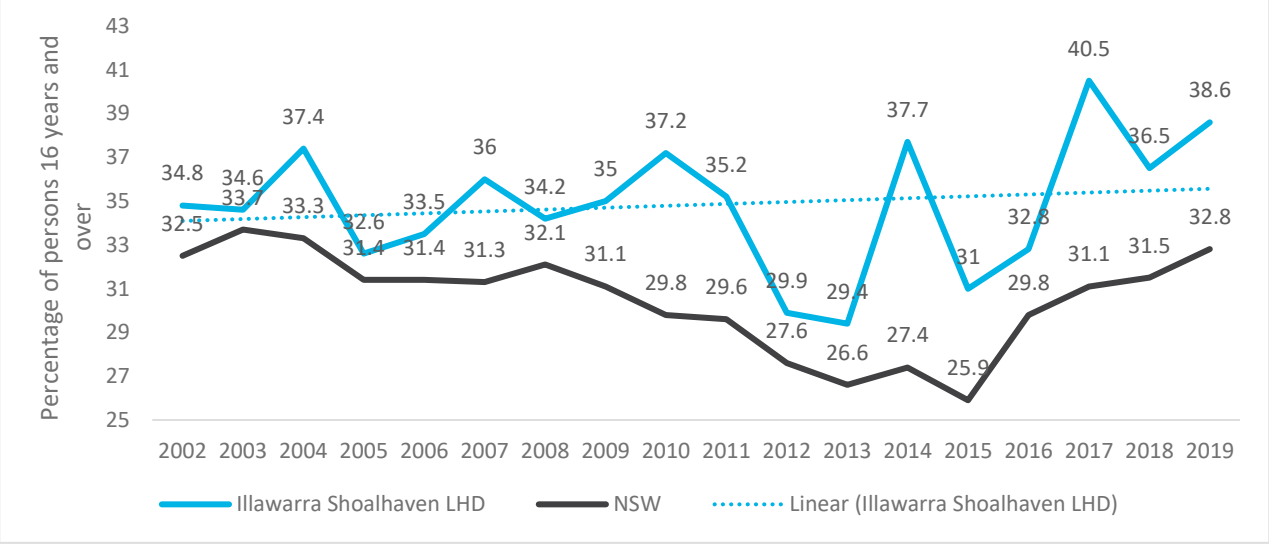
A.9 Health and community well-being

A.9.1 Community health

i Physical health

There are four major health risk factors that can be used as an indicator of population health: alcohol consumption, smoking, asthma, and obesity.

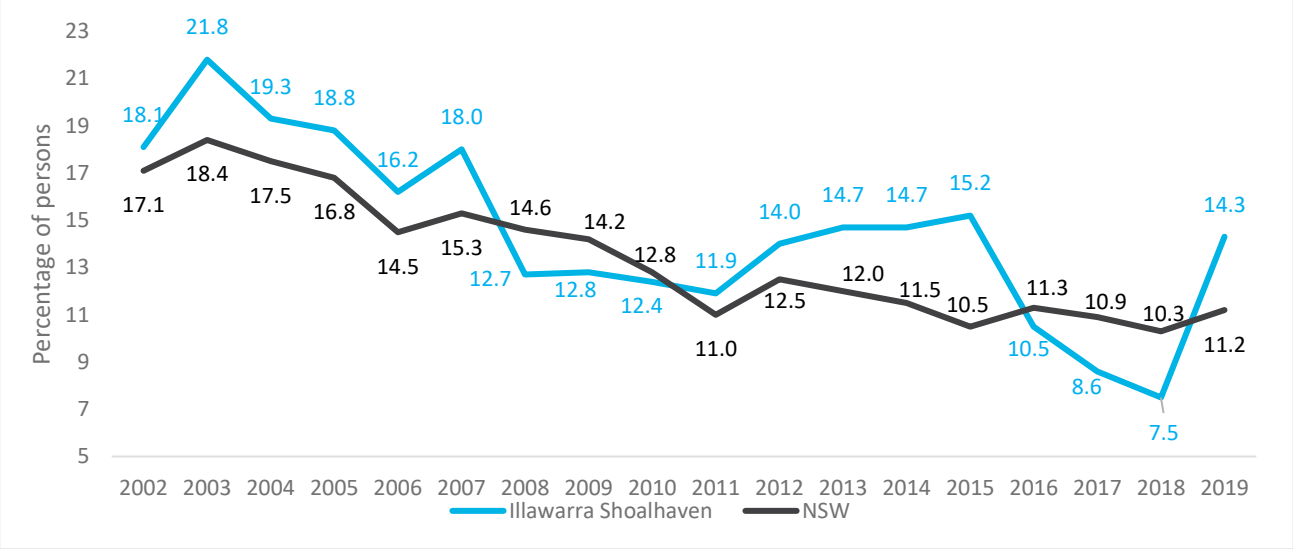
The Wollongong regional area had a slightly higher percentage of the population who consumed alcohol at levels considered to be a high risk to health than NSW, at 16.2% and 15.5% respectively (PHIDU 2020). Trends were not available at the LGA level. However, trends in relation to the number of people who consume alcohol at levels posing a long-term health risk in the Illawarra-Shoalhaven Local Health District (LHD) show greater fluctuation and a consistently higher percentage of the population than in NSW (see Figure A.15).



Source: Ministry of Health 2019, *Health Statistics NSW*.

Figure A.15 Alcohol consumption at levels posing a long-term health risk (proportion of persons aged 16 years and older), 2002–2018

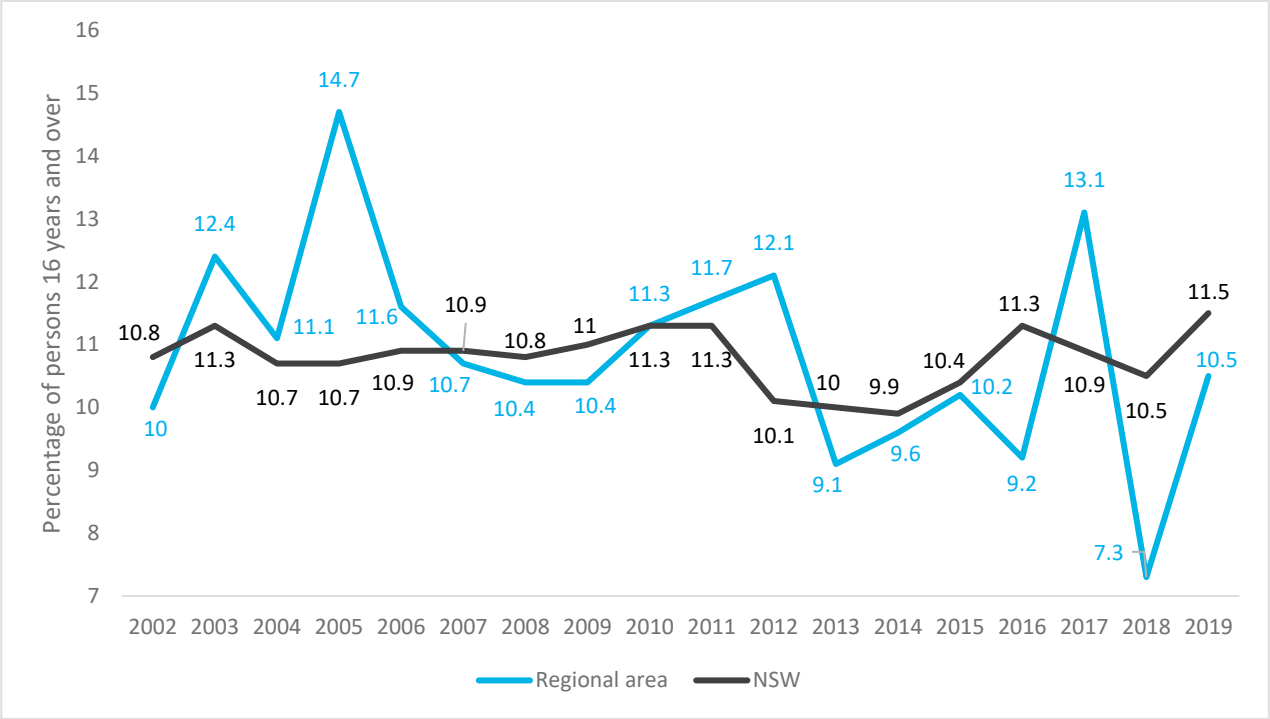
In Wollongong, the percentage of the population who smoke were above the state average with 15.8% of persons over 18 years being current smokers and 14.4% in NSW (PHIDU 2019). Trends were not available at the LGA level but were available at the LHD level. The results are slightly higher in the Illawarra-Shoalhaven LHD, following a sharp decrease between 2016-2018, but the overarching trend shows greater fluctuation of smokers than in NSW (see Figure A.16).



Source: Ministry of Health 2019, *Health Statistics NSW*.

Figure A.16 Daily smoking in adults (proportion of persons), 2002–2018

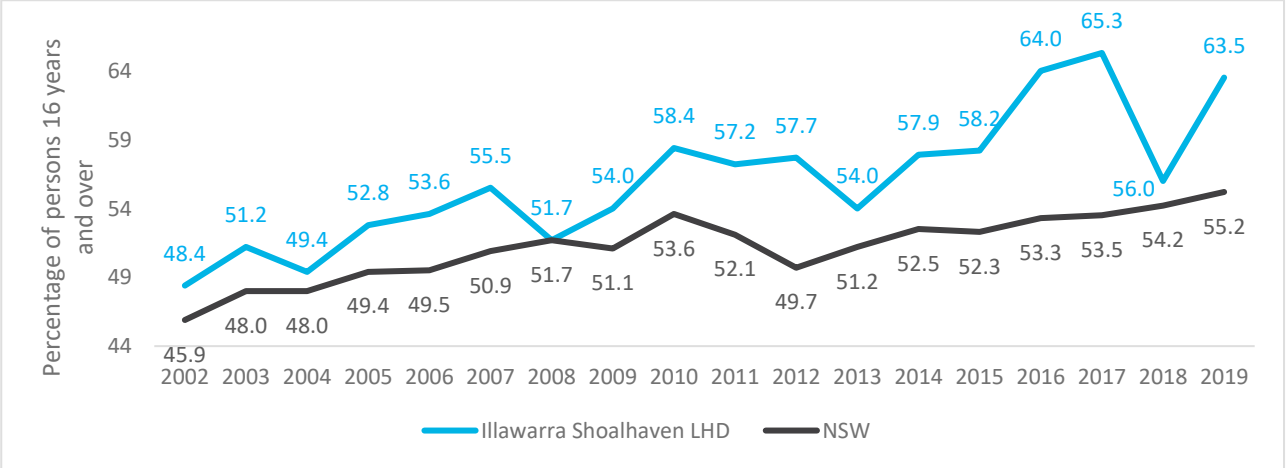
Trends in asthma suffering between the regional area and NSW have remained similar across the years. Of note however are two sharp increases of persons suffering from asthma in the regional area from 2004 to 2005 and 2016 to 2018 (14.7% and 13.1% respectively). There was also a sharp decrease in 2018 to 7.3% of the population. The proportion of adults with asthma is presented in Figure A.17.



Source: Ministry of Health 2019, *Health statistics NSW*

Figure A.17 Asthma in adults (proportion of persons aged 16 years and older), 2002 – 2018

There was a higher rate of obesity among the regional area population (33.4%) compared to NSW (30.9%) (PHIDU 2019). Trends can be identified through self-reported data at the LHD level regarding people reporting as either overweight or obese. The data indicates that the Illawarra-Shoalhaven LHD has a more fluctuating and higher rate of obesity, however, follows a similar overarching trend to NSW between 2002–2019 (see Figure A.18).



Source: Ministry of Health 2019, *Health Statistics NSW*.

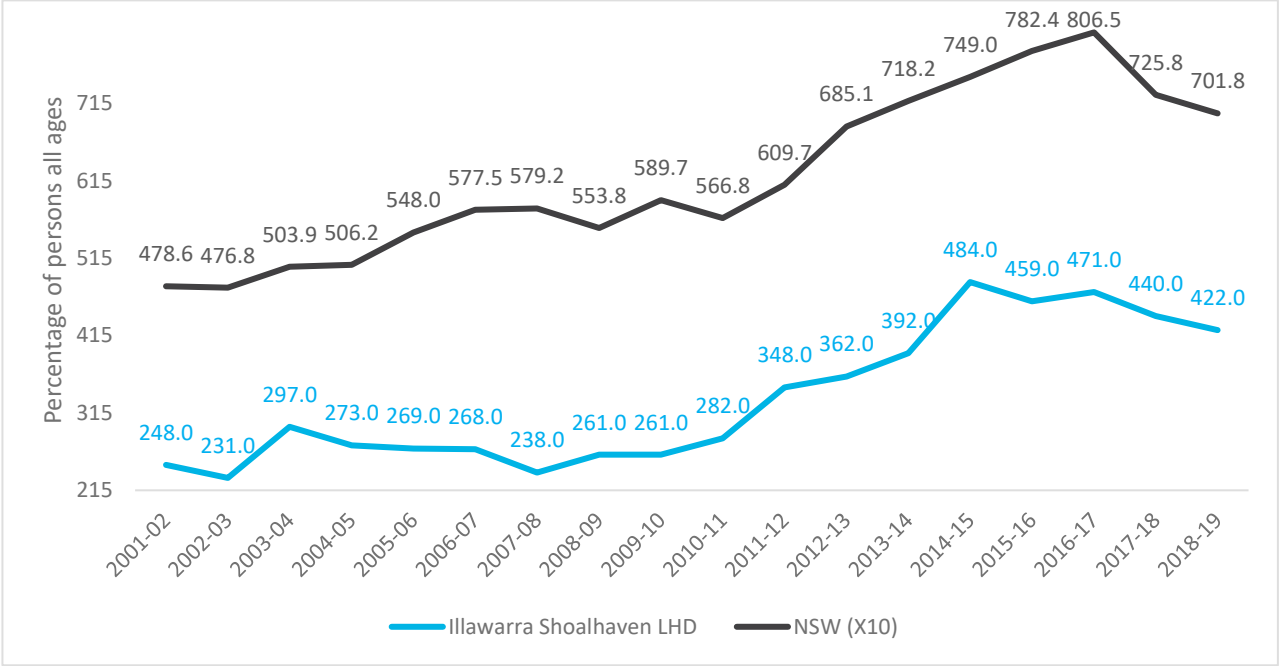
Figure A.18 Overweight or obese adults (proportion of persons aged 16 years and older), 2002–2018

Self-assessed health is another measure that can reflect the overall level of a population's health (PHN 2016). In the regional area, 15.0% of the population self-assess their health as fair or poor compared to 14.1% of the population of NSW (PHIDU 2020).

ii Mental health

Data relating to the number of people hospitalised for intentional self-harm is indicative of very poor and/or poorly managed mental health services in the local area. Intentional self-harm hospitalisations trends in the regional area have been relatively consistent with NSW trends. The rates of hospitalisations due to intentional self-harm are consistently lower in the regional area than NSW.

Data for intentional self-harm hospitalisations is presented in Figure A.19.

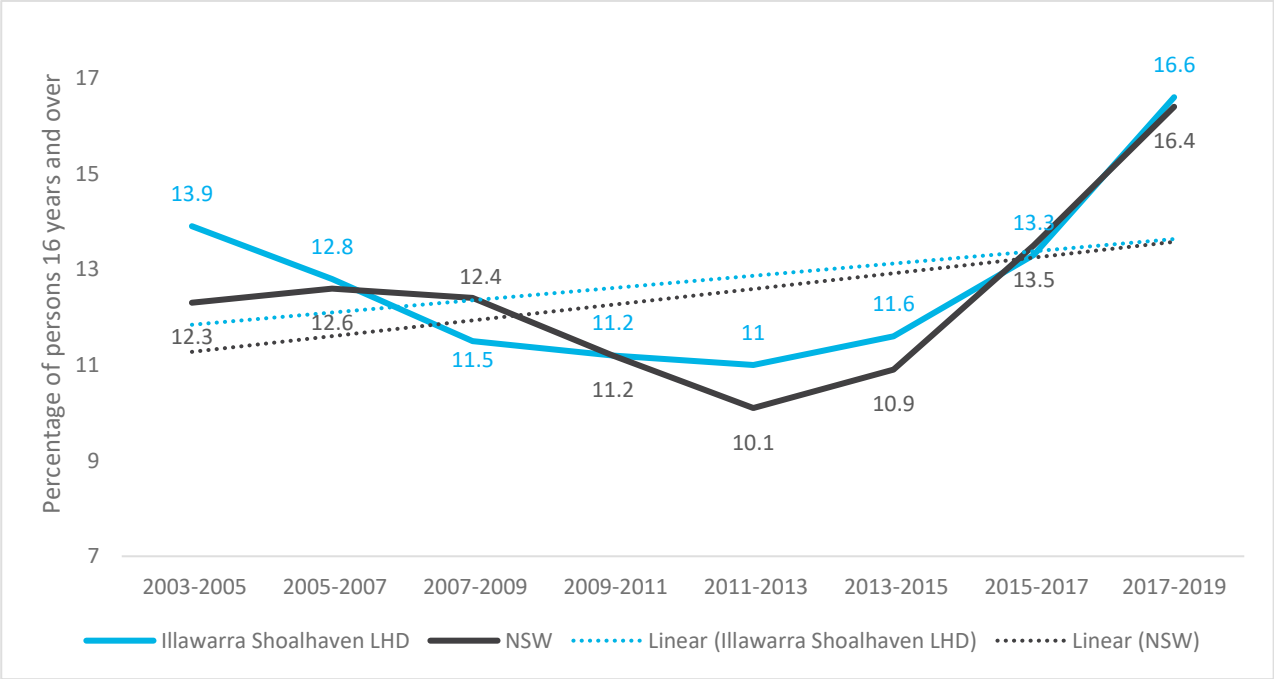


Source: Ministry of Health 2019, *Health Statistics NSW*.

Figure A.19 Intentional self-harm hospitalisations (rate per 100,000 persons of all ages), 2001–2003 to 2016–2018

Data is also collected by NSW Health regarding the level of psychological distress using the Kessler 10 (K10) approach. This approach uses a 10-item questionnaire that measures anxiety, depression, agitation, and psychological fatigue in the most recent 4-week period and has been adopted by NSW Health as an indicator of mental health.

PHIDU (2020) reports the proportion of people with high or very high psychological distress based on the K10 Scale to be 13.4% in the regional area and 12.4% in NSW. The trend data is only available at the LHD level and indicates that levels of psychological distress rated between high and very high in the Illawarra Shoalhaven LHD have been in line with those seen across NSW (see Figure A.20)



Source: Ministry of Health 2019, *Health Statistics NSW*.

Figure A.20 High and very high levels of psychological distress based on Kessler 10 scale (proportion of persons aged 16 years and older), 2003–2005 to 2015–2017

A.9.2 Voluntary work

Volunteering rates can give an indication of social cohesion in a community, and the willingness of people to help each other. The rate of volunteering in the local area (16.3%) is similar but slightly lower than the regional area (18.3%) and NSW (18.1%).

The proportion of persons who volunteered in the area of social influence is presented in Table A.35.

Table A.35 Volunteering rates, 2016

	Did voluntary work through an organisation or group (last 12 months)
Local area	16.3%
Regional area	18.3%
NSW	18.1%

Source: ABS 2016, Census of Population and Housing: General Community Profiles

A.9.3 Community safety and crime

The following data has been sourced from the NSW Bureau of Crime Statistics and Research (BOCSAR). The following data for Liverpool GLA is assumed to be similar within the area of social influence.

The largest increases in reported offences from 2015–2020 were for possession and/or use of other drugs (ie not cocaine, narcotics, cannabis, amphetamines, or ecstasy), followed by indecent assault, theft from a retail store, and fraud. The largest decreases in offences were for theft from a person, breaking and entering a non-dwelling, arson, breaking and entering a dwelling, and other theft (i.e. not of a motor vehicle or stock, or from a motor vehicle, retail store, dwelling, or person).

The top reported offences that experienced the largest increases decreases from 2015–2020 are available in Table A.36. Crime trends from 2015 – 2020, including ranks, for Wollongong LGA are presented in Table A.38.

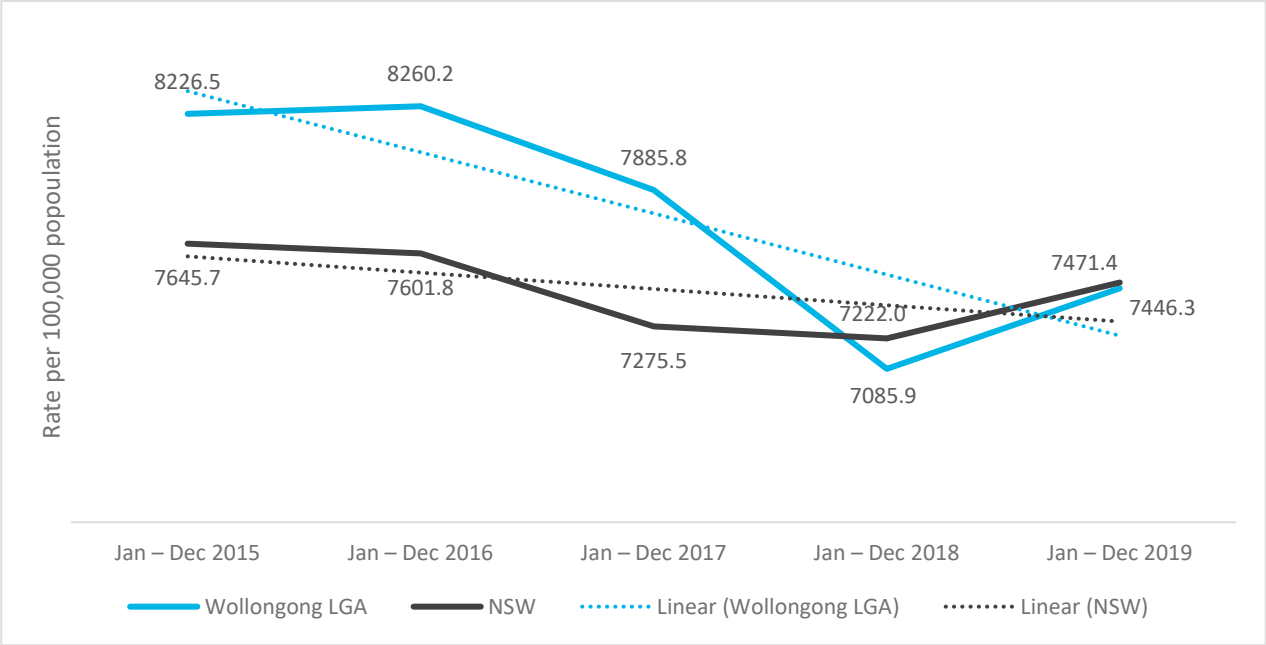
Table A.36 Largest increases and decreases in reported offences in Wollongong LGA, 2015 – 2020

Offence	Total change	Average annual change
Largest increases in reported offences		
Possession and/or use of other drugs	101.1%	19.1%
Indecent assault, act of indecency and other sexual offences	45.3%	9.8%
Steal from retail store	27.0%	6.2%
Fraud	18.2%	4.3%
Largest decreases in reported offences		
Steal from person	-59.3%	-20.1%
Break and enter non-dwelling	-42.1%	-12.8%
Arson	-34.3%	-10.0%
Break and enter dwelling	-27.5%	-7.7%
Other theft	-22.5%	-6.2%

Source: NSW BCSR 2019, NSW Recorded Crime Statistics July 2015-June 2020.

The rate of crime in Wollongong LGA has seen a declining trend from 2015-2019. However, the rate of recorded offences per 100,000 people in Wollongong LGA has remained significantly above NSW from 2015 to 2017, with a significant decline in the rate of crime in 2018. Rates in 2019 for Wollongong LGA were close to those seen in NSW.

The total offences rates in Wollongong LGA from 2015–2019 are illustrated in Figure A.21, rates per 100,000 persons are presented in Table A.38.



Source: NSW BCSR 2019, NSW Recorded Crime Statistics July 2015-June 2020.

Figure A.21 Total offences rates per 100,000 population, 2015–2019

Table A.38 Crime trends, 2019

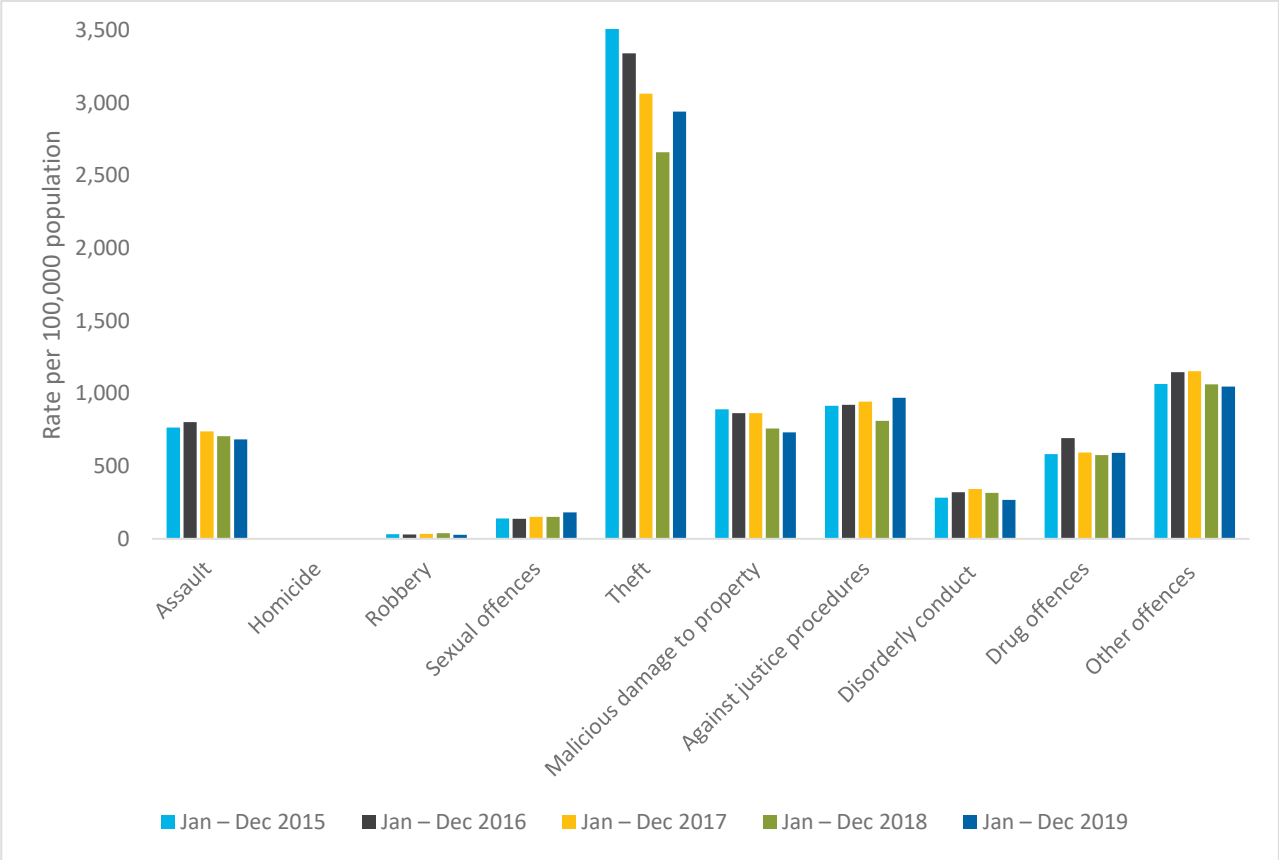
	Offence category	Rate per 100,000 population				
		Jan – Dec 2015	Jan – Dec 2016	Jan – Dec 2017	Jan – Dec 2018	Jan – Dec 2019
Wollongong LGA	Assault	764.7	803.3	739.4	705.3	685.0
	Homicide	1.4	1.0	0.5	1.9	0.9
	Robbery	32.2	30.9	34.7	38.4	28.2
	Sexual offences	141.1	137.4	151.0	151.8	182.3
	Theft	3,549.4	3,341.8	3,062.6	2,660.5	2,939.5
	Malicious damage to property	891.9	865.5	865.5	759.9	732.6
	Against justice procedures	916.4	921.1	943.4	812.2	971.0
	Disorderly conduct	283.2	320.8	341.8	316.1	267.5
	Drug offences	581.8	692.5	593.6	575.7	592.4
	Other offences	1,064.3	1,145.9	1,153.4	1,064.0	1,046.9
	TOTAL	8,226.5	8,260.2	7,885.8	7,085.9	7,446.3

Table A.38 Crime trends, 2019

	Offence category	Rate per 100,000 population				
		Jan – Dec 2015	Jan – Dec 2016	Jan – Dec 2017	Jan – Dec 2018	Jan – Dec 2019
NSW	Assault	819.9	817.9	801.1	802.4	824.5
	Homicide	1.5	1.4	1.0	1.3	1.4
	Robbery	35.4	30.5	30.9	31.2	32.0
	Sexual offences	155.8	158.9	173.1	173.6	182.0
	Theft	3117.0	3031.9	2855.3	2800.1	2820.4
	Malicious damage to property	840.8	812.4	777.7	733.5	713.9
	Against justice procedures	776.8	851.2	814.4	827.4	928.8
	Disorderly conduct	285.0	282.4	260.2	247.6	251.7
	Drug offences	604.1	610.2	580.3	598.6	654.1
	Other offences	1009.3	1005.0	981.3	1006.3	1062.6
	TOTAL	7645.7	7601.8	7275.5	7222.0	7471.4

Source: NSW BCSR 2019, NSW Recorded Crime Statistics July 2015-June 2020.

Recorded offences categories that have consistently had the highest rates in Wollongong LGA are theft, assault, malicious damage to property, against justice procedures, and other offences (see Figure A.22). The offence category with the highest rate in the Wollongong LGA in 2019 (and previously) was theft (2,820.4 per 100,000).



Source: NSW BCSR 2019, NSW Recorded Crime Statistics July 2015-June 2020.

Figure A.22 Offence by category in Wollongong LGA, 2015–2019

Appendix B

Social Risk Matrix

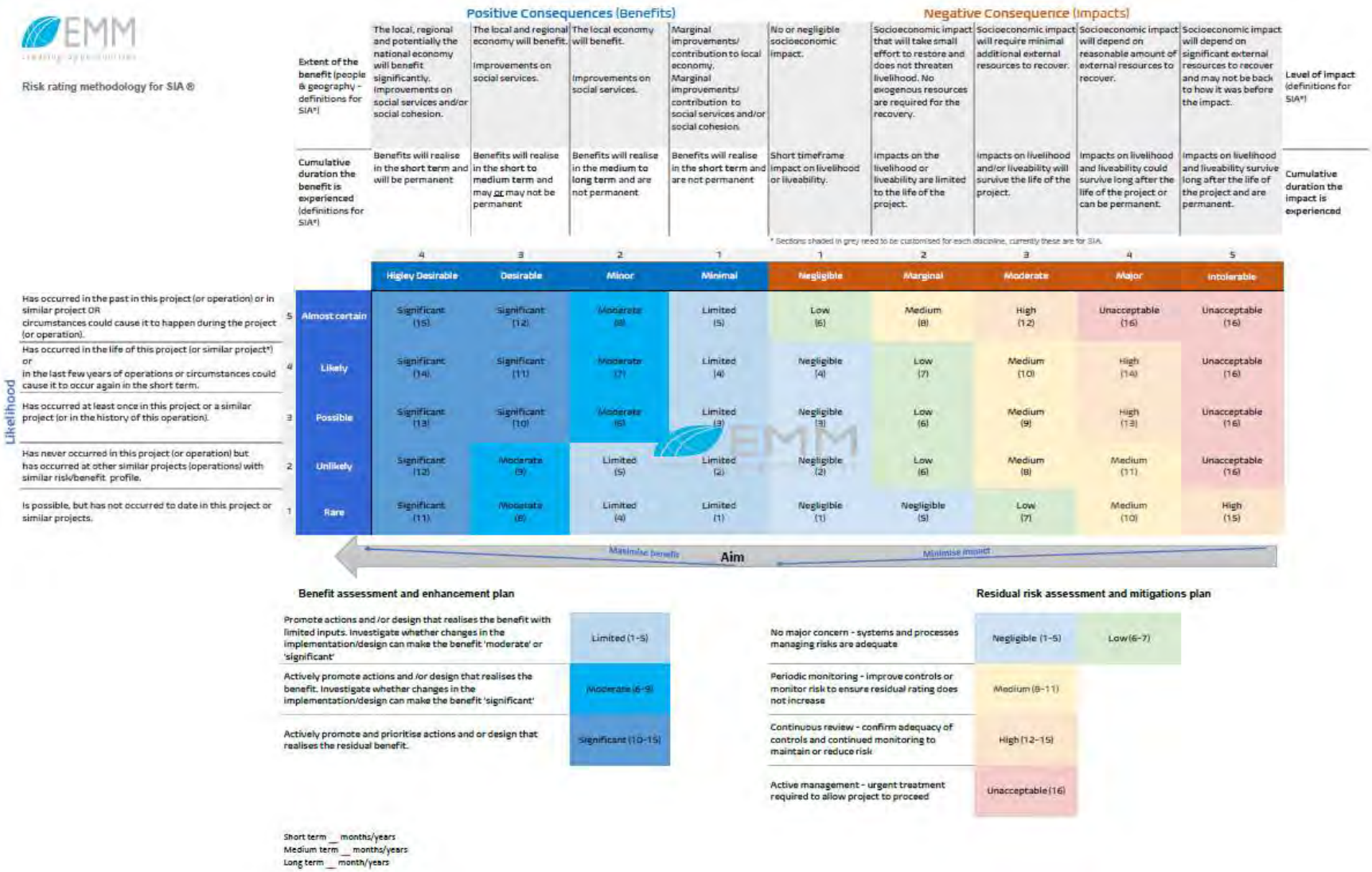


Figure B.1 Risk rating methodology for SIA

Appendix C

Community Newsletters

Wongawilli Colliery Modification 2

COMMUNITY NEWSLETTER No. 1
August 2020

Background

Wongawilli Colliery (the Colliery) is a well-established underground coal mine owned by Wollongong Coal Limited, approximately 15 km south west of Wollongong. Mining activities have occurred at the Colliery since 1916, principally producing coking coal for steel production. The Colliery was placed in care and maintenance in 2019, however the site is still being managed to ensure it remains in a safe condition.

Wollongong Coal proposes to recommence production at the Colliery to develop the North West Mains Driveage (NMWD) – a series of first workings approved by the development consent under which the Colliery operates. This development consent expires at the end of this year, on 31 December 2020. Therefore, to enable the extraction of coal from approved workings, Wollongong is seeking approval to extend the life of the mine by 5 years (Modification 2).

Newsletters will provide regular updates on the progress of the Project, as detailed environmental, economic, and social impact assessments are undertaken as part of the planning approval process.

Throughout the assessment and approvals process we will be providing community members opportunities to contribute to the environmental impact assessments, including the social impact assessment with opportunities to have your say on the issues that are important to you.

Jindal Steel and Power Ltd (JSPL) is the majority share holder of Wollongong Coal Ltd. The Colliery's current approved operations allows for the extraction of up to 2 million tonnes of coal per annum. The coal extracted is transported via rail to Port Kembla for export to JSPL's steel production facilities and other markets.

What is the Project?

The Wongawilli Colliery Modification 2 (the Project) proposes to extend the life of the Colliery to allow for the development of the NWMD, by 5 years to 31 December 2025, along with minor changes to the Colliery's surface infrastructure.

Extension of the approval of the Project will allow for the completion of the NWMD. To date, approximately 500 metres of the NWMD has been developed prior to the mine going into care and maintenance in 2019. The NWMD is displayed over the page, and shows the plan for the NWMD's further development. Wollongong Coal committed in early 2019 to no longer undertake mining via longwall methods. Coal extraction will be undertaken by methods which will cause minimal subsidence, such as first workings place change method, which uses continuous miners and bolters.

The proposed mine plan for the NWMD aligns with the originally approved plan, except for the 2.9 km extension to the existing Wongawilli Ventilation Shaft 1 to avoid constructing a new shaft in the catchment area. This shaft will ensure ventilation requirements are met for the NMWD. The Project proposes to rely on existing surface (pit top) infrastructure with the exception of minor changes to the conveyor network. The changes are proposed to improve the transportation of coal from the NWMD portals to the existing coal handling and train loading facilities.

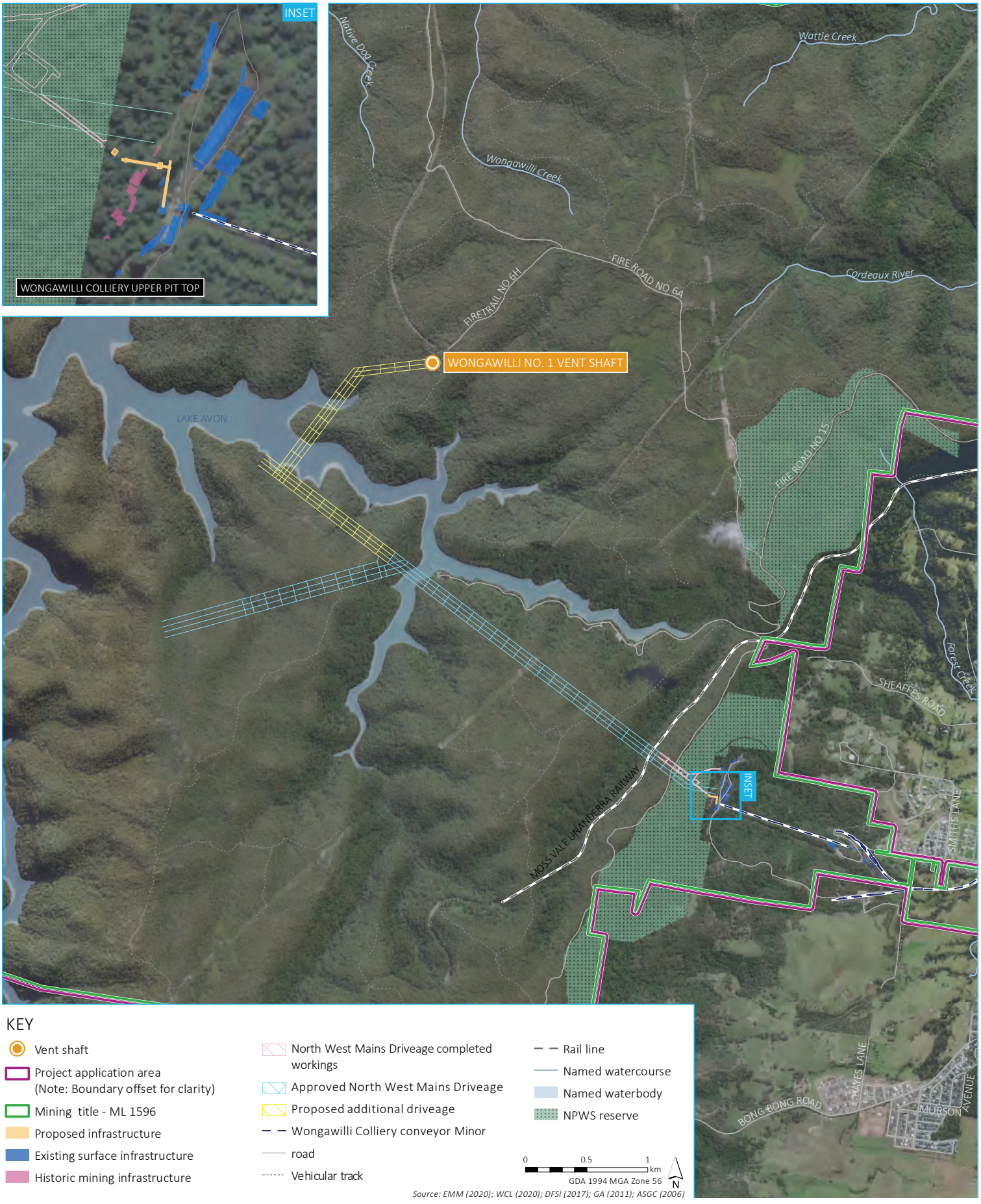


Figure 1 Metropolitan Special Area

Overview of the project compared to currently approved operations

Element	Approved operations	Wongawilli Colliery Modification 2
Operating hours	24 hours per day, seven days per week. Loading and unloading to/from coal stockpile for normal operations: 7am to 6pm Monday to Friday 8am to 4pm Saturday No time on Sundays and public holidays	No change
Coal seams	Bulli and Wongawilli Coal Seams	No change
Extraction Rate	2 million tonnes per annum	No change
Approval period ending	31 December 2020	31 December 2025
Mine Life	9 years consisting of 4 years (Original Consent) plus 5 years (Modification 1).	Coal extraction until 31 December 2025, representing an extension of the approved mine life by 5 years.
Mining Method	Longwall mining method and first workings mining method using continuous miners.	First workings place change mining method using two continuous miners.
Underground workings	Four 5.5-metre-wide by 3.6-metre-high roadways. Access from two existing portals.	No change to the approved layout of the NWMD, with additional first workings proposed to enable access to Wongawilli shaft 1 access from four existing portals.
Mine infrastructure, coal stockpiles and product transport	Wongawilli Pit Top facilities and coal load out facility.	No change to rail transport requirements No change to Pit Top administration facilities. Construction of a conveyor to transport coal from portals to decline coal conveyor. Upgrades to existing conveyors.
Waste management	Waste rock to be stored underground in two of the four Western Driveage roadways. Waste rock which does come to the surface to be utilised for ballast or fill underground or used on the surface for landscaping and rehabilitation.	Waste rock to be stored underground within previous workings and not restricted to the NWMD workings.
Mine ventilation	Mine portals and vent shafts including: Two portals for men and materials One portal for coal extraction Two portals into the Western Driveage Wongawilli Shaft 1, Nebo Shaft 3 and 4.	Existing Nebo area portals (Wonga Belt and Wonga Track) and vent shafts (Vent Shaft 3 and 4) are proposed to be closed off and rehabilitated so will no longer be in use. Revised NWMD will reduce future ventilation shaft requirements via relying on the existing Wongawilli 1 ventilation shaft.
Workforce	Currently, during care and maintenance operations, employing 5 full time employees. Approved for up to 300 full-time personnel and contract personnel.	Employment of up to 150 full time equivalent personnel, generating up to 145 additional jobs.

Approvals required

The Project will require modificationtotheexisting Colliery State significantdevelopmentconsent (PA 09_0161) under the NSW *Environmental Planning and Assessment Act* 1979. Therefore, a modificationapplicationwillbesubmitted to the NSW Department of Planning, Industry and Environment, supported by a detailed modificationreport.WollongongCoalhasengaged EMM Consulting Pty Ltd (EMM) to prepare the modifi cation report.

Assessment process and timing

We are in the early stages of the approvals process in which we are commencing environmental, economic and social studies to support the modificationreport.Itisanticipatedthatthemodi fi cation report will be lodged at the end of October 2020.

The modificationreportwillincludea comprehensive assessment of the potential impacts and benefitso f the project and will identify appropriate management and mitigation measures. The modificationreportwillbeavailabletothe community for review and comment during a public exhibition period expected to take place in November 2020.

Further information

We look forward to hearing from you as the approvals process is undertaken. For further information about the project please visit the Project web page **https://emm.mysocialpinpoint. com/colliery** or get in touch with the Project Team. To provide input to the social impact assessment please contact Santiago Ayala at EMM Consulting.

Stakeholder Engagement During Covid-19

All community consultation will be undertaken in line with current government guidelines, which will include social distancing and increased hygiene practices. Wherever possible the Project team will provide you with options for engagement that best suit your circumstances.

How can you have your say?

Your views will be considered during the preparation and assessment of the modification report. There are two avenues for you to provide input and commentary:

Community Engagement Program

- Community Consultative Committee (CCC)
- newsletters and community updates
- project website

Social Impact Assessment Study

- in-depth interviews
- community surveys
- project website **https://emm.mysocialpinpoint.com/colliery**

We are committed to working with you to understand your views, interests and what is important to you. The views and opinions of all stakeholders will be captured and considered throughout the approvals process.

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Wongawilli Colliery Modification2

COMMUNITY NEWSLETTER No. 2
October 2020

Background

Wongawilli Colliery (the Colliery) is a well-established underground coal mine owned by Wollongong Coal Limited, approximately 15km south west of Wollongong. Mining activities have occurred at the Colliery since 1916, principally producing coking coal for steel production. The Colliery was placed in care and maintenance in 2019, however the site is still being managed to ensure it remains in a safe condition.

Wollongong Coal proposes to recommence production at the Colliery to develop the North West Mains Driveage (NMWD) – a series of first workings approved by the development consent under which the Colliery operates (see image below). This development consent expires at the end of 2020. Therefore, to enable the extraction of coal, Wollongong Coal is seeking approval to extend the life of the mine by 5 years (Modification 2).

Further details can be found in the previous community newsletter, available to download on the project website: https://emm.mysocialpinpoint.com/colliery. The website provides information on the project, the planning approvals process, and updates on the Project.

Newsletters such as this will provide regular updates on the progress of the project as detailed environmental, economic and social impact assessments are undertaken as part of the planning approval process.
Throughout the assessment and approvals process we will be providing community members opportunities to contribute to the environmental impact assessments, including the social impact assessment with opportunities to have your say on the issues that are important to you.

Project Update

Environmental, economic, and social studies to support the modification report are being prepared by independent consultants. These studies are now well advanced and will be completed in the coming weeks becoming part of the modification report. Please find overleaf updates on the environmental and social studies. It is anticipated that the modification report will be lodged for approval at the end of October 2020. The modification report includes a comprehensive assessment of the potential impacts and benefits of the project and will identify appropriate management and mitigation measures. The modification report will be available to the community for review and comment during a public exhibition period expected to take place in November 2020.
Should you wish to further discuss or find out more about the project, Wollongong Coal encourages individuals to reach out to one of the project team. Contact details are provided overleaf.

Approvals required

The project will require modification to the existing Colliery State significant development consent (PA 09_0161) under the NSW Environmental Planning and Assessment Act 1979. Therefore, a modification application will be submitted to the NSW Department of Planning, Industry and Environment, supported by a detailed modification report. Wollongong Coal has engaged EMM Consulting Pty Ltd (EMM) to prepare the modification report.

Specialist studies

The Project is currently in the process of preparing environmental, economic, and social studies to support the modification report. Studies currently being undertaken are traffic, subsidence and geotechnical, Historical heritage and Aboriginal cultural heritage, noise, air quality and greenhouse gas, groundwater, surface water, social impact and economic. A description is provided listed overleaf.

Approvals required

The Project will require modificationtotheexisting Colliery State significantdevelopmentconsent (PA 09_0161) under the NSW *Environmental Planning and Assessment Act* 1979. Therefore, a modificationapplicationwillbesubmitted to the NSW Department of Planning, Industry and Environment, supported by a detailed modificationreport.WollongongCoalhasengaged EMM Consulting Pty Ltd (EMM) to prepare the modifi cation report.

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Further information

We look forward to hearing from you as the approvals process is undertaken. For further information about the project please visit the Project web page **https://emm.mysocialpinpoint. com/colliery** or get in touch with the Project Team. To provide input to the social impact assessment please contact Santiago Ayala at EMM Consulting.

Stakeholder Engagement During Covid-19

All community consultation will be undertaken in line with current government guidelines, which will include social distancing and increased hygiene practices. Wherever possible the Project team will provide you with options for engagement that best suit your circumstances.

How can you have your say?

Your views will be considered during the preparation and assessment of the modification report. There are two avenues for you to provide input and commentary:

Community Engagement Program

- Community Consultative Committee (CCC)
- newsletters and community updates
- project website

Social Impact Assessment Study

- in-depth interviews
- community surveys
- project website **https://emm.mysocialpinpoint.com/colliery**

We are committed to working with you to understand your views, interests and what is important to you. The views and opinions of all stakeholders will be captured and considered throughout the approvals process.

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Wongawilli Colliery Modification 2

COMMUNITY NEWSLETTER No. 2
October 2020

Background

Wongawilli Colliery (the Colliery) is a well-established underground coal mine owned by Wollongong Coal Limited, approximately 15km south west of Wollongong. Mining activities have occurred at the Colliery since 1916, principally producing coking coal for steel production. The Colliery was placed in care and maintenance in 2019, however the site is still being managed to ensure it remains in a safe condition.

Wollongong Coal proposes to recommence production at the Colliery to develop the North West Mains Driveage (NMWD) – a series of first workings approved by the development consent under which the Colliery operates (see Figure 1 next page). This development consent expires at the end of 2020. Therefore, to enable the extraction of coal, Wollongong Coal is seeking approval to extend the life of the mine by 5 years (Modification 2).

Newsletters such as this will provide regular updates on the progress of the project as detailed environmental, economic and social impact assessments are undertaken as part of the planning approval process.

Throughout the assessment and approvals process we will be providing community members opportunities to contribute to the environmental impact assessments, including the social impact assessment with opportunities to have your say on the issues that are important to you.

Further details can be found in the previous community newsletter, available to download on the project website: https://emm.mysocialpinpoint.com/colliery. The website provides information on the project, the planning approvals process, and updates on the Project.

Project Update

Environmental, economic, and social studies to support the modification report are being prepared by independent consultants. These studies are now well advanced and will be completed in the coming weeks becoming part of the modification report. Please find overleaf updates on the environmental and social studies.

It is anticipated that the modification report will be lodged for approval at the end of October 2020. The modification report includes a comprehensive assessment of the potential impacts and benefits of the project and will identify appropriate management and mitigation measures. The modification report will be available to the community for review and comment during a public exhibition period expected to take place in November 2020.

Please find overleaf updates on environmental and social studies, a figure displaying the proposed modification is also provided.

Approvals required

The project will require modification to the existing Colliery State significant development consent (PA 09_0161) under the NSW Environmental Planning and Assessment Act 1979. Therefore, a modification application will be submitted to the NSW Department of Planning, Industry and Environment, supported by a detailed modification report. Wollongong Coal has engaged EMM Consulting Pty Ltd (EMM) to prepare the modification report.

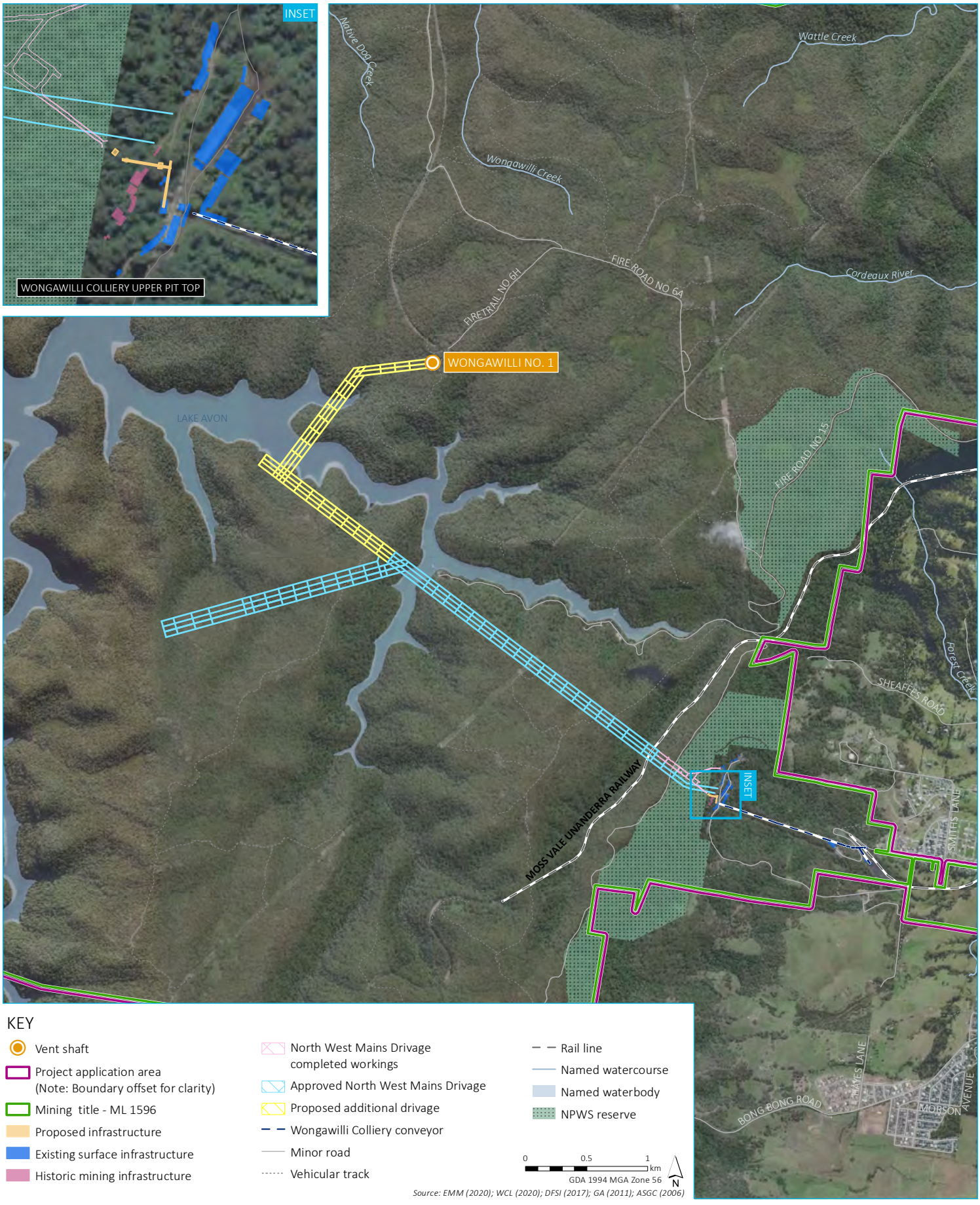

Figure 1 Conceptual Project Layout

Specialists studies

The Project is currently in the process of preparing environmental, economic, and social studies to support the modification report. Studies currently being undertaken include:

Traffic

A traffic impact assessment is being undertaken to understand the local road network and how ongoing Colliery operations associated with the proposed modification may influence local traffic. The traffic assessment has determined that the project is unlikely to impact the local road network or road safety given a reduction in workforce from the current approval. Of note, Wollongong Coal has made available land to the Wollongong City Council to assist with future planned road improvements within the local area.

Subsidence and geotechnical

A subsidence and geotechnical assessment is being undertaken to assess the potential surface and sub-surface impacts of the proposed Colliery modification. The assessment considers the geotechnical conditions of the Colliery site as well as the proposed modifications to the operations of the mine to ensure that the site is stable and safe. The assessment has determined that the project is unlikely to impact environmental features or surface infrastructure and there is no potential to cause surface movements of any consequence.

Historical heritage and Aboriginal cultural heritage

Historical heritage and Aboriginal cultural heritage impact assessments are currently being undertaken to determine potential impacts on both Aboriginal and non-Aboriginal heritage in the area of the proposed modification. The Aboriginal heritage assessment has involved both desktop and field surveys work in consultation with stakeholders.

The historical heritage assessment has largely been completed identifying historic mining infrastructure in the vicinity of the project with proposed mitigation measures to be communicated in the modification report.

Noise

A noise impact assessment is currently underway to determine potential noise emissions, quantify achievable noise levels and propose mitigation measures to minimise noise impacts in the vicinity of the project as far as practicable. The project is expected to result in a reduction of potential noise impacts to the surrounding area when compared to operations currently approved.

Air quality and greenhouse gas

An air quality and greenhouse gas impact assessment has been prepared to assess the potential air quality impacts of the proposed modification. The assessment will determine proposed Colliery emission sources, undertake modelling to assess potential impacts in the area surrounding the Colliery, and identify mitigation and management measures to minimise air quality impacts in the vicinity of the project as far as practicable. The air quality and greenhouse gas assessment has determined that the project will not result in exceedance of any applicable criteria. Existing mitigation measures at the Colliery, including enclosing conveyors and other areas where coal is moved, water spaying stockpiles and travel routes will be continued as part of the project.

Groundwater

A groundwater assessment is being undertaken for the proposed modification to help us understand current groundwater conditions in the existing environment. This will include assessment of existing water quality, identification of any groundwater dependant ecosystems and how groundwater interacts with the existing landscape. The assessment will include groundwater modelling that will allow us to predict any changes in hydraulic properties and help develop and implement management plans to ensure the protection of groundwater and water quality in the area. Outcomes of the groundwater assessment will be made available via the Project website when the assessment has been completed.

Surface water

A surface water assessment is currently being undertaken to understand the water systems in and around the proposed modification. The assessment will review existing surface water behaviours at the Colliery, predict any potential impacts on flow regimes, determine the adequacy of existing water management strategies and systems and recommend mitigation measures to address any surface water impacts the modification may have. Outcomes of the surface water assessment will be made available via the Project website when the assessment has been completed.

Social impact

A social impact assessment is being undertaken to determine the potential benefits and impacts the proposed modification could have in the community. The social impact assessment will consider the social, economic, environmental, and health and wellbeing of the community in the local area. Outcomes of the social impact assessment will be determined through review of impacts from the above studies along with feedback from community engagement. The social impact assessment is progressing with the local community through feedback accessible through the project website.

Economic

An economic assessment is being undertaken to assess the economic benefits and impacts of the proposed modification. The economic assessment will determine the modification's potential for economic success by analysing its feasibility, profitability, potential to create local employment and potential to stimulate the economy. It is expected the reactivation of the Colliery will have significant economic benefits for the local community and the wider Wollongong.

Further information

We look forward to hearing from you as the approvals process is undertaken. For further information about the project please visit the Project web page https://emm.mysocialpinpoint.com/colliery or get in touch with the Project Team. To provide input to the social impact assessment please contact Santiago Ayala at EMM Consulting.

Contact details of the Project team are listed below.

Stakeholder Engagement During Covid-19

All community consultation is been undertaken in line with current government guidelines, which will include social distancing and increased hygiene practices. Besides the avenues listed below to ensure all stakeholders are able to participate, the Project team is providing alternative options for engagement that best suit your circumstances.

How can you have your say?

Wollongong Coal values community feedback on the proposed modification, with individuals' input being considered during the preparation and assessment of the modification report. There are multiple ways in which you can provide input and commentary on the project, including the below avenues:

- Community Consultative Committee (CCC)
- Newsletters and community updates
- Project website
- Interactive Project Map through the Project website
- Via direct contact to one of the Project team – contact details provided below

We are committed to working with you to understand your views, interests and what is important to you. The views and opinions of all stakeholders will be captured and considered throughout the approvals process.

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Wongawilli Colliery Modification 2

COMMUNITY NEWSLETTER No. 3
December 2020

Background

Wongawilli Colliery (the Colliery) is a well-established underground coal mine owned by Wollongong Coal Limited (Wollongong Coal), approximately 15 km south west of Wollongong. Mining activities have occurred at the Colliery since 1916, principally producing coking coal for steel production. The Colliery was placed in care and maintenance in May 2019; however, the site is still being managed to ensure it remains in a safe condition.

Wollongong Coal proposes to extend the life of the Colliery by 5 years to enable continued development of the approved North West Mains Development (NWMD) to access the existing Wongawilli Ventilation Shaft 1 and minor surface infrastructure (Modification 2). Approval of the modification will enable the NWMD to be completed, and during this period Wollongong Coal propose to seek separate approval to mine within the North West and South West Domain utilising the existing Wongawilli pit top infrastructure with a 30 year mine life.

Further details can be found in the previous community newsletters, available to download on the Project webpage: **https://emm.mysocialpinpoint.com/colliery**. The webpage also provides information on the Project, the planning approvals process, updates on the Project, and an interactive map for comments regarding the proposed modification. Details about Wollongong Coal can be found on their webpage: **https://wollongongcoal.com.au.**

Project Update

Environmental, economic, and social assessments to support the Project have been undertaken by independent consultants and form part of the modification report. Please find overleaf current outcomes of the environmental, economic, and social assessments. The social impact assessment is still in process.

Environmental assessments are now well advanced, and as such, Wollongong Coal will be holding an information day to provide an overview of the project to the local community and allow for the community to have their say. The information day will provide you with opportunities to learn from the Project team about the Modification and talk to the different technical experts. The session will take place on the 16th December from 8 am to 6 pm at the Dapto Rural Fire Brigade Station (3 Wongawilli Road, Wongawilli).

Wollongong Coal values community feedback on the proposed modification. Should you wish to find out more about the Project, community members are encouraged to attend the information day or reach out to one of the Project team. Contact details are provided overleaf.

Wollongong Coal's Community Newsletters provide regular updates on the progress of the Project as detailed environmental, economic, and social impact assessments are undertaken as part of the planning approval process.

Throughout the assessment and approvals process we have been providing community members opportunities to contribute to the environmental impact assessments, including the social impact assessment with opportunities to have your say on the issues that are important to you.

Approvals required

The Project requires modification to the existing Colliery State significant development consent (PA 09_0161) under the NSW Environmental Planning and Assessment Act 1979. Therefore, a modification application, supported by a detailed environmental, economic and social assessments, is required to be submitted to the NSW Department of Planning, Industry and Environment (DPIE). Wollongong Coal has engaged EMM Consulting Pty Ltd (EMM) to prepare the modification report.

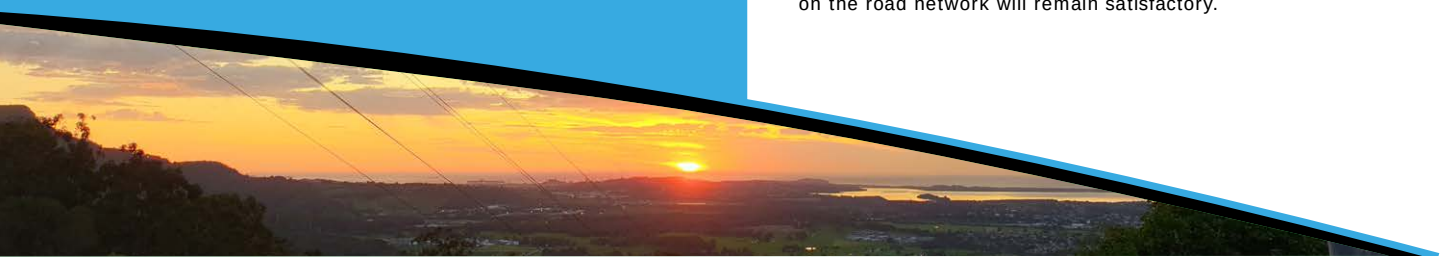
Specialists studies

The Project is in the process of preparing environmental, economic, social assessments to support the modification report. Studies undertaken include:

Traffic

A traffic impact assessment has been undertaken to understand the local road network and how ongoing Colliery operations associated with the proposed modification may influence local traffic.

The traffic assessment has determined that the project operation is unlikely to impact the local road network, road upgrade works, or road safety given a reduction in workforce from the current approval. Traffic associated with the project construction and operation is expected to be relatively small and traffic conditions on the road network will remain satisfactory.



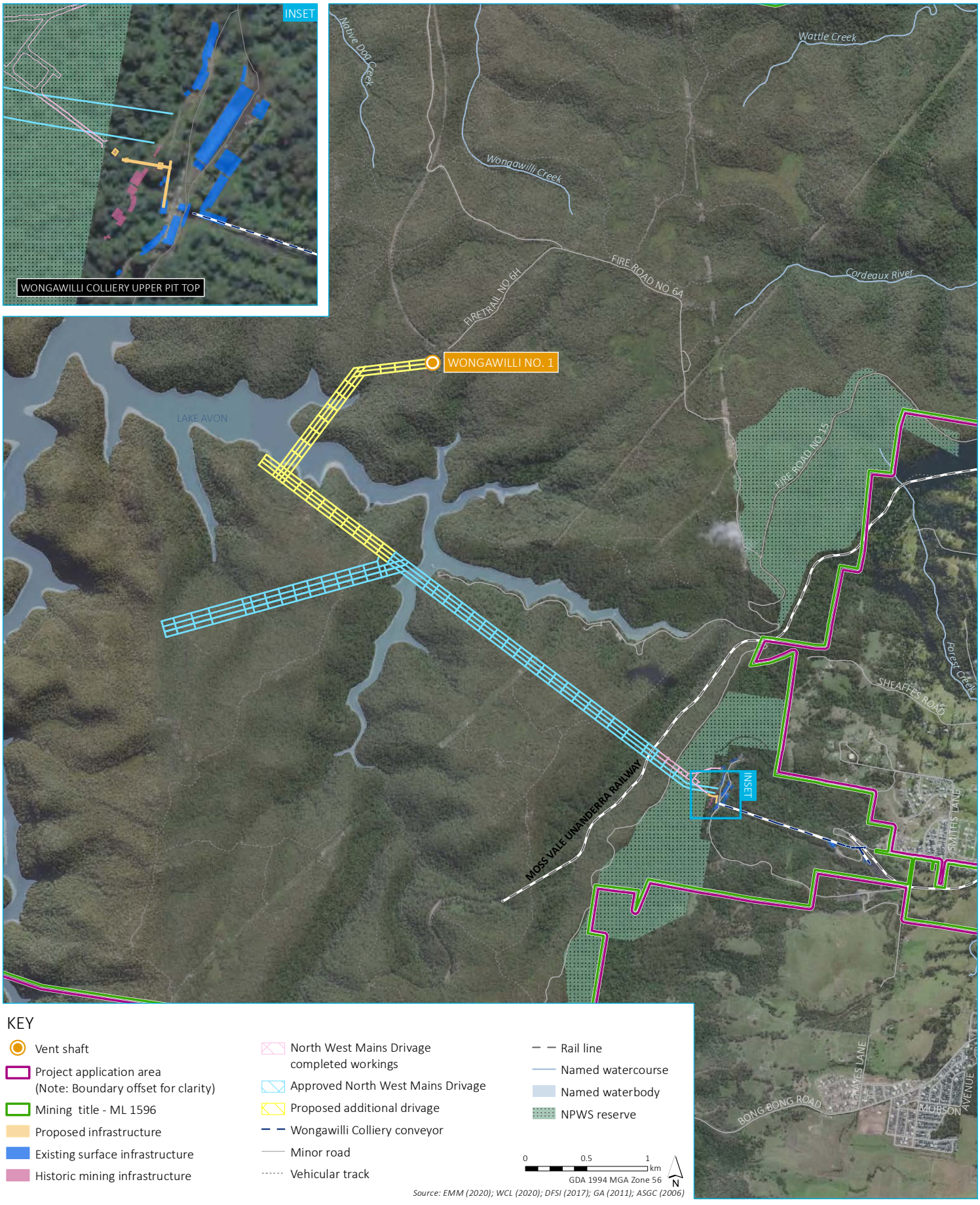


Figure 1 Conceptual Project Layout

Biodiversity

A biodiversity impact assessment has been undertaken to assess the extent of native vegetation, threatened ecological communities, and vegetation integrity within the vicinity of the proposed modification.

The Biodiversity development assessment report (BDAR) has assessed potential impacts to flora and fauna in the area and provided recommendations to mitigate any impacts that may be identified. The proposed modification will include the removal of 0.03 ha of native vegetation for proposed surface infrastructure works.

The assessment has concluded that six biodiversity credits are required to offset direct impacts to two vegetation zones, and four native species with potential habitats in these vegetation zones.

Subsidence and geotechnical

A subsidence and geotechnical assessment has been undertaken to assess the potential surface and sub-surface impacts of the proposed modification. The assessment considers the geotechnical conditions of the Colliery site as well as the proposed modifications to the operation of the mine to ensure that the site is stable and safe.

The assessment has concluded that there is no potential for the proposed NWMD workings to cause any significant surface ground movement. 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.

Historical heritage

A historical heritage impact assessment has been undertaken to determine potential impacts on non-Aboriginal heritage in the area of the proposed modification. The project proposes no removal or demolition of local or State historic heritage sites.

Mitigation measures will ensure that proposed works to and around identified local heritage sites, comprising minor alterations to the fabric of the Breaker Building and the Transfer Bunker or inadvertent damage to the Dumper House caused by use and movement of machinery is appropriately managed during construction. The proposed modification will have no impacts to the heritage value of the Avon Dam and Illawarra Escarpment Landscape Area.

Aboriginal cultural heritage

An aboriginal cultural heritage assessment has been undertaken to determine potential impact on Aboriginal heritage in the area of the proposed modification. The assessment included archaeological investigations of the site, desktop study of past assessments and existing environment, and consultation with Registered Aboriginal Parties (RAPs) and relevant agencies.

No Aboriginal sites or areas of potential archaeological deposit were identified within the study area during the survey. As a result, the proposed modification has been assessed with low potential to impact Aboriginal sites. Any unexpected finds will be managed by Wollongong Coal as per recommendations set out in the assessment.

Noise and vibration

A noise and vibration impact assessment has been undertaken to determine potential noise emissions, quantify achievable noise levels, and propose mitigation measures to minimise noise impacts in the vicinity of the project as far as practicable.

The project is expected to result in a reduction of potential noise impacts to the surrounding area when compared to current approved operations. Mitigation measures have been identified to minimise noise emissions, including extending the noise barrier along the rail line within the Colliery to reduce noise from train loading and limiting coal train loading to day light hours only.

Wollongong Coal will continue to investigate further mitigation practices to minimise potential sources of noise during operation.

Air quality and greenhouse gas

An air quality and greenhouse gas (GHG) impact assessment has been prepared to assess the potential air quality impacts of the proposed modification. The assessment includes proposed Colliery emission sources, modelling to assess potential impacts in the area surrounding the Colliery, and mitigation and management measures to minimise air quality impacts in the vicinity of the project as far as practicable.

The air quality assessment has determined that predicted impacts from Colliery operations will not result in exceedance of any applicable criteria at any neighbouring assessment locations. The GHG assessment determined emissions generated by the Colliery represent approximately 0.291% of total GHG emissions for NSW and 0.071% of total GHG emissions for Australia.

Wollongong Coal will continue to implement mitigation and management measures as approved to reduce the potential for air quality and greenhouse gas impacts to the receiving environment.

Groundwater

A groundwater assessment has been undertaken for the proposed modification to understand current groundwater conditions in the existing environment. This includes assessment of existing water quality, identification of any groundwater dependant ecosystems, and how groundwater interacts with the existing landscape. The assessment also includes groundwater modelling to predict any changes in hydraulic properties to ensure the protection of groundwater and water quality in the area.

The assessment has determined that the project will have little to no impact on groundwater or receptors, including third party bores, groundwater dependent ecosystems, or surface water.

Surface water

A surface water assessment has been undertaken to understand the water systems in and around the proposed modification. The assessment has reviewed existing surface water behaviours at the Colliery, predicted any potential impacts on flow regimes, determined the adequacy of existing water management strategies, and systems and provided mitigation measures to address any surface water impacts.

The assessment has determined that with no observable subsidence or groundwater impacts the project is expected to result in a neutral effect on surface water quality and require no changes to the existing surface water management system.

Economic

An economic assessment has been undertaken to assess the economic benefits and impacts of the proposed modification. The economic assessment includes the modification's potential for economic success by analysing its feasibility, profitability, potential to create local employment and potential to stimulate the economy.

The assessment has determined that the project 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 the project to the local community are not expected to be material from an aggregate economic efficiency perspective.

Social impact

A social impact assessment is currently being undertaken to determine the potential benefits and impacts the proposed modification could have in the community. The assessment will consider the social, economic, environmental, and health and wellbeing of the community in the local and regional areas. An online survey is now available for community members to provide input to the social impact assessment (see details below).

Outcomes of the social impact assessment will be informed by input from community members during consultation activities. Data collected as part of the social baseline and engagement findings, findings from technical studies, previous social impact assessment reports from the same regional area, academic research and relevant government and agency reports will also be used to inform the social impact assessment.

Further information

We look forward to hearing from you as the approvals process continues. We encourage you to attend the information day and/or complete the online survey to have your say, available at: **https://www.surveymonkey.com/r/colliery** or scan the QR code with your mobile device.

For further information about the Project please visit the Project web page **https://emm.mysocialpinpoint.com/colliery** or get in touch with the Project Team.

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What's next in the approvals process?

Following public exhibition of the modification report, DPIE will collate any submissions received. Wollongong Coal will then prepare a submissions report which will address any submissions received in regard to the project, for provision to DPIE. DPIE will take into consideration the modification report, public submissions and the submissions report in developing an assessment report and determination.

How can you have your say?

Wollongong Coal values community feedback on the proposed modification. An information day at the Dapto Rural Fire Brigade Station (3 Wongawilli Road, Wongawilli) is proposed on 16th December from 8 am to 6 pm to provide an overview of the project to the local community. An online survey is also currently available for community members and can be accessed via the following link: **https://www.surveymonkey.com/r/colliery**

Following the completion of the environmental, social, and economic assessments, the modification report will be submitted to DPIE and will be put on public exhibition for a minimum of 21 days, during which time members of the public are able to make submissions to DPIE regarding the modification. These submissions will be reviewed by Wollongong Coal and responses will be prepared and submitted to DPIE to be considered alongside the modification report during determination of approval.

Appendix D

Social Pinpoint Project Website

D.1 Project website layout

Figure D.1 Project website homepage

D.2 Project website map comments and responses

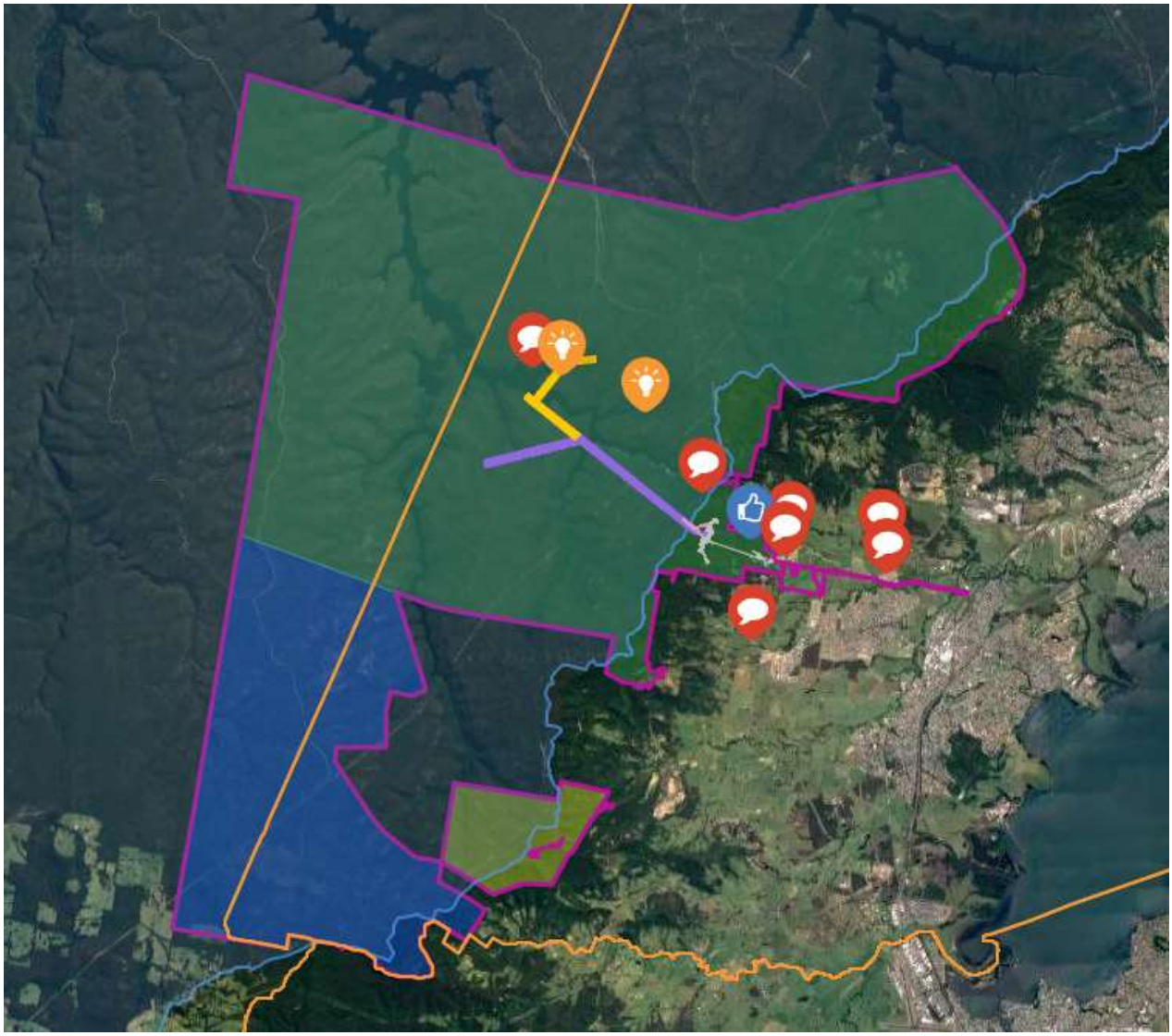

Figure D.2 Project map on website, 20 December 2020

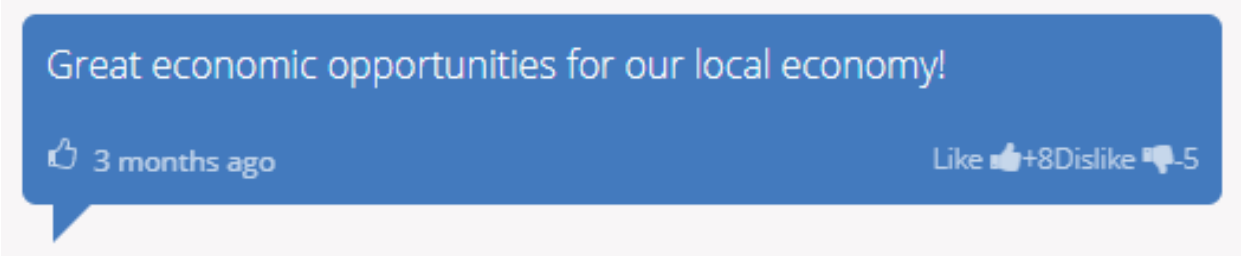

Figure D.3 **Project map community member comment and Project team response – 23 September 2020**

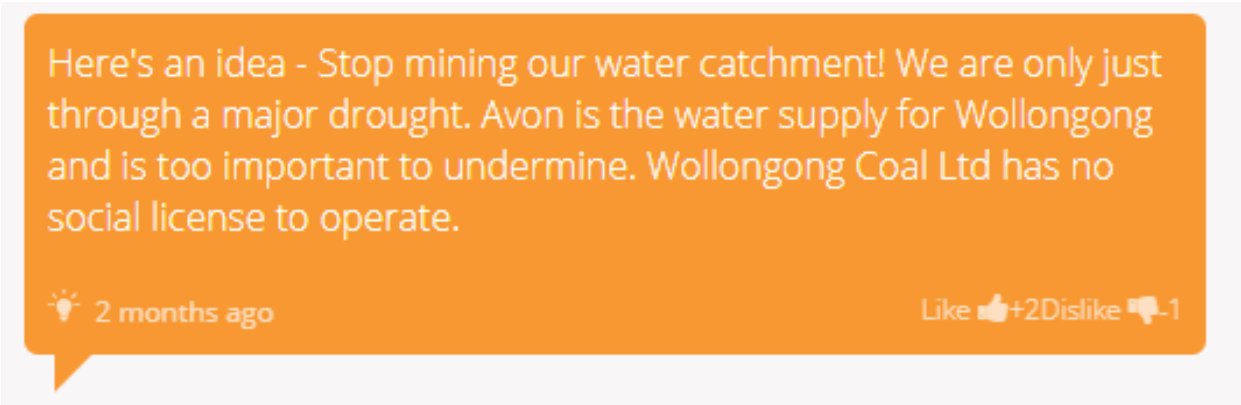

Figure D.4 **Project map community member comment and Project team response – 2 November 2020**

How has vehicle access to the and from the mine been considered? Has the proposal considered the increase in traffic due to mine operations with the growth in traffic expected as the Wongawilli and Kembla Grange residential estates grow? Has road safety been consumed weed given the higher number of pedestrians using Wongawilli Road now and once the upgrades to the road are completed?

Comment Response

A full response to this comment has been provided in the Maps page of this website. Please follow this link to review our response in full:
https://emm.mysocialpinpoint.com/wongawilli-colliery-map

11 days ago Like +2 Dislike

Response 3

A traffic impact assessment has been undertaken to understand the local road network and how ongoing Colliery operations associated with the proposed modification may influence local traffic. The main increases in traffic will be between 6.30 to 7.30 am and 2.30 pm to 3.30 pm during shift changes, however traffic generated will be lower than currently approved levels, given that the approved workforce will decrease from 300 to 150 full time equivalent staff.

The Colliery is accessed via Jersey Farm Road via Wongawilli Road and West Dapto Road from the Princes Highway with the maximum traffic generation on weekdays to be 61 light vehicle inbound trips/61 light vehicle outbound trips and 10 heavy vehicle inbound trips/10 heavy vehicle outbound trips. The road networks have been assessed as being adequate to support the increase in traffic with no delays and no increased risk to safety for road users.

Figure D.5 Project map community member comment and Project team response – 10 December 2020

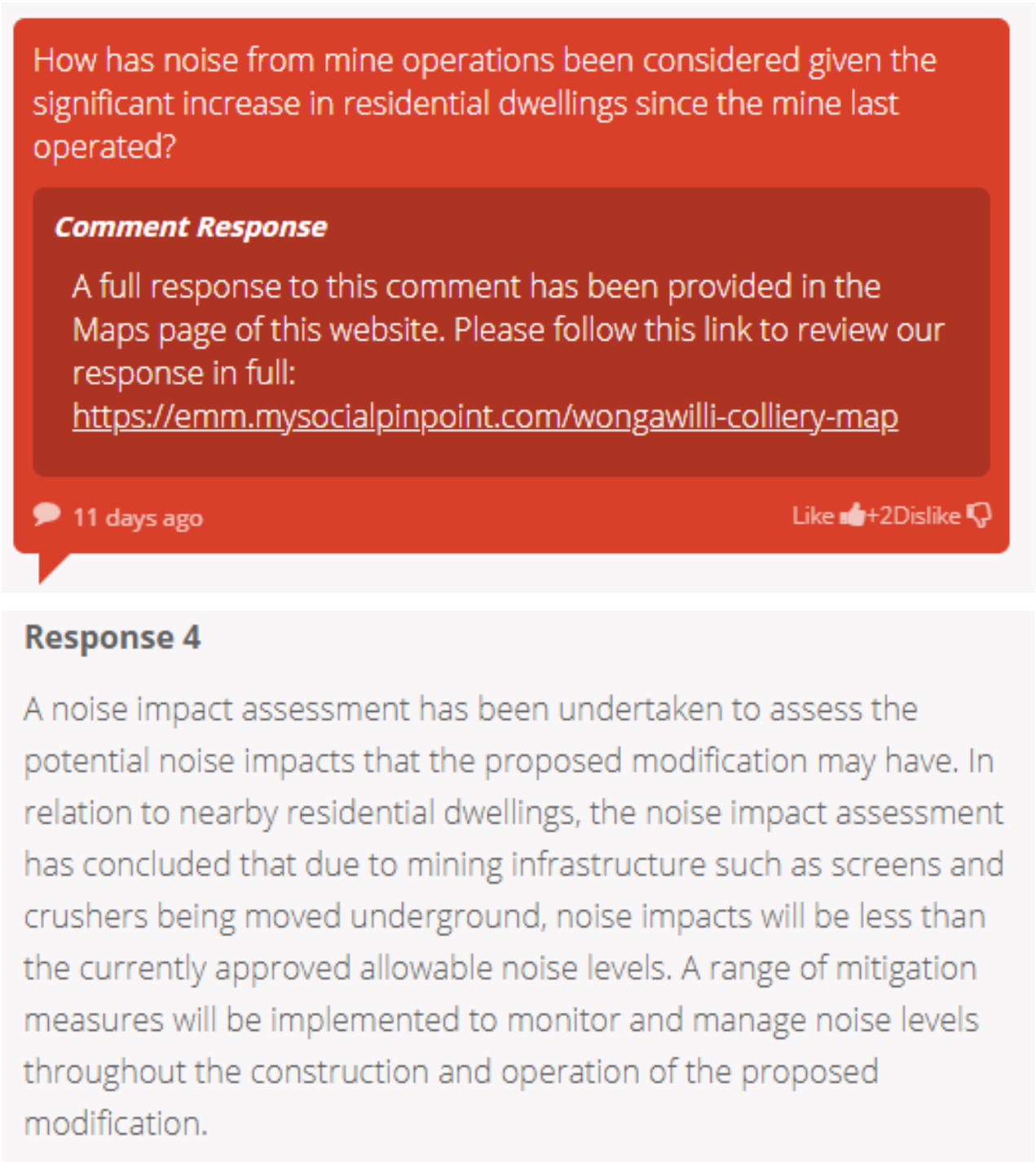

Figure D.6 Project map community member comment and Project team response – 10 December 2020

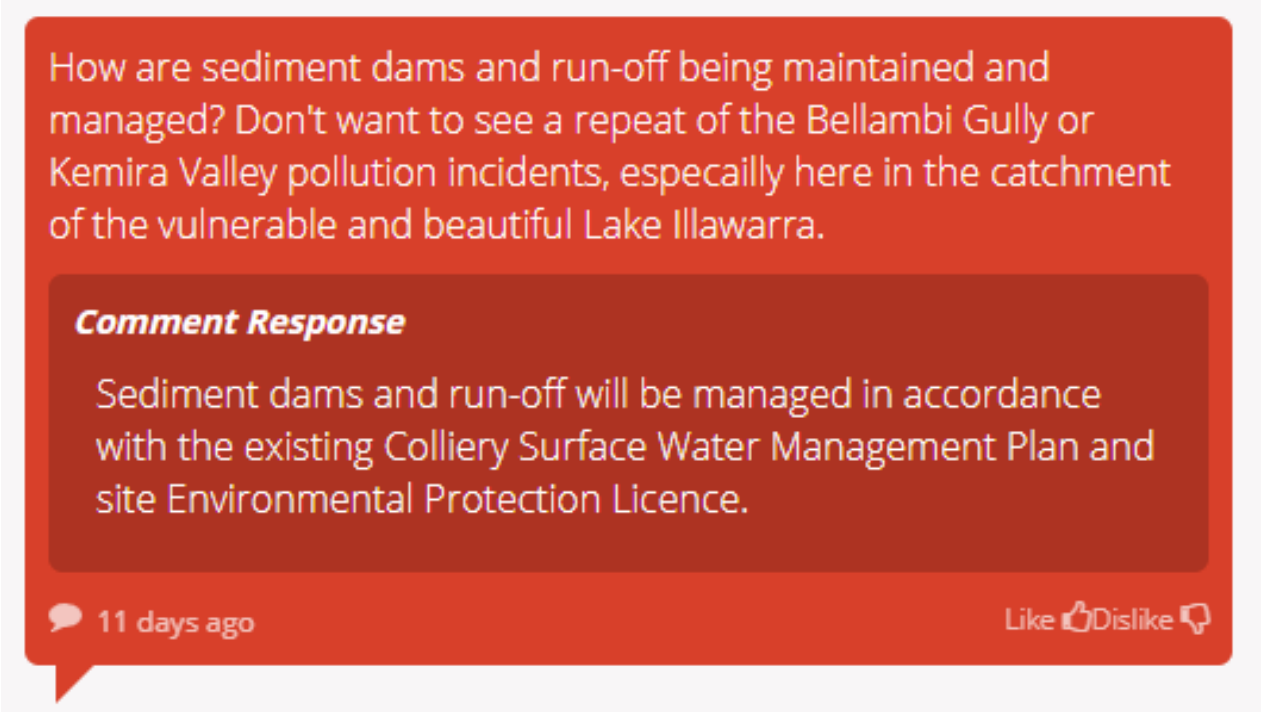

Figure D.7 **Project map community member comment and Project team response – 10 December 2020**

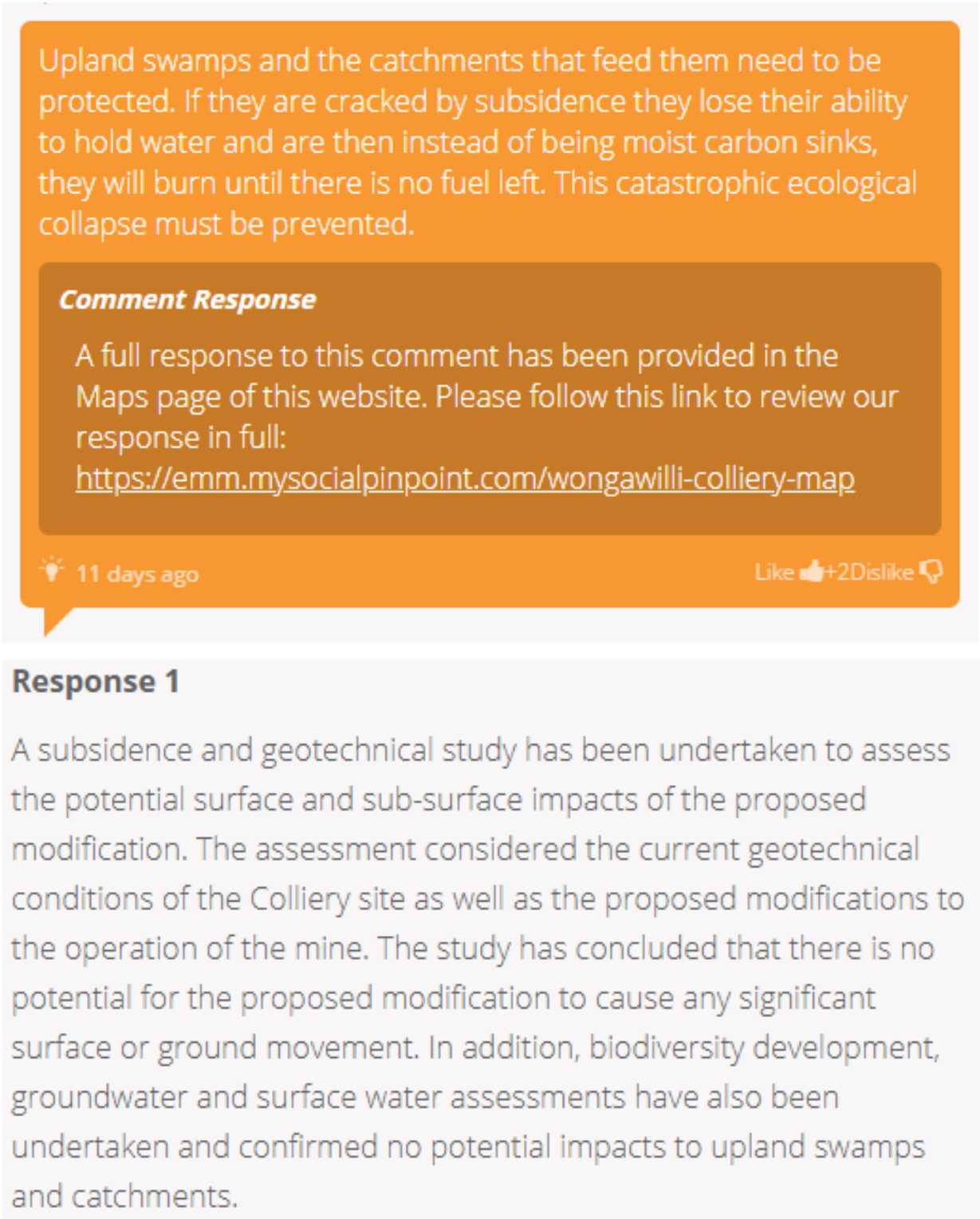

Figure D.8 Project map community member comment and Project team response – 10 December 2020

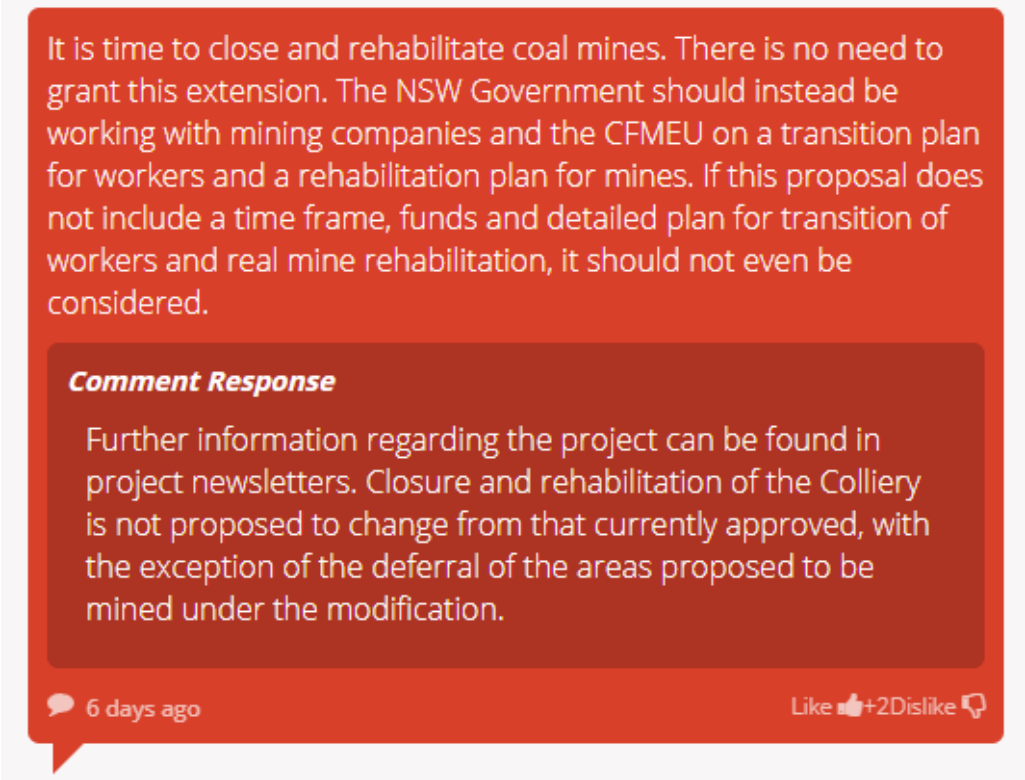

Figure D.9 **Project map community member comment and Project team response – 15 December 2020**

Figure D.10 **Project map community member comment and Project team response – 17 December 2020**

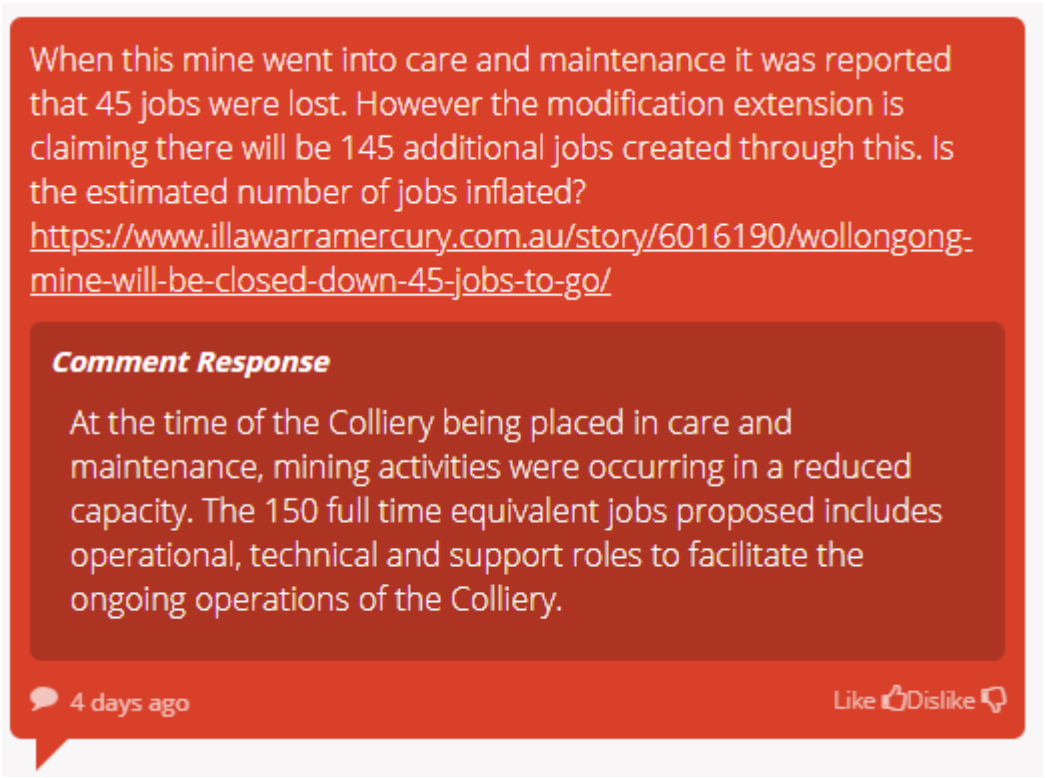

Figure D.11 **Project map community member comment and Project team response – 17 December 2020**

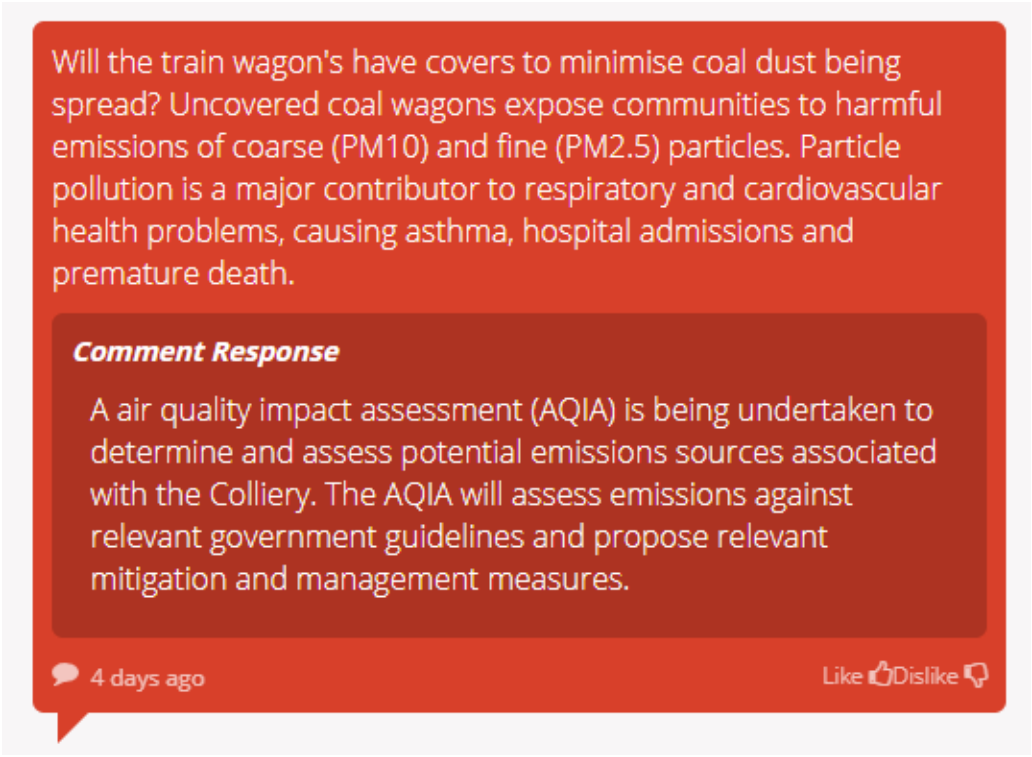

Figure D.12 **Project map community member comment and Project team response – 17 December 2020**

Appendix E

Illawarra Mercury Newspaper Advertisement

14 ILLAWARRA MERCURY Saturday December 05, 2020

NEWS

Degan's sporting chance

BY LISA WACHSMUTH

DAPTO schoolboy Degan Wingate is never the first to cross the finish line in a race – but his fabulous sportsmanship has seen him take a lead in school elections.

The Year 5 student has been voted in as sports vice-captain for Dapto Public School for 2021, and he wore his new badge with pride on Friday as he stood with the other student leaders.

Degan was born with bilateral periventricular syndrome – a condition which affects his speech and mobility in a similar way to cerebral palsy, says his mum Gervasse.

She and Degan's father Lance were told he would likely not walk, yet he proved them wrong.

So when he came home and told his parents he wanted to be a sports leader recently, they didn't doubt he could do it.

He came up with a speech to read to students, who were handed out copies so they could read along.

"Most of you know I couldn't win a running race to save my life or anyone else's for that matter, and (I) never be selected in any top team either," he told them.

"But in every race and every competition there is only one winner and that's the way it's always been, but it's knowing how to lose, come last, be happy, have fun no matter what and take it like a good sport.

"That's the hard part, which I think I do extremely well, it's here it's've had a lot of practice."

Degan told his peers his biggest achievement was learning to walk, which he achieved thanks to his determination, and the amazing staff at Sydney Children's Hospital.

His second biggest achievement was learning to ride a bike, and he also likes to ride his motorbike. In archery, he can hit a bullseye with "amazing accuracy from 25 metres almost every time".

"Where I lack in strength and co-ordination I make up with a kind heart and strong mind," he told students.

"You may think of a sports leader as someone with excellent sporting ability – in my opinion this is because everyone is better on the field, as for me I feel I can represent and understand everyone within the school, whether playing or watching sport regardless of their position or ability."

The young student agreed, voting him to represent them when he enters his final year of primary school next year.

On Thursday, the International Day of People with Disability says celebrated, and Degan's mum said she was delighted he was showing others with a disability that they could achieve their goals.

"Degan is cognitively fine but the condition affects his speech and language and muscles around his face," she said.

"As a result his tongue is partially paralysed, he has trouble swallowing and not everyone understands him.

"We were told he wouldn't walk but his determination has amazed everyone and though he stumbles often, and can fall, he keeps going.

"It took him 100 times longer to learn to ride a bike than other kids, but he's done that too.

"You don't think of a sports leader as a kid with this condition, but it's not just about being the best, it's about trying your best. He's just thrilled the students believe in him and I think he's such a great example for others with disability."

Principal Tony Frivoltsis said Dapto Public was a very inclusive school, and he congratulated Degan on his new role.

"We're very proud of all the kids and for this young boy it's wonderful that his own peers voted him in and held him such high esteem," he said. "It's a positive thing for Degan and a great example of inclusion."

YOUNG LEADERS: Dapto Public School's sports vice-captain for 2021 Degan Wingate (centre) and other school captains and vice-captains Nicola Novakovic, Logan Smith, Grace Miller and Aliyah McGuinness. Picture: Adam McLean

WOLLONGONG COAL

Community Information Session

Wongawilli Colliery Modification 2 Project

Wongawilli Colliery (the Colliery) is a well-established underground coal mine owned by Wollongong Coal Limited (Wollongong Coal), approximately 15 km south west of Wollongong.

Wollongong Coal proposes to extend the life of the Colliery by 5 years to enable continued development of the approved North West Mains Development (NWMD) to access the existing Wongawilli Ventilation Shaft 1 and minor surface infrastructure (Modification 2).

Technical studies associated with the proposed modification are nearing completion. These studies include, but are not limited to air quality, noise, vibration, groundwater, surface water, and social impact assessments.

We are inviting all interested members of the Wongawilli and surrounding communities to attend a community information session to learn about the project, outcomes of our studies and provide feedback on matters of importance to you.

A community drop-in session will be held at the Dapto Rural Fire Brigade Station, 2 Wongawilli Road (Wongawilli NSW 2530) at the following time:

Wednesday 16 December between 6.00 pm and 8.00 pm

If you would like more information regarding the Project please visit: https://www.wollongongcoal.com.au/colliery

If you are unable to attend the sessions or would prefer to provide your feedback online, please visit: https://www.surveymonkey.com/r/colliery or scan the QR code with your mobile device.

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Figure E.1 **Illawarra Mercury advertisement, Saturday 5 December 2020**

Figure E.2 **CID invitation – 50,000 impressions on Illawarra Mercury website from 5 December 2020**

Appendix F

CID Attendance Register

EMM

WOLLONGONG COAL

Wongawilli Colliery Modification 2 - Community Information Session

Full name	Are you a landholder, business owner, resident, special interest group member, etc.? Please specify.	Suburb of residence	Would you like to be informed further about the Project?
E.g. Joe Bloggs	Resident	Wongawilli	Yes
Rosie Brodie	Resident	Bulli	Yes
[illegible]	[illegible]	"	Yes
[illegible]	DAPTO		
RON COOPER	RESIDENT	"	YES
[illegible] Kennard	Nearly local after 50yrs	Thirroul	Yes
Finn Jennings	resident	Bulli	Sure.
[illegible]	resident	Corrimal	No
Kaia Cox	resident	COLEDALE	Nah.
Phillip [illegible]	" " "	DAPTO	Nil
Tony Howe	Resident	Wongawill	Yes
GEOFF [illegible]	WIN TV		NO.
DOM FIGLIOMENI	WCC.	Port Kembla	YES
June McLean x2	Horsley Resident		yes
Geoff McIntosh	Resident	W'willi	yes
Arjha	Resident	Wongawilli	Yes.
Hendrix	Resident		
B [illegible]	RESIDENT	WONG	Yes
[illegible] + Ruby Davies	Resident	WONGAWILLI	Yes

Scanned with CamScanner

Figure F.1 CID attendance register

Appendix G

Online Community Survey

Wongawilli Colliery Modification Project - Social Impact Assessment Survey

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). The Colliery is owned and operated by Wollongong Coal Pty Limited (Wollongong Coal).

A modification report is being prepared to accompany a modification application (MOD2) to the existing Project Approval (PA) for the Colliery (PA 09_0161). 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 seeks approval to extend the length of the approved NWMD alignment to access the existing Wongawilli Ventilation Shaft 1 and minor surface activities, including:

- relocation of coal handling infrastructure including the crusher, sizer and screen from the Wongawilli lower pit top to underground; and
- construction of a new section of coal conveyor system, approximately 60 m in length, and coal storage bin at the Wongawilli upper pit top.

Purpose

EMM Consulting Pty Ltd has been engaged by the Wollongong Coal to prepare a Social Impact Assessment as part of the modification report for the Project. The survey identifies the potential social impacts and community concerns regarding the Project for further investigation during the development of the Social Impact Assessment. The results will inform the identification and assessment of impacts and benefits as well as strategies to minimise impacts and enhance benefits.

More information

For more information visit the Project website at www.emm.mysocialpinpoint.com/colliery. Details about Wollongong Coal can be found on their website at www.wollongongcoal.com.au.

1. Have you had any interaction with Wollongong Coal?

- [ ] Yes
- [ ] No

2. If yes, what was the topic of discussion?

3. How **satisfied** were you with Wollongong Coal's response to any issues you raised?

Not at all satisfied	Somewhat unsatisfied	Neutral	Somewhat satisfied	Very satisfied
○	○	○	○	○

4. How would you rate your **awareness** of the existing Wongawilli Colliery?

Very poor	Poor	Fair	Good	Very good
○	○	○	○	○

5. How would you rate your **awareness** of the proposed Wongawilli Colliery Modification Project?

Very poor	Poor	Fair	Good	Very good
○	○	○	○	○

6. How do you **feel about** the proposed Wongawilli Colliery Modification Project?

Strongly Opposed	Opposed	Neutral	Supportive	Strongly supportive
○	○	○	○	○

7. What **benefits** would/could the Wongawilli Colliery Modification Project bring to the region and local communities?

8. Rate the following **potential impacts** from the proposed Wongawilli Colliery Modification Project:

	Very negative	Negative	Neutral	Positive	Very positive
Air quality	○	○	○	○	○
Noise	○	○	○	○	○
Water	○	○	○	○	○
Local economy	○	○	○	○	○
Regional economy	○	○	○	○	○
Historic heritage	○	○	○	○	○
Aboriginal heritage	○	○	○	○	○
Employment	○	○	○	○	○
Amenity	○	○	○	○	○
Health	○	○	○	○	○
Traffic and transport	○	○	○	○	○
Vibration	○	○	○	○	○

Any other potential issues or impacts you wish to raise

9. Do you have any **issues or concerns** about the proposed Wongawilli Colliery Modification Project?

10. What is your **postcode**?

11. What is the name of your town/suburb?

12. How long have you lived in this community?

- ◯ Less than 1 year
- ◯ 1- 2 years
- ◯ 3-5 years
- ◯ 6-10 years
- ◯ More than 10 years

13. Which of the following age brackets do you fall into?

- ◯ Under 15
- ◯ 15-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64
- ◯ 65 and over

14. Which of the following do you identify as?
Please select all that apply to you.

- ☐ Male
- ☐ Female
- ☐ Other gender
- ☐ Aboriginal
- ☐ Torres Strait Islander
- ☐ I speak a language other than English at home
- ☐ I have a disability and/or special need
- ☐ Landholder
- ☐ Business owner
- ☐ Resident

15. Do you have any further questions about the proposed Wongawilli Colliery Modification Project?

16. Would you like to be contacted further about this project? If so, please provide your contact details below.

◯ Yes ◯ No

Your contact information. Please provide your name, email, and telephone.

Appendix H

Community Member Email Correspondence

H.1 Initial email

“Hi Santiago,

Just a couple of questions in regards to this project

1. Where will the water supply come from to be used at mine ?

2. Where will waste water be delivered?

3. If using the old wongawilli vent shaft. Will it be recommissioned as a fan shaft or will it be used as a downcast shaft ?

4. If a downcast shaft. Where will the main ventilation fan be situated?

5. What impact will all these Areas of getting the mine going again have on the new residents in wongawilli village ?

Regards

[Local resident]”

H.2 Project team response

Hi [Local resident],

Thank you for your interest in the project. Studies to determine the likely impacts and appropriate mitigations measures are currently being undertaken. Updates on the status of relevant studies can be found on the project website (https://emm.mysocialpinpoint.com/colliery/project-updates). A newsletter with more updates will be available soon from the project website.

Please see below responses to your questions.

1. Where will the water supply come from to be used at mine ?”

Water to support ongoing operations will be sourced via existing water entitlement held by Wollongong Coal. Drinking water will be supplied to surface administration facilities via connection to the Wollongong town water supply.

2. Where will waste water be delivered?

Mine water will largely be managed and reused within the mine water management system. Excess water not reused by the project may be discharged via one of the Wongawilli Colliery’s existing Environmental Protection Agency (EPA) Licensed Discharge Points.

3. If using the old wongawilli vent shaft. Will it be recommissioned as a fan shaft or will it be used as a downcast shaft ?

The existing Wongawilli Shaft 1 is intended to be recommissioned as a fan shaft (i.e. it is not intended to be used as a downcast shaft).

4. If a downcast shaft. Where will the main ventilation fan be situated?

Please see above.

5. What impact will all these Areas of getting the mine going again have on the new residents in wongawilli village ?

Studies to assess potential impacts, such as traffic, noise, air quality, are currently being undertaken to inform the project modification report. These studies take into consideration the recently developed areas in proximity to the Colliery. Updates on the status of studies undertaken to date are provided on the project website (https://emm.mysocialpinpoint.com/colliery/project-updates). Potential impacts and appropriate mitigation and management measures will be documented in the project modification report, which is expected to be finalised by late October.

Thanks again for your interest in the project.

Kind regards

Santiago"

H.3 Community member response

"Thanks for the reply

If the old Wongawilli Fan is to be recommissioned has a study been done on getting power to shaft through catchment area?

The power for this fan originally came from Wongawilli colliery site & up over the escarpment.

The power poles would now be rusted out & power lines have been removed.

Also the Richardson vertical fan at this site is now antique.

I think someone in the WCL organisation has not looked into this proposal correctly

Regards

[Local resident]"

H.4 Project team second response

Hi [Local resident],

"Thank you for your interest in the project, and your operational insight.

Your comments have been noted and we will pass your feedback on to the project team.

Kind regards,

Santiago"


FIELD
NOTES

Appendix P

Economic impact assessment

Economic Assessment of the Wongawilli Colliery Modification of Consent North West Mains Development

Prepared for

Wollongong Coal Limited

By

Gillespie Economics
Tel: (02) 9804 8562
Email: gilllespieeconomics@gmail.com

November 2020

TABLE OF CONTENTS

TABLES

EXECUTIVE SUMMARY

The Wongawilli Colliery (the Colliery) is owned and operated by Wollongong Coal Pty Ltd (Wollongong Coal). The current approval for mining, including for the development and construction of the North West Mains Development (NWMD), expires on 31 December 2020.

A modification (MOD2) to the existing Project Approval is being sought 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 NWMD. Furthermore, MOD2 seeks approval to extend the length of the approved NWMD alignment to access the existing Wongawilli Ventilation Shaft 1 and minor surface activities.

From an economic perspective there are two important aspects of MOD2 that can be considered:

- its economic efficiency (i.e. consideration of the economic costs and benefits of MOD2) which is evaluated using cost benefit analysis (CBA); and
- its effects on the local economy, which is evaluated using local effects analysis (LEA) and input-output (IO)analysis.

An important aspect of MOD2 is that from an economic efficiency (CBA) perspective it is a subcomponent of a larger future potential mining project i.e. mining within the North West Domain, for which Wollongong Coal propose to seek approval in the future. MOD2 will provide access to the North West Domain and ensure continuity of mining operations, assuming that the North West Domain Project will require a 3 to 5-year period for application preparation, submission and determination.[1]

As identified by NSW Treasury (2007, p.33), *"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 parts."*

Notwithstanding, under the *Environmental Planning and Assessment* (EP&A) *Act* projects may be disaggregated for approval purposes with technical assessments focused on the sub-component of the larger project. Consequently, the CBA examines the MOD2 in isolation but also makes reference to the potentially wider costs and benefits of the larger project.

A CBA of MOD2, indicates net production benefits to NSW at -$1.6M to $2.9M (present value at 7% discount rate) comprising royalties of $2.9M (present value at 7% discount rate) and a company tax deduction of -$4.5M, 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 Australia is $3M (present value at 7% discount rate). There will also be some additional externality costs of approximately $0.1M associated with greenhouse gas emissions, biodiversity offsets and the opportunity cost of holding groundwater licences. Over MOD2 itself would have net social benefits to NSW of -$1.7M to $2.8M (present value at 7% discount rate), the lower figure assuming a tax deduction can be realised.

The potential expected value of royalty benefits from the future North West Domain project range between $57M and $191M (present value at 7% discount rate), depending on the assumed probability of obtaining project approval. This is a minimum benefit of the larger project as it does not include potential company tax benefits and wage benefits. Any residual environmental, social and cultural impacts of this North West Domain project after mitigation, compensation and offset, would need to be

[1] Wollongong Coal acknowledges that approval of MOD2 does not guarantee approval of mining activities in the North West Domain.

compared against the estimated production benefits. This will be the subject of a future economic assessment

MOD2 will provide direct economic activity, including jobs, to the local area of Illawarra Statistical Area 4 (SA4), and indirect economic activity to the local area via both wage and non-wage expenditure. A summary of local economic effects of MOD2 is provided in Table ES1.

Table ES1 - Summary of Effects on the Local Community

Local Effects	**Direct Total**	**Direct Already Resident in the Local Area**	**Net**
Average annual direct employment FTE	56	54	26
Net income ($M)			2.5
Non-labour expenditure in the Local Area	7.5		
Regional Impacts	**Direct**	**Flow-on**	**Total**
Output ($M)	23	20	43
Value-added ($M)	9	11	19
Income ($M)	6	5	11
Employment	56	62	118
Other Local Economic Impacts			
Contraction in other sectors	No material impact*		
Displaced activities	No material impact*		
Wage rise impacts	No material impact*		
Housing impacts	No material impact*		
Local Environmental Impacts			
Greenhouse gas emissions (Scope 1 and 2)	$0.00		
Operational noise	No material impact*		
Road transport	No material impact*		
Air quality	No material impact*		
Groundwater	No material impact* - cost borne by Wollongong Coal		
Surface water	No material impact*		
Subsidence	No material impact*		
Biodiversity	No material impact* cost borne by Wollongong Coal		
Aboriginal heritage	No material impact*		
Historic heritage	No material impact*		
Net public infrastructure costs	No material impact*		

1 INTRODUCTION

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). 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), whom largely purchase coal produced at the Colliery for steel production purposes.

Project Approval 06_0161 permits:

- continued use of the surface infrastructure at the Wongawilli pit top as currently operated;
- ROM coal production at the historic level of up to 2 million tonnes per annum (Mtpa);
- mining of six longwall panels (LWs N1 to N6) in the Nebo area in the north east corner of the lease area;
- continued development and construction of the North West Mains Development (NWMD);
- continued transportation of run of mine coal from the Colliery to Port Kembla Coal Terminal (PKCT) by rail; and
- rehabilitation of the site.

Project Approval 06_0161 has been subject to one Modification application (MOD1), which was approved on 27 November 2015 to permit continued operation until 31 December 2020.

The Colliery is currently on care and maintenance operational mode but proposes to move out of this mode and recommence mining during 2020 under its current Project Approval 09-0161.

A modification (MOD2) to the existing Project Approval is being sought 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, MOD2 seeks approval to extend the length of the approved NWMD alignment to access the existing Wongawilli Ventilation Shaft 1 and minor surface activities.

This Economic Assessment has been prepared as part of the environmental assessment (EA) of proposed MOD2. Consistent with the NSW Government (2015) *Guideline for the economic assessment of mining and coal seam gas proposals*, two types of economic assessment of MOD2 are required:

- a cost benefit analysis (CBA) which is the primary way that economists evaluate the net benefits of projects and policies, provide economic justification for a project and address the public interest;

- a local effects analysis (LEA) to assess the impacts of MOD2 in the locality, specifically:

    - effects relating to local employment;
    - effects relating to non-labour project expenditure; and
    - environmental and social impacts on the local community.

Economic analysis tools such as CBA and LEA are not mechanised decision-making tools, but rather a means of analysis that provides useful information for decision-makers to consider alongside the performance of a project in meeting other government goals and objectives.

2 COST BENEFIT ANALYSIS

2.1 Introduction

CBA of MOD2 involves the following key steps:

- identification of the "with" and "without" Modification scenarios;
- identification and valuation of the incremental benefits and costs;
- consolidation of value estimates using discounting to account for temporal differences;
- application of decision criteria;
- sensitivity testing;
- consideration of non-quantified benefits and costs; and
- consideration of the distribution of costs and benefits.

What follows is a CBA of MOD2 based on financial, technical and environmental advice provided by Wollongong Coal and its specialist consultants. An explanation of CBA is provided in Attachment 1.

An important aspect of MOD2 that is to be evaluated using CBA, is that from an economic perspective it is a subcomponent of a larger future potential mining project i.e. mining within the North West Domain, for which Wollongong Coal propose to seek approval. MOD2 will provide access to the North West Domain and ensure continuity of mining operations, assuming that the North West Domain Project will require a 3 to 5-year period for application preparation, submission and determination.[2]

As identified by NSW Treasury (2007, p.33), *"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 parts."*

Notwithstanding, under the EP&A Act projects may be disaggregated for approval purposes with technical assessments focused on the sub-component of the larger project. Consequently, the CBA examines the MOD2 in isolation but also makes reference to the potentially wider costs and benefits of the larger project.

2.2 Identification of the "Without" Modification Scenarios

A starting point for CBA is to establish the "without" MOD2 scenario for the land impacted by MOD2. This becomes the base case against which to assess the potential economic, social and environmental impacts of changes due to MOD2.

Under the "without" MOD2 scenario, the current Project Approvala would be limited to December 2020 and the Colliery would remain on care and maintenance, with required rehabilitation and decommissioning occurring thereafter.

[2] Wollongong Coal acknowledges that approval of MOD2 does not guarantee approval of mining activities in the North West Domain.

2.3 Identification of the "With" Modification Scenario

MOD2 is seeking:

- to extend the life of the mine by 5 years to 31 December 2025 to enable Wollongong Coal to continue development of the approved NWMD;
- additional driveage and underground mains heading of approximately 2.9 linear km to access the existing Wongawilli Ventilation Shaft 1;
- to provide additional access to the NWMD to that currently approved via existing Portals 6 and 7;
- 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; and
- construction of a new section of coal conveyor system, approximately 60 m in length, at the Wongawilli Upper top pit.

Wollongong Coal propose to continue coal production at up to 2 Mtpa utilising largely existing surface infrastructure (i.e. coal handling, water management systems, administration facilities) at the Upper and Lower Wongawilli pit tops. Product coal will continue to be transported from the Colliery to Port Kembla by rail.

2.4 Identification of Benefits and Costs

Relative to the base case, or "without" MOD2 scenario, MOD2 by itself is associated with a range of production costs (opportunity costs, development costs and operating costs) that Wollongong Coal is willing to incur to establish access to the North West Domain and have continuity of mining operations. These production costs are partially offset by the value of coal extracted, deferred rehabilitation and decommissioning requirements at the mine site, and the residual value of land and capital at the cessation of MOD2.

In addition, there may potentially be some environmental, social and cultural impacts as a result of MOD2. These potential costs and benefits are a summarised in Table 2.1. It should be noted that if the potential externality impacts in Table 2.1 are mitigated to the extent where community wellbeing is insignificantly affected, then no external economic costs arise.

Table 2.1 - Potential Incremental Economic Benefits and Costs of MOD2

Category	Costs	Benefits
Production	• Opportunity costs of land and capital • Development costs • Operating costs, including administration, mining, processing, transportation, mitigation measures and offsets (but excluding royalties)	• Deferred rehabilitation and decommissioning • Sale value of coal • Residual value of land and capital at the cessation of MOD2
Externalities	• Environmental, social and cultural impacts	

Framed in another but equivalent way the potential incremental costs and benefits of MOD2 are as per Table 2.2. Under this frame, the potential net production benefits of mining projects comprise, royalties, company tax and residual net producer surplus. However, because MOD2 is essentially focused on a cost component of a larger project, the overall net production benefits of MOD2 will be negative, although some royalties will accrue to the NSW government.

Table 2.2 - Alternative Frame of Potential Economic Benefits and Costs of MOD2

Costs	Benefits
Direct costs	***Direct benefits***
Nil	Net production benefits • *Royalties* • *Company tax* • *Net producer surplus*
Indirect costs	
Environmental, social and cultural impacts	

When MOD2 is considered as part of a larger project involving mining in the North West Domain then net production benefits are likely to be positive, with royalties and company tax benefits accruing to Australia and NSW and net producer surplus benefits accruing to Wollongong Coal. These net production benefits need to be considered in relation to the environmental, social and cultural impacts of the larger project.

2.5 Quantification/Valuation of Benefits and Costs

Consistent with NSW Government (2015), the CBA was undertaken in 2020 real values, with discounting at 7 percent (%) and sensitivity testing at 4% and 10%.

The analysis period is seven years, comprising one year pre-MOD2, the MOD2 life and one year post MOD2.

Where competitive market prices are available, they have generally been used as an indicator of economic values. Environmental, cultural and social impacts have initially been left unquantified and interpreted using the threshold value method.[3]

An attempt has also been made to estimate environmental, cultural and social impacts using market data and benefit transfer[4] and incorporate them into an estimate of the net social benefit of MOD2.

2.5.1 Production Costs and Benefits[5]

Economic Costs

Opportunity Cost of Land and Capital

There is an opportunity costs associated with using existing land and capital at the Wongawilli Mine for MOD2, instead of realising its value at the end of the existing Project Approval. This opportunity cost is estimated at $7.1M[6] and $50M[7] for land and capital respectively.

[3]The threshold value method uses the value of quantified net production benefits as the amount that unquantified environmental, social and cultural costs would need to exceed to make a project questionable from an economic efficiency perspective.
[4] Benefit transfer refers to transferring economic values that have been determined for other study sites.
[5] All values reported in this section are undiscounted unless specified.
[6] NSW Valuer General estimate of land value for the pit top site – NSW Government Spatial Collaboration Portal.
[7] Proponent advice.

Capital Cost of MOD2

The capital cost of MOD2, including sustaining capital expenditure, is estimated at $37.3 over the MOD2 life.

Annual Operating Costs of MOD2

Compared to the base case, there will be incremental operating costs associated with MOD2 including labour costs, roadway development costs, hire costs/running costs, rejects management, rail haulage and port loading. These costs will ramp up over time to average $23.0M per annum (ex royalties), in the main three years of operation.

While royalties are a cost to Wollongong Coal they are part of the overall net production benefit of the mining activity that is redistributed by government. Royalties are therefore not included in the calculation of the resource costs of operating MOD2. Royalties, after allowance for deductions, are estimated at $3.85M in total and $2.9M present value (at 7% discount rate).

Depreciation has also been omitted from the estimation of operating costs since depreciation is an accounting means of allocating the cost of a capital asset over the years of its estimated useful life. The economic capital costs are included in the years in which they occur.

Economic Benefits

Revenues

Compared to the base case, MOD2 will result in additional revenues (and hence the royalties estimated above).

Revenues were estimated based on:

- incremental ROM coking coal production of 385,000 tonnes over the MOD2 life;
- 6.5% of ROM from the Wongawilli seam and 93.5% from the Bulli seam;
- the ROM coal produced is crushed and screened but remains unwashed and hence is sold at a discount to the benchmark hard coking coal price;
- benchmark hard coking coal price, USD/t as per KPMG average contributor pricing (Table 2.3);
- adjustment of nominal values assuming a 2% per annum inflation rate;
- unwashed Wongawilli seam coal sold at 58% of the benchmark hard coking coal price;
- unwashed Bulli seam coal sold at 78% of the benchmark hard coking coal price;
- AUD:USD exchange rate as per KPMG average contributor AUD:USD exchange rate (Table 2.4).

Table 2.3 – Price of Hard Coking Coal (USD/t Nominal)

Year ended 31 December	Reporting date	2020	2021	2022	2023	2024	LT (2020)
Contributor 2	15-Jul-20	124.7	133.0	n/a	n/a	n/a	n/a
Contributor 3	10-Jul-20	133.0	140.0	150.0	n/a	n/a	140.0
Contributor 4	9-Jul-20	123.2	127.5	147.5	n/a	n/a	n/a
Contributor 5	8-Jul-20	135.5	144.0	149.0	142.5	138.0	142.0
Contributor 6	8-Jul-20	137.0	150.0	150.0	n/a	n/a	150.0
Contributor 7	6-Jul-20	141.8	143.5	141.8	140.0	149.0	135.0
Contributor 8	6-Jul-20	132.0	153.0	n/a	n/a	n/a	n/a
Contributor 9	5-Jul-20	143.0	165.0	145.0	140.0	135.0	110.0
Contributor 10	1-Jul-20	132.0	138.0	139.0	n/a	n/a	140.0
Contributor 11	1-Jul-20	122.0	130.0	144.0	146.0	142.0	119.0
Contributor 12	1-Jul-20	141.0	145.0	n/a	n/a	n/a	130.0
Contributor 13	30-Jun-20	128.8	140.0	150.0	150.0	n/a	150.0
Contributor 14	25-Jun-20	144.0	163.0	160.0	160.0	n/a	160.0
Contributor 15	25-Jun-20	135.0	145.0	150.0	150.0	150.0	135.9
Contributor 16	25-Jun-20	133.0	145.0	145.0	150.0	149.0	135.0
Contributor 17	18-Jun-20	137.9	157.3	n/a	n/a	n/a	n/a
Contributor 18	15-Jun-20	133.0	130.5	n/a	n/a	n/a	n/a
Contributor 20	20-May-20	153.0	153.8	157.6	161.5	165.6	n/a
Low		**122.0**	**127.5**	**139.0**	**140.0**	**135.0**	**110.0**
High		**153.0**	**165.0**	**160.0**	**161.5**	**165.6**	**160.0**
Average		**135.0**	**144.6**	**148.4**	**148.9**	**146.9**	**137.2**
Median		**134.0**	**144.5**	**149.0**	**150.0**	**149.0**	**137.9**
Previous bulletin (Mar/Apr20)							
Average		**142.9**	**149.3**	**150.6**	**151.2**	**148.8**	**138.7**
Median		**146.3**	**150.0**	**150.0**	**150.0**	**150.0**	**135.4**

Source: KPMG (2020), p. 2.

Table 2.4 – AUD:USD Exchange Rate

Year ended 31 December	Reporting date	2020	2021	2022	2023	2024	LT (2020)
Contributor 1	17-Jul-20	0.67	0.68	0.69	0.70	0.70	n/a
Contributor 2	29-Jun-20	0.67	0.74	0.75	n/a	n/a	n/a
Contributor 3	10-Jul-20	0.68	0.70	0.71	n/a	n/a	0.75
Contributor 4	9-Jul-20	0.67	0.76	0.77	n/a	n/a	n/a
Contributor 5	8-Jul-20	0.65	0.69	0.71	0.74	0.74	0.74
Contributor 6	8-Jul-20	0.67	0.69	0.69	n/a	n/a	0.69
Contributor 7	6-Jul-20	0.57	0.77	0.75	0.75	0.75	0.75
Contributor 9	8-Jul-20	0.69	0.72	0.72	n/a	n/a	0.73
Contributor 10	1-Jul-20	0.67	0.69	0.70	n/a	n/a	0.74
Contributor 11	1-Jul-20	0.68	0.73	0.74	0.74	0.73	0.72
Contributor 12	17-Jun-20	0.67	0.74	n/a	n/a	n/a	n/a
Contributor 13	30-Jun-20	0.64	0.63	0.65	0.68	n/a	0.75
Contributor 14	25-Jun-20	0.65	0.70	0.75	0.75	n/a	0.75
Contributor 15	13-Jul-20	0.66	0.67	0.70	0.72	0.72	0.72
Contributor 16	25-Jun-20	0.68	0.70	0.71	0.73	0.74	0.75
Contributor 17	18-Jun-20	0.67	0.70	n/a	n/a	n/a	n/a
Contributor 18	15-Jun-20	0.66	0.70	0.72	n/a	n/a	n/a
Contributor 19	26-May-20	0.67	0.67	0.70	0.75	0.75	n/a
Contributor 20	14-Jul-20	0.64	0.64	0.64	0.64	0.64	0.64
Contributor 21	7-May-20	0.65	0.67	0.71	0.74	0.78	0.81
Low		**0.57**	**0.63**	**0.64**	**0.64**	**0.64**	**0.64**
High		**0.69**	**0.77**	**0.77**	**0.75**	**0.78**	**0.81**
Average		**0.66**	**0.70**	**0.71**	**0.72**	**0.73**	**0.73**
Median		**0.67**	**0.70**	**0.71**	**0.74**	**0.74**	**0.74**
Previous bulletin (Mar/Apr20)							
Average		**0.64**	**0.67**	**0.71**	**0.72**	**0.73**	**0.74**
Median		**0.64**	**0.68**	**0.71**	**0.73**	**0.74**	**0.75**

Source: KMPG (2020), p. 4.

Royalties

The estimated revenue became the basis for the estimation of the royalties that may accrue from MOD2. Royalties for coal are Ad Valorem i.e. charged as a percentage of the Australian dollar (AUD) value of production (total revenue less allowable deductions). For underground coal mining (apart from deep underground mining at greater than 400m depth) the royalty rate is 7.2%.

Some minor deductions are subtracted from the AUD coal revenue prior to application of the royalty rate. These make only a minor difference to the royalty calculations. However, for completeness the royalty estimated below incorporate deductions. Allowable deductions include:

- Beneficiation costs at a rate of:
  - $0.50 per tonne for coal which has been crushed and screened but not subject to a washing process.

- Levies

  - Coal research levy;
  - Mine Subsidence Levy;
  - Mines Rescue Levy; and
  - Commonwealth Levy for Long Service Leave

There is inherent uncertainty around both the USD price of hard coking coal over the life of MOD2 and the AUD/USD exchange rate. Consequently, royalties from MOD2 are calculated for a number of scenarios.

Table 2.5– Royalties from MOD2 Under Various Price and Exchange Rate Scenarios

Coal Price	Exchange Rate	Total Royalties ($ M)	Present Value of Royalties at Various Discount Rates (M)		
			4%	7%	10%
Consensus Coal Price Forecast	0.65	$4.30	$3.80	$3.50	$3.20
	0.7	$4.00	$3.50	$3.20	$2.90
	0.75	$3.70	$3.30	$3.00	$2.70
	0.8	$3.50	$3.00	$2.80	$2.60
	KPMG	$3.80	$3.40	$3.10	$2.90
20% Higher Coal Price	0.65	$4.50	$4.00	$3.60	$3.30
	0.7	$4.20	$3.70	$3.40	$3.10
	0.75	$3.90	$3.40	$3.10	$2.90
	0.8	$3.60	$3.20	$2.90	$2.70
	KPMG	$4.00	$3.60	$3.30	$3.00
20% Lower Coal Price	0.65	$4.10	$3.60	$3.30	$3.00
	0.7	$3.80	$3.30	$3.10	$2.80
	0.75	$3.50	$3.10	$2.80	$2.60
	0.8	$3.30	$2.90	$2.70	$2.40
	KPMG	$3.70	$3.20	$3.00	$2.70

Deferred Decommissioning and Rehabilitation Costs

Under the current Project Approval, decommissioning and rehabilitation of the pit top and mine would be required at cessation of the Project Approval. With MOD2 these costs are deferred until after the cessation of MOD2. With decommissioning and rehabilitation costs estimated at $35.8M, deferring these costs by five years equates to a benefit of $9.0M at 7% discount rate.

Residual Value at End of the Evaluation Period

At the end of MOD2, the value of the land and capital equipment would have some residual value. For the purpose of the analysis, this is assumed to be $7.1M and $50.0M for land and capital, respectively.

2.5.2 External Costs and Benefits

Traffic

The assessment of the traffic impacts found that the impacts of the additional traffic associated with MOD2 would be minor and traffic conditions on the adjacent road network to the mine would remain satisfactory (Transport and Urban Planning Pty Ltd, 2020). It also found that MOD2 is not expected to have any negative impacts on other road users and or on road safety on the road network (Transport and Urban Planning Pty Ltd, 2020). Consequently, there are no material impacts for inclusion in the CBA.

Aboriginal Cultural Heritage

The Aboriginal Cultural Heritage Assessment (Biosis, 2020) found no Aboriginal cultural heritage sites or areas of archaeological sensitivity within the study area. Consequently, there are no material Aboriginal Cultural Heritage impacts from MOD2 for inclusion in the CBA.

Noise and Vibration Assessment

Operational noise from Wongawilli Colliery has been assessed by EMM (2020) 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, noise emissions from the mine would reduce by up 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. Wollongong Coal propose a series of operational controls in which noise emissions would be monitored and managed to reduce the potential of noise impacts to local receptors

EMM (202) also found that:

- vibration levels are expected to be below that which could cause disturbance to residents;
- road traffic noise generated by mine-related traffic is predicted to achieve relevant road traffic noise goals;
- rail noise from up to two trains during the daytime period is predicted to comply with the relevant rail noise goal established in accordance with the RING (EPA, 2013) and is also below the current rail noise limit provided in PA 09-0161.

Air Quality

The Air Quality and Greenhouse Gas Assessment (EMM, 2020) identified that predicted impacts from the Colliery operations will not result in exceedances of any applicable criteria at any neighbouring assessment location. Consequently, there are no material air quality impacts for inclusion in the CBA.

Greenhous Gas

The Air Quality and Greenhouse Gas Assessment (EMM, 2020) identified average annual[8] Scope 1 and Scope 2 emissions of 361,297 t Co2-e and 22,029 t Co2-e, respectively.

To place an economic value on CO_2-e emissions, a shadow price of CO_2-e is required. Three shadow prices were initially used, the Forecast European Union Emission Allowance Units price, the Australian

[8] Based on 2 Mtpa operations.

Treasury Clean Energy Future Policy Scenario and the US Environmental Protection Agency (EPA) Social Cost of Carbon. However, these represent the global damage cost of carbon (i.e. the cost of carbon emissions to the population of the whole world).

For a CBA of the project to NSW, only the GHG impacts that accrue to NSW are relevant[9]. Refer to Gayer and Viscusi (2016) for discussion of these issues. 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. 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)

Ecology

MOD2 will result in clearing of 0.03ha of native vegetation comprising two PCTs and 0.01ha of threatened ecological communities. While no threatened fauna species were recorded, the presence of four species requiring offset was assumed based on the habitat.

These impacted vegetation and fauna are likely to have non-use values to the community that would be lost as a result of MOS2. These values could potentially be estimated using non-market valuation methods. However, it is government policy that the biodiversity offsets that are provided at least maintain biodiversity values within the region. The provision of offsets is also likely to have non-use values to the community that would be gained as a result of MOD2. Provided the values held by the community for the offsets are equal or greater than values that would be lost, then no additional economic costs warrant inclusion in the CBA apart from the costs of providing the offsets.

These offset costs are estimated at $20,000 which will be paid in to the NSW Biodiversity Conservation Trust Fund.

Ground water

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 assumed to be $2,000/ML i.e. $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; and
- will be negligible impact on baseflow to rivers and creeks.

Surface Water

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 (Hydro Engineering & Consulting Pty Ltd, 2020). Consequently, there are no material impacts for inclusion in the CBA.

[9] Just as only net production benefits that accrue to NSW are included.

Subsidence

The Subsidence and Geotechnical Assessment (SCT Operations Pty Ltd, 2020) found that there is no potential for the proposed main heading development roadways to cause surface ground movements of any consequences. 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. Consequently, there are no material subsidence impacts for inclusion in the CBA.

Historical Heritage

MOD2 will not have any impacts on historic heritage sites. Hence, there are no material economic impacts for inclusion in the CBA.

Net Public Infrastructure Impacts

No additional public infrastructure is required for MOD2. Potential impacts of MOD2 on existing infrastructure include the use of utilities. This will be paid for by user fees which are included in the MOD2 operating costs. Consequently, no net infrastructure costs to government are envisaged from MOD2.

Loss of Surplus to Other Industries

No loss of surplus to other industries will occur as a result of MOD2.

Market Benefits to Workers

MOD2 will provide additional employment for the regional and NSW economy. There are potentially wage benefits for these workers if wages received are in excess of their reservation wage. However, for the purpose of this assessment it is assumed that there are no wage benefits to workers. Employment impacts are further assessed in Section 3 of this report.

Economic Benefits to Existing Landholders

Payments by the proponent for the purchase of land, that exceed the opportunity cost of the land, are an economic benefit to the landholder. However, no additional land needs to be purchased for MOD2 and hence no additional benefits accrue to landholders.

Economic Benefits to Suppliers

The focus of CBA is generally on primary costs and benefits i.e. first round impacts. Secondary net benefits that accrue to firms that sell to or buy from a project are ignored. This is the approach taken in this assessment.

2.6 Consolidation of Value Estimates

2.6.1 Net Production Benefits

The present value of production costs and benefits, using a 7% discount rate, is provided in Table 2.6.

MOD2 is estimated to have global net production benefits of -$43.8M (present value at 7% discount rate). Wongawilli Coal is 100% foreign owned. Hence the components of the net production benefits that accrue to Australia are government royalties and company tax (assuming a 30% company tax rate). On this basis, the net production benefits of MOD2 that accrue to Australia are estimated at -$11.1M (present value at 7% discount rate), comprising royalties of $2.9M (present value at 7% discount rate) and a company tax deduction of -$14M, 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 Australia is $2.9M (present value at 7% discount rate).

The net production benefits can be further apportioned to NSW by assuming that company tax benefits/costs accrue to NSW based on its population share and that all government royalties accrue to NSW. On this basis, the net production benefits of MOD2 that accrue to NSW are estimated at -$1.6M to $2.9M (present value at 7% discount rate) comprising royalties of $2.9M (present value at 7% discount rate) and an apportioned company tax deduction of -$4.5M, 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 $2.9M (present value at 7% discount rate).

Table 2.6 - Net Production Benefits of MOD2 ($M Present Values at 7% Discount Rate)

	$M
Costs	
Opportunity cost of land	$6.2
Opportunity cost of land	$43.7
Capital costs	$29.8
Operating cost (ex royalties)	$56.2
Sub-total	***$135.8***
Benefits	
Deferred rehabilitation and decommissioning	$9.0
Revenue	$42.3
Residual value of land	$5.1
Residual value of capital	$35.6
Sub-total	***$92.0***
Global Net Production Benefits	**-$43.8**
Royalties to NSW Govt	$2.9
Company Tax	-$14.0
Residual Net Production Benefits	-$32.8
Global Net Production Benefits	***-$43.8***
Royalties to NSW Govt	$2.9
Company Tax	-$14.0
Residual Net Production Benefits	$0.0
Australian Net Production Benefits	***-$11.1 to $2.9***
Royalties to NSW Govt	$2.9
Company Tax	-$4.5
Residual Net Production Benefits	$0.0
NSW Net Production Benefits	***-$1.6 to $2.9***

2.6.2 Externalities

The present value of externality costs and benefits, using a 7% discount rate, is provided in Table 2.7.

Table 2.7 – NSW Externality Impacts of MOD2 (Present Values at 7% Discount Rate)

	$M
Benefits	
Wage benefits to employment	Not quantified
Economic benefits to existing landholders	$0
Economic benefits to suppliers	$0
Sub-total	***$0***
Costs	
Greenhouse gas emissions (Scope 1 and 2)	$0.02
Operational noise	No material impact*
Road transport	No material impact*
Air quality	No material impact*
Groundwater	$0.06
Surface water	No material impact*
Subsidence	No material impact*
Biodiversity	$0.02
Aboriginal heritage	No material impact*
Historic heritage	No material impact*
Net public infrastructure costs	No material impact*

From Table 2.9 it is evident that the main potential environmental, social and cultural impacts of MOD2 are immaterial from biophysical perspective and hence immaterial from an economic efficiency perspective.

The externalities that were quantified i.e. greenhouse gas emissions, opportunity cost of holding the required groundwater WALs, and biodiversity offset costs are also minor.

2.6.3 Net Social Benefits to NSW

The main decision criterion for assessing the economic desirability of a project to society is its net present value (NPV). NPV is the present value of benefits less the present value of costs. A positive NPV indicates that it would be desirable from an economic perspective for society to allocate resources to the project, because the community as a whole would obtain net benefits from the project. However, strict interpretation of the results in this way is problematic, because as identified earlier, from an economic perspective MOD2 is not a stand-alone project but is part of a larger project involving mining in the North West Domain.

The results from Table 2.6 and Table 2.7 are combined in Table 2.8 to estimate the net social benefits of MOD 2, by itself, to NSW. This indicates that MOD2 will have net social benefits to NSW of between -$1.7M and $2.8M (present value at 7% discount rate), depending on whether Wollongong Coal and can realise the tax deduction that arises from MOD2.

Table 2.8– Net Social Benefits of MOD2 (present value @ 7% discount rate) to NSW

Benefits	**$M**
Net Production Benefits	
Royalties to Government	$2.9
Company Tax	-$4.5
Residual Net Production Benefits	$0.0
Sub-total	***-$1.6 to $2.9***
Other Benefits	
Wage benefits to employment	Not quantified
Economic benefits to existing landholders	$0
Economic benefits to suppliers	$0
Sub-total	$0
Costs	
Greenhouse gas emissions (Scope 1 and 2)	$0.02
Operational noise	No material impact*
Road transport	No material impact*
Air quality	No material impact*
Groundwater	$0.06
Surface water	No material impact*
Subsidence	No material impact*
Biodiversity	$0.02
Aboriginal heritage	No material impact*
Historic heritage	No material impact*
Net public infrastructure costs	No material impact*
Sub-total	***$0.1***
Net Social Benefits	**-$1.7 to $2.8**

2.6.3 Potential Net Social Benefits to NSW of Mining in the North West Domain

MOD2 is the first stage of a larger project involving mining in the North West Domain. In this respect, Clark (2017) estimates 375 Mt of insitu coal resource potentially available to the Wollongong Coal Wongawilli Colliery.

It is recognised that subsequent stages would require a separate approval and that there is uncertainty around obtaining it. Notwithstanding, some indication of potential net production benefits to NSW of the overall project can be gained from making the following assumptions:

- ROM production of 2.1 Mtpa for 28 years commencing in five years-time;
- product coal recovery following washing of 80%;
- 100% hard coking coal;
- KPMG long term benchmark price for hard coking coal – USD137.2/t;
- KPMG long term AUD:USD exchange rate – 0.73;
- royalty rate of 7.2% of revenue (adjusted for deductions);

- various probabilities of project approval ranging from 30% to 100%.

On this basis, potential expected value of royalty benefits from the larger project range between $57M and $191M (present value at 7% discount rate), depending on the assumed probability of obtaining project approval. This is a minimum benefit of the larger project as it does not include potential company tax benefits and wage benefits. Any residual environmental, social and cultural impacts of this larger project after mitigation, compensation and offset, would need to be compared against the estimated production benefits. This will be the subject of a future economic assessment.

Table 2.9 – Potential Royalty Benefits of Mining the North West Domain

		Discount Rate	
Probability of Obtaining an Approval	**4%**	**7%**	**10%**
30%	$91	$57	$38
50%	$151	$96	$64
70%	$212	$134	$89
100%	$303	$191	$128

2.7 Distribution of NSW Costs and Benefits of MOD2

CBA is primarily concerned with the single objective of economic efficiency. CBA and welfare economics provide no guidance on what is a fair, equitable or preferable distribution of costs and benefits. Nevertheless, CBA can provide qualitative and quantitative information for the decision-maker on how economic efficiency costs and benefits are distributed.

The costs and benefits of MOD2 to NSW are potentially distributed among a range of stakeholders as identified in Table 2.10.

Table 2.10 - 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	$2.9
Company tax	NSW Government and NSW households	-$4.5
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	$0.02
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*
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*

* 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.

2.8 Risk and Sensitivity Analysis

The main areas of environmental risks associated with mining projects relate to:

- the financial viability of a project from unexpected downturns in prices and any consequent environmental impacts from premature cessation of operations;
- ecological risk associated with whether the biodiversity offsets will adequately compensate for the direct ecological impacts; and
- other environmental, social and cultural impact estimations and required mitigation measures.

The NSW DPIE has previously identified that the financial viability of projects is a risk assumed by the project owners. 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 – Division of Resources and Energy (DPIE-DRE) as the holder of a mining authority under the

Mining Act. This security deposit is held by DPIE-DRE 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-DRE to meet the relevant requirements.

The provision of biodiversity offsets can be associated with a number risks, including those that relate to the biodiversity benefits of additional management of offsets, success in reconstruction of ecological communities, time lags between impacts and provision of offsets as well as between management actions and achievement of ecological outcomes. These risks are mitigated through offset ratio requirements in the provision of offsets and commitment to pay into the Biodiversity Conservation Trust Fund whereby offsets will be obtained and managed via the Biodiversity Conservation Trust.

The net present value of MOD2 to NSW (presented in Table 2.8) is based on a range of assumptions around which there is some level of uncertainty. Uncertainty in a CBA can be dealt with through changing the values of critical variables in the analysis (James and Gillespie, 2002) to determine the effect on the NPV[10].

In this sensitivity analysis, the 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; and
- offset costs.

Results are reported in Tables 2.11. What this analysis indicates is that CBA is most sensitive to changes in revenue (reflecting production levels, the value of coal in USD and the USD/ AUD exchange rate) and to a lesser extent operating costs and capital costs. This is because changes in revenue directly impact royalties which is the main component of net production benefits to NSW. Changes in revenue also impact company tax estimates, only a component of which accrues to NSW. Changes in operating costs and capital costs do not impact royalties but do impact the estimates of company tax production benefits.

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 as a component of a larger future potential project.

[10] Quantitative risk analysis could also potentially be undertaken. However, this requires information on the probability distributions for input variables in the analysis. This information is not available and so the sensitivity testing is limited to uncertainty analysis.

Table 2.11 - NSW CBA Sensitivity Testing (Present Value $M)

	Lower Bound Estimate			Upper Bound Estimate		
	4%	**7%**	**10%**	**4%**	**7%**	**10%**
CENTRAL ANALYSIS	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
INCREASE – 20%						
Opportunity cost of land	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Opportunity cost of capital	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Operating costs	-$3.0	-$2.7	-$2.5	$3.2	$2.8	$2.5
Capital costs	-$2.4	-$2.2	-$2.1	$3.2	$2.8	$2.5
Decommissioning and rehabilitation costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Revenue	-$0.2	-$0.3	-$0.4	$3.8	$3.4	$3.0
Residual value of land	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Residual value of capital	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Greenhouse gas costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Groundwater costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Offset costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
DECREASE – 20%						
Opportunity cost of land	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Opportunity cost of capital	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Operating costs	-$0.6	-$0.6	-$0.6	$3.2	$2.8	$2.5
Capital costs	-$1.1	-$1.1	-$1.0	$3.2	$2.8	$2.5
Decommissioning and rehabilitation costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Revenue	-$3.3	-$3.0	-$2.8	$2.5	$2.2	$2.0
Residual value of land	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Residual value of capital	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Greenhouse gas costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Groundwater costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5
Offset costs	-$1.8	-$1.7	-$1.6	$3.2	$2.8	$2.5

3 LOCAL EFFECTS ANALYSIS

3.1 Introduction

The CBA in Section 2 is concerned with whether the incremental costs and benefits of MOD2 and potential costs and benefits of mining in the North West Domain. This section examines local effects.

The local area is defined as the Illawarra SA4, which includes the LGAs of Wollongong, Shellharbour and Kiama. This area is considered likely to be main source of labour and non-labour inputs for MOD2.

3.2 Direct Effects Related to Employment of Existing Residents Only

MOD2 will employ up to 150 people on site at any one time, including direct employees and contractors.

On an average annual basis, direct employment i.e. employees, is estimated at 56. Based on historic employment data (refer to Table 3.1), 97% of these workers are expected to be sourced from the local area.

Table 3.1 - Employee Residence Locations

LGA Location	% of workforce
Wollongong	73%
Shellharbour	18%
Kiama	5%
Wollondilly	3%

Source: As reported in the 2010 Environmental Assessment.

Assuming that those that already reside in the local area are already employed and that job vacancies created by these people filling the mining positions remain unfilled (i.e. no job chain effects), the incremental disposable wages from MOD2 that accrue to the region is $2.5M per annum. This is equivalent to 26 direct full time equivalent (FTE) mining jobs. This is a minimum estimate as it assumes full employment in the region and hence the jobs from which people come, to fill the mining jobs, remain vacant.

Table 3.2 - Analysis of Net Income Increase and FTE Job Increase Assuming No Job Backfilling

Attribute	No.
a) Direct incremental employment	56
Number that already reside in the region	54
b) Average net income in mining	$94,233
c) Average net income in other industries*	$48,641
d) Average increase in net income per job (b-c)	$45,592
e) Increase in net income per year due to direct employment	$2,476,553
f) FTE (e/b)	26

*This information is not available from the ABS and hence average income across all sectors is used.

3.3 Direct Effects Related to Non-Labour Expenditure

The total annual non-labour expenditure (operating costs of MOD2 after subtraction of wages) is $15.7M.

However, not all of this expenditure will accrue to the local area. From a 2016 input-output table of the local area economy developed by Gillespie Economics, approximately 47% i.e. $7.4M pa of non-labour expenditure is estimated to accrue to the local area.

3.4 Second Round and Flow-On Effects

The expenditure by employees, who reside in the region, and non-labour expenditure that is captured by the local area, provides flow-on economic activity to the local economy.

Recognised methods for assessing second round and flow-on effects such as input-output analysis (but also computable general equilibrium analysis), do not utilise direct effects of employment and income effects as calculated above in accordance with the Guidelines (NSW Government, 2015). Instead they use the total employment working in the region, with total wages (rather than net additional wages to existing employed people) divided between those who live in the region and those who reside outside the region. They do utilise estimates of non-labour expenditure, however multiplier effects are not estimate in terms on non-labour expenditure but in terms of how this and labour expenditure contribute to the local area economy in terms of direct and indirect output, value-added, income and employment. This type of assessment is reported in the following section.

3.5 Regional Economic Impact Assessment

Standard regional economic impact assessment using input-output analysis, is not restricted to a focus on the existing labour force in the local area and does not assume an absence of job chain effects. The presence of job chain effects in a region, means that to the extent that jobs from which people come, to fill the mining jobs, are themselves filled and their jobs are also filled until the lowest paid jobs are filled by people from unemployment, new labour force participants, then new wages in the region will approximate the total incremental wages associated with the mining project. Refer to Attachment 2.

In this framework, MOD2 will provide the following average annual direct and indirect effects to the local area economy:

- $43M in output;
- $19M in value-added;
- $11M in gross wages; and
- 118 jobs.

Table 3.3 – Gross Annual Direct and Indirect Regional Economic Impacts of MOD2

Indicator	Direct Impacts	Production Induced Flow-ons	Consumption Induced Flow-ons	Total Flow-ons	Total Impacts
Output ($M)	23	11	9	20	43
Type IIA Multiplier	*1.00*	*0.47*	*0.41*	*0.88*	*1.88*
Value Added ($M)	9	5	6	11	19
Type IIA Multiplier	*1.00*	*0.60*	*0.65*	*1.25*	*2.25*
Income ($M)	6	3	2	5	11
Type IIA Multiplier	*1.00*	*0.45*	*0.36*	*0.81*	*1.81*
Employment (No.)	56	28	34	62	118
Type IIA Multiplier	*1.00*	*0.50*	*0.61*	*1.11*	*2.11*

3.6 Effects on Other Industries

3.6.1 Regional Economic Impacts of Displaced Agriculture

No agricultural activities will be displaced as a result of MOD2.

3.6.2 Other Wage Impacts

In the short-run, increased regional demand for labour as a result of MOD2 (relative to the "without Modification" scenario) could potentially result in some increased pressure on wages in other sectors of the economy. The magnitude and duration of this upward wages pressure would depend on the level of demand for labour, the availability of labour resources in the region and the availability and mobility of labour from outside the region. However, given the scale of MOD2 and the availability of labour inside and outside the region, wage impacts are not likely to be significant. Where upward pressure on regional wages occurs, it represents an economic transfer between employers and owners of skills and would in turn attract skilled labour to the region leading to future downward pressure on wages.

3.6.3 Housing Impacts

MOD2 is not expected to result in any substantial in-migration of workers and their families and consequently the impact on housing prices is expected to be negligible.

3.7 Environmental and Social Impacts on the Local Community (Externalities)

The distribution of costs and benefits of MOD2 on the local area are summarised in Table 3.4. There are not considered to be any material impacts from MOD2 on the local community.

3.8 Summary of Local Effects

A summary of local effects of MOD2 is provided in Table 3.4.

Table 3.4 - Summary of Effects on the Local Community

Local Effects	**Direct Total**	**Direct Already Resident in the Local Area**	**Net**
Average annual direct employment FTE	56	54	26
Net income ($M)			2.5
Non-labour expenditure in the Local Area	7.5		
Regional Impacts	**Direct**	**Flow-on**	**Total**
Output ($M)	23	20	43
Value-added ($M)	9	11	19
Income ($M)	6	5	11
Employment	56	62	118
Other Local Economic Impacts			
Contraction in other sectors	No material impact*		
Displaced activities	No material impact*		
Wage rise impacts	No material impact*		
Housing impacts	No material impact*		
Local Environmental Impacts			
Greenhouse gas emissions (Scope 1 and 2)	$0.00		
Operational noise	No material impact*		
Road transport	No material impact*		
Air quality	No material impact*		
Groundwater	No material impact* - cost borne by Wollongong Coal		
Surface water	No material impact*		
Subsidence	No material impact*		
Biodiversity	No material impact* cost borne by Wollongong Coal		
Aboriginal heritage	No material impact*		
Historic heritage	No material impact*		
Net public infrastructure costs	No material impact*		

[1] The Ilawarra SA4 Local Area population is a small fraction of the NSW population. NSW GHG impact have been apportioned accordingly.

4 CONCLUSION

A CBA of MOD2, indicates net production benefits to NSW at -$1.6M to $2.9M (present value at 7% discount rate) comprising royalties of $2.9M (present value at 7% discount rate) and a company tax deduction of -$4.5M, 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 $2.9M (present value at 7% discount rate). There will also be some additional externality costs ($0.1M, present value at 7% discount rate) associated with greenhouse gas emissions, biodiversity offsets and the opportunity cost of holding groundwater licences. Overall MOD2 is estimated to have net social benefits to NSW of between -$1.7M and $2.8M (present value at 7% discount rate).

However, from an economic perspective, MOD2 is part of a larger project involving mining in the North West Domain. The expected value of royalty benefits from mining in the North West Domain range from $57M and $191M (present value at 7% discount rate), depending on the assumed probability of obtaining project approval. This is a minimum benefit of mining in the North West Domain as it does not include potential company tax benefits and wage benefits. Any residual environmental, social and cultural impacts of this larger project after mitigation, compensation and offset, would need to be compared against the estimated production benefits. This will be the subject of a future economic assessment

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.

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ATTACHMENT 1 - COST BENEFIT ANALYSIS

Introduction to CBA

Cost Benefit Analysis (CBA) has its theoretical underpinnings in neoclassical welfare economics. Applications in New South Wales (NSW) are guided by these theoretical foundations as well as the NSW Treasury (2017). CBA applications within the NSW environmental assessment framework are further guided by the NSW Government (2015) *Guidelines for the economic assessment of mining and coal seam gas projects* and the *NSW Government (2018) Technical Notes supporting the Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals.*

CBA is concerned with a single objective of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) and governments i.e. economic efficiency. It provides a comparison of the present value of aggregate benefits to society, as a result of a project, policy or program, with the present value of the aggregate costs. These costs and benefits are defined and valued based on the microeconomic underpinnings of CBA. In particular, it is the values held by individuals in the society that are relevant, including both financial and non-financial values. Provided the present value of aggregate benefits to society exceed the present value of aggregate costs (i.e. a net present value of greater than zero), the project is considered to improve the well-being of society and hence is desirable from an economic efficiency perspective.

While CBA can provide qualitative and quantitative information on how costs and benefits are distributed, welfare economics and CBA are explicitly neutral on intra and intergenerational distribution of costs and benefits. There is no welfare criterion in economics for determining what constitutes a fair and equitable distribution of costs and benefits. Judgements about equity are subjective and are therefore left to decision-makers.

Similarly, CBA does not address other objectives of the EP&A Act and governments. Decision-makers therefore need to consider the economic efficiency implications of a project, as indicated by CBA, alongside the performance of a project in meeting other conflicting goals and objectives of the EP&A Act and government.

Definition of Society

CBA includes the consideration of costs and benefits to all members of society i.e. consumers, producers and the broader society as represented by the government.

As a tool of investment appraisal for the public sector, CBA can potentially be applied across different definitions of society such as a local area, state, nation or the world. However, most applications of CBA are performed at the national level. This national focus extends the analysis beyond that which is strictly relevant to a NSW government planning authority. However, the interconnected nature of the Australian economy and society creates significant spill-overs between States. These include transfers between States associated with the tax system and the movement of resources over state boundaries.

Nevertheless, "where major impacts spill over national borders, then CBA should be undertaken from the global as well as the national perspective" (Boardman *et al.,* 2001). For mining projects, impacts that spill over national borders include greenhouse gas costs and producer surplus benefits to foreign owners.

CBA at a sub-national perspective is not recommended as it results in a range of costs and benefits from a project being excluded, making CBA a less valuable tool for decision-makers (Boardman *et al*., 2001).

CBAs of mining projects are therefore often undertaken from a global perspective i.e. including all the costs and benefits of a project, no matter who they accrue to, and then truncated to assess whether there are net benefits to Australia. A consideration of the distribution of costs and benefits can then be undertaken to identify the benefits and costs that accrue to NSW and other regions.

However, a project is considered to improve the well-being of society if it results in net benefits to the nation, even if it results in net costs to the local area.

Definition of the Project Scope

The definition of the project for which approval is being sought has important implications for the identification of the costs and benefits of a project. Even when a CBA is undertaken from a global perspective and includes costs and benefits of a project that accrue outside the national border, only the costs and benefits associated with the defined project are relevant. For coal mining projects, typically only the costs and benefits from mining the coal and delivering it to Port or domestic users, are relevant.

Coal is an intermediate good i.e. it is an input to other production processes such as production of electricity and steel making. However, these other production processes themselves require approval and, in CBA, would be assessed as separate projects.

Net Production Benefits

CBA of mining proposals invariably involves a trade-off between:

- the net production (producer surplus) benefits of a project; and
- the environmental, social and cultural impacts (most of which are costs of mining but some of which may be benefits).

Net production benefits can be estimated based on market data on the projected financial[11] value of coal less the capital and operating costs of projects, including opportunity costs of capital and land already in the ownership of mining companies. This is normally commercial in confidence data provided by the proponent. Production costs and benefits over time are discounted to a present value.

Environmental, Social and Cultural Impacts

The consideration of non-market impacts in CBA relies on the assessment of other experts contributing information on the biophysical impacts. The environmental impact assessment process results in detailed (non-monetary) consideration of the environmental, social and cultural impacts of a project and the proposed means of mitigating the impacts.

At its simplest level, CBA may summarise the consequences of the environmental, social and cultural impacts of a project (based on the assessments in the relevant assessment document), for people's well-being. These qualitatively described impacts can then be considered alongside the quantified net production benefits, providing important information to the decision-maker about the economic efficiency trade-offs involved with a project.

These environmental, social and cultural impacts generally fall into three categories, those which:

- can be readily identified, measured in physical terms and valued in monetary terms;

[11] In limited cases the financial value may not reflect the economic value and therefore it is necessary to determine a shadow price for the coal.

- can be identified and measured in physical terms but cannot easily be valued in money terms; and
- are known to exist but cannot be precisely identified, measured or value (NSW Treasury, 2007).

Impacts in the first and second category can potentially be valued in monetary terms using benefit transfer or, subject to available resources, primary non-market valuation methods. Benefit transfer involves using information on the physical magnitude of impacts and applying per unit value estimates obtained from non-market valuation studies undertaken in other contexts.

Primary non-market valuation methods include choice modelling and the contingent valuation method where a sample of the community is surveyed to ascertain their willingness to pay to avoid a unit change in the level of a biophysical attribute. Other methods include the property valuation approach where changes in environmental quality may result in changes in property value.

In attempting to value the impacts of a project on the well-being of people there is also the practical principle of materiality. Only those impacts which are likely to have a material bearing on the decision need to be considered in CBA (NSW Government, 2012).

Where benefits and costs cannot be quantified these items should be included in the analysis in a qualitative manner (NSW Treasury, 2007).

Consideration of Net Social Benefits

The consideration of the net social benefits of a project combines the value estimate of net production benefits and the qualitative and quantitative estimates of the environmental, social and cultural impacts.

In combining these considerations, it should be noted that the estimates of net production benefits of a project generally include accounting for costs aimed at mitigating, offsetting or compensating for the main environmental, social and cultural impacts. This includes the costs of purchasing properties adversely affected by noise and dust, providing mitigation measures for properties moderately impacted by noise and dust, the costs of providing ecological offsets and the cost of purchasing groundwater and surface water entitlements in the water market etc. Including these costs effectively internalises the respective and otherwise, non-monetary environmental, social and cultural costs. To avoid double counting of impacts, only residual impacts, after mitigation, offset and compensation, require additional consideration.

Even when no quantitative valuation is undertaken of the environmental, social and cultural impacts of a project, the threshold value approach can be utilised to inform the decision-maker of the economic efficiency trade-offs. The estimated net production benefits of a project provides the threshold value that the non-quantified environmental, social and cultural impacts of a project (based on the assessments in the relevant assessment document), after mitigation, offset and compensation by the proponent, would need to exceed for them to outweigh the net production benefits.

Where the main environmental, social and cultural impacts of a project are valued in monetary terms, stronger conclusions can be drawn about the economic efficiency of a project i.e. the well-being of society.

Any other residual environmental, cultural or social costs that remain unquantified in the analysis[12] can also be considered using the threshold value approach. The costs of these unquantified environmental,

[12] Including potential impacts that were unknown at the time of the preparation of the relevant assessment document or arise during the Environmental Impact Assessment process due to differences in technical opinions.

cultural and social impacts would need to be valued by society at greater than the quantified net social benefit of a project to make it questionable from an economic efficiency perspective.

REFERENCES

Boardman, A., Greenberg, D., Vining, A. and Weimer, D. (2001) *Cost-Benefit Analysis: Concepts and Practice, Prentice Hall, USA*.

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ATTACHMENT 2 – COMPARISON OF INPUT-OUTPUT ANALYSIS AND THE LEA METHOD

IO analysis begins with identification of the direct gross regional economic activity footprint of a project for the region. If a project provides 100 jobs at the mine site then all these jobs are counted in IO analysis as a direct effect i.e. direct employment in the region, because the jobs are located in the region. All income paid to employment is also included as it is generated in the economy and IO tables are based on place of work. However, in assessment of the impacts of a project on the regional economy only the income of employees living in the region are counted as direct income effects since it is only wages expenditure of those living in the region that flows through the regional economy. In IO analysis, if 40% of a project's jobs are filled by people who already reside in the region then the **total** wages of these people is counted as a direct regional income effect of the project. Similarly, if 40% of the new jobs are taken by people who migrate into the region this is also counted as direct income for the region, as it is income that will accrue to people living in the region even though they are new residents. In impact assessment using IO analysis, the income of those residing outside the region is excluded as most of their income will be taken home after shift and spent where they live or elsewhere.

These direct employment and income effects for the region are those **associated** with the project i.e. the gross footprint, rather than specifically an assessment of **incremental** effects. This is partly because assessment of incremental effects becomes highly contentious and difficult. However, as will be shown below, these gross direct effects associated with a project can also be a reasonable approximation of incremental effects when "job chain" effects are considered.

However, first is a comparison between how IO analysis treats direct employment and income effects (as explained above) and that in the NSW (2015) guideline.

The guideline splits labour into those ordinarily resident in the region and those not ordinarily resident in the locality. For those ordinarily resident in the region the guideline suggests calculation of incremental income as the difference between a mining (including quarrying) income and the average level of income in other industries in the region. Incremental direct employment is then calculated by dividing this incremental income by the average wage in mining.

The guideline ignores workers who migrate into the region to work. However, using the rationale of the guideline, workers who migrate into the region to take jobs in a project provide a greater level of incremental income and spending in the region than those to take jobs in a project and who already reside in the region. The entire wage of those migrating into the region is additive to regional income in comparison to wage increments for those already residing in the region.

Table 1 provides an example of incremental wages using the guideline method and when income from those migrating into the region is counted. If only the incremental wages of those who already reside in the region are counted the incremental impact is $1.4M in annual wages. However, if the incremental wages to the region from those who migrate into the region are included, this increases to $5.4M.

Table 1 - Incremental Income when Immigrating Workforce is Included

Categories of Workers	Direct Empl	Current Wages @$65k	New Wages @$100k	Incremental New Wages for Workers	Incremental New Wages to the Region
Already Live in Region	40	2,600,000	4,000,000	1,400,000	1,400,000
Migrate into Region to Live	40	2,600,000	4,000,000	1,400,000	4,000,000
Commute from outside	20	1,300,000	2,000,000	700,000	0
Total Direct Empl	**100**	**6,500,000**	**10,000,000**	**3,500,000**	**5,400,000**

Even for those already living in the region who are already employed, the incremental income estimated using the guideline will substantially understate additional regional income effects. This is because new jobs in a region create a chain of job opportunities (referred to in the literature as the "job chain" - see Persky et al, 2004 What are jobs worth?, Employment Research Vol. 11 , p. 3).

An already employed person in the region moving into a mining (including quarrying) job, creates a job vacancy, which can be filled by those in the region (already employed, unemployed or attracted into the labour force) or by in-migration. Where this job is filled by those already employed in the region this in turn creates another vacancy etc. Following the entire chain through, the cumulative increase in wages to a region would approach the wages of the total direct mining jobs. It would only be discounted if the chain ends with employment of those from local residents in the unemployment pool (who are receiving an allowance and hence already are spending income in the region), if jobs remain unfilled or if jobs are filled by a commuter workforce. The latter is less likely for lower paying jobs down the job chain. In periods of higher unemployment rates, jobs along the job chain remaining unfilled is unlikely. If the chain ends with in-migrating employment or employment of those in the region that are new to the workforce then the incremental wages is equal to the total wages of the new jobs.

Table 2 demonstrates the "job chain" effect in relation to 40 new mining jobs filled by already employed local workers. It shows that the total annual wages of the new mining jobs is $4M. Under the job chain approach where all jobs are backfilled including ultimately by 40 local residents from the unemployment pool the incremental wages to the region are $3.5M. If some of these jobs filled from the unemployment pool are ultimately filled by in-migration the difference between the incremental wages to the region and the total annual mining jobs wages will lessen.

The guideline does not take account of the "job chain" effect and essentially assumes that the previous jobs of "job movers" in the region remain vacant for the life of the Project.

Incorporation of consideration of the "job chain" effect means that the direct incremental income to a region approximates that assumed in IO analysis (i.e. the gross footprint of economic activity estimated using IO analysis is also an indicator of the net effect).

Table 2 - Demonstration of the Job Chain Effect for 40 Jobs Filled by Locals Who are Already Employed in the Region

	Total wages	Increment Wages Gain to Region
1. New mining wage for 40 workers @$100k	$4,000,000	$1,400,000 (1-2)
2. Current Wages for 40 workers @$65k	$2,600,000	$1,000,000 (2-3)
3. Wage of people filling above 40 positions @$40k	$1,600,000	$800,000 (3-4)
4. Wage of people filling above 40 positions @$20k	$800,000	$ 255,664 (4-5)
5. Wages of the unemployed filling above 40 positions (Newstart - single no children)	$544,336	
Total		**$3,455,664**