



## **APPENDIX K**

### Social Impact Assessment

# DENDROBIUM MINE - PLAN FOR THE FUTURE: COAL FOR STEELMAKING PROJECT



SOCIAL IMPACT ASSESSMENT  
APRIL 2019

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## Executive Summary

Illawarra Coal Holdings Pty Ltd (Illawarra Coal) is seeking consent to undertake the *Dendrobium Mine – Plan for the Future: Coal for Steelmaking* (the Project), to gain access to two proposed future underground mining areas which are situated beneath an area of WaterNSW's Metropolitan Special Area (MSA). If approved, the Project would enable continuity of Dendrobium Mine's operations to 2048.

This Social Impact Assessment (SIA) was undertaken during February 2017 – October 2018 as part of the Project's Environmental Impact Statement. The SIA is focused on the proposed Project, however it considers the extent to which Dendrobium Mine's social impacts and benefits would continue or change as a result of the Project. Potential effects relating to refusal of development consent for the Project are also outlined.

Project benefits at the local level include:

- sustaining Mount Kembla's traditional identity as a mining community;
- access to Project employment; and
- contributions to community well-being as a result of Illawarra Coal's community investments and partnerships.

Material increases or intensification of Dendrobium Mine's current impacts on amenity and way of life are not anticipated.

Project impacts at the local level would include:

- potential for rail noise to affect residential amenity in Mount Kembla, Cordeaux Heights, Unanderra and Figtree, but with less severity and frequency than experienced prior to 2017;
- an ongoing contribution to traffic in Mount Kembla, and on Cordeaux Road, Picton Road and Appin Road, with consequent potential for impacts on amenity and community concerns about traffic safety;
- occasional contributions to dust affecting homes downwind of Kemira Valley; and
- community concern about the potential for the Project to affect the MSA's capacity for water supply.

Project benefits for the Wollongong Local Government Area (LGA) include:

- the creation of approximately 207 jobs during the initial construction and development phase;
- continuity of employment for mine personnel including Dendrobium Mine's current 265 employees and 140 Full Time Equivalent (FTE) contractors;
- an increase in employment opportunities, with approximately 507 operational personnel required at full development;
- maintaining a major component of the LGA's mining employment opportunities; and
- support for population stability and housing demand within the LGA.

Continuation of existing relationships between Dendrobium Mine and suppliers, BlueScope Steel and Port Kembla Coal Terminal would be supported by the Project, supporting substantial indirect employment in the Wollongong LGA for the current labour force and the next generation.

The SIA did not identify any significant potential for the Project to have negative impacts on social indicators such as population size, housing cost or social infrastructure access.

Residents in the Wollongong LGA and broader region are likely to share concerns about the Project's potential impacts on environmental values or the MSA's capacity to supply water. Concern was

expressed in consultation that any effects on groundwater or surface water would have negative inter-generational impacts for people in the Illawarra and greater Sydney regions. Investigation of these issues is beyond the scope of the SIA, but community concerns are acknowledged.

The SIA describes Illawarra Coal's mitigation commitments and recommends a mitigation and monitoring framework which would support adaptive management of the Project's social impacts and enhance its community benefits.

# 1 Introduction

The Dendrobium Mine is located in the Southern Coalfield of New South Wales (NSW), approximately 8 kilometres (km) west of Wollongong, with key surface facilities located in the town of Mount Kembla. Dendrobium Mine primarily produces hard coking coal for steelmaking and has an approved operational capacity of up to 5.2 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal until 31 December 2030<sup>1</sup>.

Illawarra Coal Holdings Pty Ltd (Illawarra Coal), which is a wholly owned subsidiary of South32 Limited (South32), is seeking consent to undertake the *Dendrobium Mine – Plan for the Future: Coal for Steelmaking Project* (the Project), to gain access to two proposed future underground mining areas. If approved, the Project would facilitate continuity of operations until 2048.

Elliott Whiteing was commissioned by South32 to prepare a Social Impact Assessment (SIA) as part of the Project's Environmental Impact Statement (EIS). This report documents the SIA, and is structured as follows:

- the remainder of Section 1 describes Project elements of interest to the SIA, relevant elements of South32's corporate standards, the NSW Government's requirements for SIA, stakeholder engagement undertaken and key issues raised, and the SIA methodology;
- Section 2 defines the stakeholder inputs on the scope of assessment, matters considered, the Project's area of social influence, potentially material impacts, and links to other EIS technical assessment findings;
- Section 3 documents the social baseline for the local and regional areas of social influence, and integrates findings from stakeholder engagement;
- Section 4 details the Project's potential social impacts and benefits, supported by stakeholder engagement findings, and provides an evaluation of significance;
- Section 5 provides the framework for adaptive management and monitoring including recommended mitigation and enhancement strategies; and
- Section 6 provides the SIA's conclusions.

The analysis in this report is supported by Appendix A: Supplementary Data and Appendix B: Social Impact Assessment Engagement. A cross-reference between SIA Guideline review questions and the SIA is provided in Appendix C: Review Questions.

## 1.1 Project elements

The Project is focused on underground mining in Areas 5 and 6 along with ancillary works, surface activities and logistics. It does not include approved underground mining areas at the Dendrobium Mine.

The SIA is focused on the proposed Project however it considers the extent to which existing social impacts and benefits of Dendrobium Mine would continue or change as a result of the Project proceeding or not proceeding.

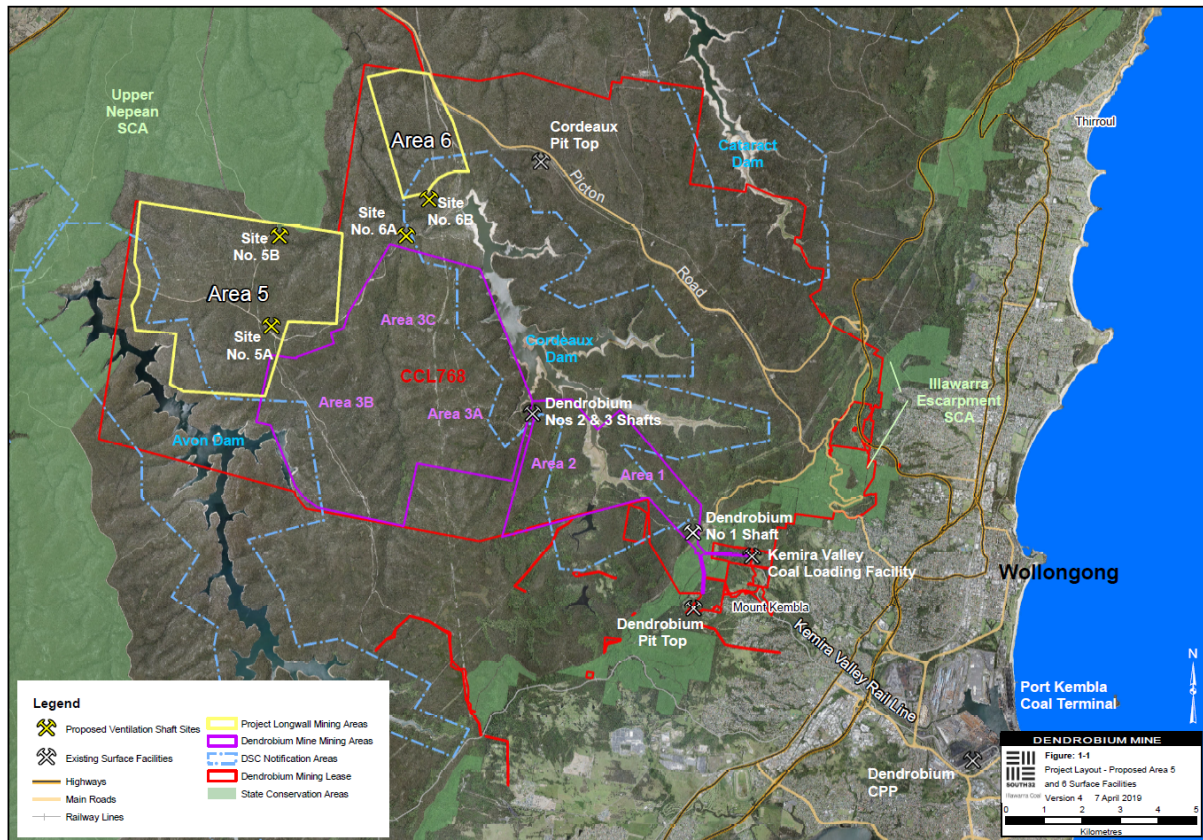
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<sup>1</sup> In accordance with Dendrobium Mine Development Consent DA 60-03-2001



Figure 1-1 shows the Project layout. The following subsections describe Project elements which have potential to affect the social environment.

**Figure 1-1: Project Layout – Proposed Areas 5 and 6 and Surface Facilities**



Source: South32, 2019

### 1.1.1 Existing mine

Illawarra Coal is the owner and operator of the Dendrobium Mine. Construction of the Dendrobium Mine commenced in 2002, and longwall mining commenced in April 2005. The Dendrobium Mine includes five approved underground mining areas: Areas 1, 2, and 3A, where extraction is largely complete, Area 3B (where longwall mining is currently being undertaken), and Area 3C where mining is planned.

Key surface infrastructure is shown in Figure 1-1 and includes:

- the Dendrobium Pit Top which is located between Mount Kembla and Kembla Heights;
- the Kemira Valley Coal Loading Facility (KVCLF), north of Mount Kembla;
- the Kemira Valley Rail Line (KVRL), which runs from the KVCLF through the suburbs of Cordeaux Heights, Unanderra and Figtree to Port Kembla;
- the Dendrobium Coal Preparation Plant (CPP), which is located within the Port Kembla Steelworks precinct; and
- Dendrobium Shafts Nos 1, 2 and 3, roadways and drifts.

Dendrobium Mine (including the CPP) operate 24 hours, seven days/week, and rail transport operates from 6.00 a.m. to 11.00 p.m. seven days/week.

### 1.1.2 Project works and operations

The Project would access two proposed future underground mining areas described as Area 5 and Area 6 (see Figure 1-1), which are situated beneath an area of WaterNSW drinking water catchment designated as Metropolitan Special Area (MSA).

Project construction (first workings development in Areas 5 and 6) could commence in 2020. Coal mined from Areas 5 and 6 would extend until approximately 2048 (18 years longer than the current approved Mine life).

The Project would include minor upgrades and extensions of the existing surface infrastructure and the construction and development of new ventilation and gas management infrastructure within the MSA. The Cordeaux Pit Top located on Picton Road west of the escarpment, which is currently under care and maintenance, would continue to be used for mining support activities and would be augmented for use as the main mine access later in the Project life.

ROM coal would continue to be transported via the KVRL to the Dendrobium CPP in the Port Kembla Steelworks precinct. As with the existing operation, product coal would be transported to the KVCLF via an underground conveyor, and to the Dendrobium CPP via the KVRL, for processing and delivery to the Port Kembla Steelworks for steelmaking or Port Kembla Coal Terminal for export.

The Project would include the continued use of the approved West Cliff Stage 3 and Stage 4 Coal Wash Emplacement, with up to approximately 1.3 Mtpa of coal wash to be transported by road from the Dendrobium CPP to the coal wash emplacement area or to customers for engineering purposes (e.g. civil construction fill) or other beneficial uses.

A full description of the Project is provided in the EIS.

### 1.1.3 Project workforce

The Project would create approximately 207 jobs during the initial construction and development phase (potentially 2020-2022). The majority of construction workers (145 people or 70 per cent [%]) would be employed for up to three years, whilst the remaining construction workforce would be employed for between approximately 12 months and 2 years.

Other minor construction works would occur at the Cordeaux Pit Top, the KVCLF, Dendrobium CPP, existing Dendrobium Shaft Sites, in Area 6 for ventilation shaft construction activities, and along the KVRL over the life of the Project, along with general underground development works.

The Project would enable continuity in coal production and extend until 2048. It is anticipated that the operational workforce would be augmented during the Project to accommodate additional development units and additional gas management works. At full development, the Project would employ up to 507 operational personnel. This would include a mixture of Illawarra Coal staff and on-site contractor personnel. Personnel numbers would decrease in the years prior to the mine's closure and decommissioning.

Table 1-1 outlines the estimated number of jobs which would be available in the construction and operational phases. These estimates were provided by Illawarra Coal, based on Project planning for construction, and the existing number of employees and contractors required to operate Dendrobium Mine.

**Table 1-1: Initial estimates of Project workforce numbers**

Phase	Personnel
Construction	
Underground works (development and installation)	142
Surface shaft area works, power services and Dendrobium Pit Top upgrades	65
Total initial construction and development workforce	207
Operations	
Existing employees	265
New mining employee estimate	100
New maintenance employee estimate	2
Contractors	140
Total operational workforce	507

In assessing the potential for changes to the workforce, and consequential changes for population, housing and social infrastructure, the geographic distribution of Dendrobium Mine's current employees was considered as indicative of the Project's workforce distribution.

Analysis of current employees' residential addresses indicated that the majority live in the Wollongong Local Government Area (LGA) and nearby LGAs. The survey indicates that approximately 56% of the mine's current employees live in the Wollongong LGA, with approximately 30% based in the Shellharbour LGA, 6% in the Kiama LGA and approximately 1% in the Wollondilly or Wingecarribee LGAs. Approximately 5% of employees surveyed did not provide their residential location, whilst the balance was distributed between Shoalhaven, Camden and Sutherland LGAs.

#### 1.1.4 Suppliers and customers

The Project would enable continuation of existing relationships between Dendrobium Mine and suppliers in the Wollongong and other LGAs. A review of the Mine's current supplier network is provided in Section 4.4.7.

Project expenditure during both construction and operations is likely to support additional local and regional employment through businesses and services, as discussed in Appendix L to the EIS (Economic Impacts).

Illawarra Coal supplies approximately 60% of BlueScope Steel's coking coal requirements from coal extracted at the Dendrobium Mine and Appin Mine. Illawarra Coal also sends coking coal through the Port Kembla Coal Terminal for export. The Project would enable continuation of the existing relationships between Dendrobium Mine and these customers located within the Wollongong LGA.

#### 1.1.5 South32 Policy framework

South32's Sustainability Policy affirms a commitment to sustainable development, defined as *'supporting the needs of the present without compromising the ability of future generations to meet their own needs'*. Of particular relevance to the SIA, South32's commitments include:

- we monitor the external environment for opportunities to invest and develop natural resources that deliver shared value for society;
- we work to achieve positive social, environmental and economic outcomes;
- we support employment and community practices which empower people to make choices and

have control over their process of development as it affects their lives, beliefs, institutions, well-being and the lands they occupy or otherwise use;

- we continually improve safety, health, environmental practice, management systems and controls to ensure impacts are avoided, mitigated and managed; and
- we publicly report our progress and encourage high standards of transparency and accountability in our business governance, risk and government interactions.

South32's Community Standard outlines the company's commitments to understanding communities' baseline values, assessing and monitoring social impacts, and community engagement. The Community Standard includes the commitment that *'our purpose is to make a difference by developing natural resources, improving people's lives now and for generations to come.'* The Community Standard notes that community engagement contributes to achieving this purpose by developing meaningful relationships which engender trust and identify opportunities to make this contribution to improving people's lives and work.

South32's approach to community engagement is informed by International Council of Mining and Metals (ICMM) principles<sup>2</sup> and in particular by ICMM Principle 9 which is:

- Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities;
- Engage at the earliest practical stage with all likely affected parties to discuss and respond to issues and conflicts concerning the management of social impacts;
- Ensure that appropriate systems are in place for continual interaction with affected parties;
- Ensure that minorities and other marginalised groups have equitable and culturally appropriate means of engagement;
- Contribute to community development from exploration to closure in collaboration with host communities and their representatives;
- Encourage partnerships with governments and non-governmental organisations to ensure that programmes (such as community health, education, local business development) are well designed and effectively delivered; and
- Enhance social and economic development by seeking opportunities to address poverty.

## 1.2 Requirements for Social Impact Assessment

The Project has been declared as State Significant Development, and Development Consent is therefore being sought under the NSW *Environmental Planning and Assessment Act 1979*. The NSW Government's requirements for the SIA are described below.

### 1.2.1 Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements (SEARs) for the EIS were issued on 6 February 2017 and require assessment of likely social impacts of the Project, including:

- address the demand for the provision of local infrastructure and services;

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<sup>2</sup> ICMM. 2018



- consult with relevant local and State Government authorities, service providers, community groups and affected landowners; and
- identify the issues that were raised in consultation, and explain how they have been addressed in the EIS.

The *Social impact assessment guideline for State significant mining, petroleum production and extractive industry development* (SIA Guideline) (NSW DPE, 2017) was finalised and published in September 2017, allowing transitional arrangements for SIAs that commenced prior to its publication. Supplementary SEARs were issued by the Department of Planning and Environment (DPE) on 7 November 2017 that included the requirement for a detailed assessment of the likely social impacts of the development on the local and regional community in accordance with the SIA Guideline.

### 1.2.2 SIA Guideline

The SIA was conducted in accordance with the NSW Planning and Environment's SIA Guideline. This included:

- consideration of key matters (see Section 2.2);
- an inclusive stakeholder engagement process, including early involvement of stakeholders in scoping and assessing social impacts (see Sections 1.3 and 2.1);
- providing a thorough explanation of the SIA process (see Section 1.4) and assumptions used (Table 2-5);
- differentiation of the local and regional contexts (see Section 2.3);
- preliminary assessment of whether impacts, without mitigation, were expected to cause a material effect, considering the impacts' extent, duration, severity and sensitivity (see Section 2.5);
- provision of a social baseline which addresses planning and representation, the settlement pattern and community history, personal and property rights, culture, community composition, housing access, employment and economic development, and access to social infrastructure (see Section 3);
- developing suitable indicators in relation to pre-existing social conditions (see Section 3.8);
- assessment of all matters with potential to affect social values or indicators (see Section 4);
- analysis and assessment of direct, indirect and cumulative impacts for all stages of the Project (see Sections 2.4 and 4.8);
- integration of relevant findings with a bearing on the social environment from other EIS disciplines (see Sections 2.4.4, 4.1 and 4.2);
- evaluation of the significance of social impacts, before and after mitigation (see Section 4.10); and
- development of adaptive management and monitoring strategies (see Section 5).

In accordance with the transitional provisions, use of the SIA Guideline's scoping tool was not required as the SEARs were issued prior to the release of the SIA Guideline, however the SIA applies the SIA Guideline criteria to identify the potential for material effects (see Table 2-4).



### 1.2.3 Objectives

*Social impact assessment is a process, not a product*<sup>3</sup>. Whilst an SIA is usually produced to support assessment of a project, its key aim is to enable the project to have good social outcomes and contribute to socially sustainable development. The International Principles for Social Impact Assessment define SIA as being “*the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions*”<sup>4</sup>. As social environments are complex and dynamic, this requires an ongoing process of management and monitoring throughout the life of the Project.

The objectives for this SIA were to:

- develop a comprehensive baseline of social conditions based on research, analysis and stakeholder engagement;
- identify potential direct, indirect and cumulative impacts and their distribution;
- provide an inclusive stakeholder engagement process to inform the baseline, impact assessment and mitigation development;
- undertake preliminary assessment of social impacts and benefits in order to ensure the assessment is focused on material effects on the social environment;
- provide a detailed assessment of likely impacts and benefits, and their significance for each stage of the Project (construction, operation and post-mining);
- consider biophysical impacts and their interaction with social values;
- develop both strategies to avoid or mitigate social impacts, and actions which would enhance social benefits; and
- provide a monitoring and reporting strategy to support adaptive management of social impacts.

## 1.3 SIA engagement

SIA stakeholder engagement was designed to involve local community members and stakeholders representing wider community and regional interests. The objectives of SIA engagement were to:

- involve key stakeholders in reviewing and defining the scope of assessment;
- collect quantitative and qualitative data for the social baseline;
- ensure stakeholders in the Dendrobium Mine Zone of Influence were informed about the SIA and had opportunities to provide input to the assessment and mitigation strategies;
- understand the interests and perspectives of people who may be directly affected by Project impacts; and
- ensure that the assessment and evaluation of impacts were informed by the knowledge and experience of local stakeholders.

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<sup>3</sup> Vanclay, F. et. al. 2015

<sup>4</sup> Vanclay, F. 2003

### 1.3.1 Key issues raised

SIA consultation was undertaken during May-September 2017, with follow up consultation undertaken with the Dendrobium Community Consultative Committee (DCCC) on 20 September 2018 and with rail noise affected stakeholders in early October 2018. Stakeholders, engagement mechanisms and the key issues raised are shown in Table 1-2, with further detail following. A detailed record of SIA stakeholder engagement is provided as Appendix B.

**Table 1-2 Stakeholder groups, engagement methods and key issues**

Stakeholder groups	Engagement methods	Key issues
Mount Kembla and Kembla Heights communities  Figtree, Unanderra and Cordeaux Heights residents within Dendrobium Mine's Zone of Influence	Letter and Community Survey distributed to 900 local households and community facilities (113 participants)  Four meetings with the DCCC  Interviews with DCCC and Dendrobium Community Enhancement Committee (DCEC) members (10 people)	<ul style="list-style-type: none"> <li>Impacts on environmental values</li> <li>Traffic volumes and safety including Cordeaux Road and Picton Road</li> <li>Rail noise</li> <li>Effects on local amenity and enjoyment of private properties (principally through rail noise)</li> <li>Potential for negative impacts on water catchment hydrology with potential to affect drinking water supply</li> <li>Limited employment benefits in communities closest to the Dendrobium Mine – employees are dispersed across the LGA</li> <li>Potential effects on housing affordability</li> <li>Positive effects of employment availability</li> <li>Positive effects on local business opportunities</li> </ul>
Traditional owners	Meeting with Cubbitch Barta Elder  Consideration of the results of consultation on Aboriginal cultural heritage issues (Registered Aboriginal Parties)	<ul style="list-style-type: none"> <li>Indigenous participation in environmental and cultural management</li> <li>Employment opportunity</li> <li>Potential Project impacts on cultural heritage</li> </ul>
Residents impacted by rail noise	Community survey  Interviews and meeting with six residents (five households) impacted by rail noise in 2017  Follow up interviews with five residents impacted by rail noise in October 2018	<ul style="list-style-type: none"> <li>Effects of rail noise on amenity and way of life</li> <li>Engagement processes</li> <li>Mitigation strategies</li> </ul>
Local businesses	Interviews with six representative local and regional businesses	<ul style="list-style-type: none"> <li>Supply opportunities</li> <li>Business vitality</li> </ul>
Employees	Employee survey (278 participants)	<ul style="list-style-type: none"> <li>Employment continuation</li> <li>Social impacts of closure</li> </ul>
Mount Kembla Public School	Interview with School Principal	<ul style="list-style-type: none"> <li>Road safety</li> <li>School amenity and learning environment</li> <li>School enrolment levels</li> </ul>

Stakeholder groups	Engagement methods	Key issues
NSW Police	Interview with Wollongong Local Area Command (LAC) Operations Duty Officer	<ul style="list-style-type: none"> <li>Traffic safety</li> <li>Demands on police resources</li> </ul>
Wollongong LGA community members	Meeting with Wollongong City Council General Manager and five department/division heads  Follow-up interview with Special Projects Manager	<ul style="list-style-type: none"> <li>Employment opportunities</li> <li>Road safety</li> <li>Social infrastructure access</li> <li>Potential for negative impacts on water catchment</li> </ul>
Wollondilly community and other regional road users	Phone interviews with Wollondilly Community Development Officer and a member of Illawarra Coal's Bulli Seam Community Consultative Committee (CCC)  Wollondilly Council representation on DCCC	<ul style="list-style-type: none"> <li>Visual amenity of coal wash emplacement area</li> <li>Traffic safety on Appin Road</li> <li>Potential for negative impacts on water catchment and its recreational values</li> </ul>

### 1.3.2 Dendrobium Community Consultative Committee

Consultation with the DCCC included:

- attendance at the May 2017 DCCC meeting to seek input to the scope of the SIA;
- interviews with each DCCC member to seek their informed input on social values, impacts and opportunities/benefits;
- attendance at the July 2017 DCCC meeting to present baseline findings and preliminary assessment findings;
- providing a summary of preliminary SIA findings for discussion via video conference with the DCCC at the December 2017 meeting; and
- a follow up meeting in September 2018 to identify any changes to the existing mine's impacts or changes to community views about the Project.

### 1.3.3 Community survey

A local community survey was undertaken during June 2017. Hard copies were distributed to 900 households within the Dendrobium Mine's Zone of Influence (see Section 2.3) and an additional 500 surveys were distributed to schools and childcare centres in Mount Kembla, Cordeaux Heights, Figtree and Unanderra. A total of 113 completed surveys were returned, with addresses indicating that the majority came from within the Zone of Influence. This was not a statistically valid sample of the Zone of Influence but provides a solid indication of interested residents' views.

Respondents from Mount Kembla/Kembla Heights represented 52% of the sample, and Cordeaux Heights represented a further 33%, indicating that these communities (which are closest to the mine and/or KVRL) were most interested in the Project's potential impacts. Respondents from Figtree represented 8% of the total and respondents from Unanderra represented 5%. Long-term residents (living in the area for more than 10 years) represented 66% of respondents.

Survey results of relevance to community values are incorporated in the scoping chapter (Section 2.1) the social baseline (e.g. Section 3.4) and impact assessment (e.g. Section 4.2) as relevant.

### **1.3.4 Residents affected by rail noise**

Five interviews and one meeting were conducted with six Mount Kembla residents regarding rail noise during June and July 2018. The residents interviewed had lived in the local area for periods ranging from four to 40 years. Four had lived there before Dendrobium Mine commenced, and two had moved there since.

Follow up interviews were held with five residents in October 2018 (with one unable to be contacted) to identify any changes in their experience of rail noise since mid 2017. The results are discussed in Section 4.2.2.

### **1.3.5 Indigenous stakeholders**

Engagement was sought with the Tharawal Local Aboriginal Land Council and Cubbitch Barta Native Title Claimants to seek input on social impacts and opportunities. One meeting was held with a Cubbitch Barta Elder during the SIA consultation process. The SIA has also relied on the results of consultation undertaken as part of the EIS's cultural heritage assessment. Indigenous values are addressed in the SIA at Sections 3.3.1. and 4.3.1.

### **1.3.6 Local Government**

A meeting was held with Wollongong City Council (WCC) senior staff including the General Manager and Managers and Principal Officers for Planning and Environment, Economic Development, and Community and Cultural Development.

A Wollondilly Shire Council representative was also consulted with respect to potential issues in the Wollondilly LGA in relation to the coal wash emplacement area. This identified no social issues, however the potential for traffic or environmental issues was referred to the EIS team for consideration. A Wollondilly Shire Councillor is a member of the DCCC and identified community members' concerns that mining was currently affecting water catchment in the Wollondilly LGA.

The results of engagement are incorporated in relevant SIA sections.

### **1.3.7 Social infrastructure providers**

Consultation was invited with community facility and service providers in the study area, including the Mount Kembla Public School, Mount Kembla Rural Fire Brigade, Wollongong Police LAC and the NSW Illawarra Health Department. Subsequent interviews were held with the Principal of Mount Kembla Public School and the Operations Duty Officer for the Wollongong Police LAC. The results are incorporated in Section 3.6.

### **1.3.8 Local businesses**

Interviews were conducted with six business operators with existing supply arrangements to the Dendrobium Mine. Interviewees were selected to ensure input from locally based businesses or business branches regarding the Project's potential impacts and benefits. Five of the six interviewees lived in the Wollongong LGA. All interviewees described their business as a local employer, with specific reference made to local employees based in Unanderra and Cordeaux Heights, and further south to Albion Park.

The results of consultation with local businesses are discussed in Section 4.4.7.

### **1.3.9 Dendrobium Mine employees**

A survey of current Dendrobium Mine employees was conducted to identify personnel's interactions with local communities, and obtain their views on the Project's potential impacts and benefits. The employee survey was conducted in June 2017 and received 278 responses, including 218 surveys as hard copies and 60 surveys via an email link to the survey on line. Of the employee survey respondents:

- 72% were direct employees, and 28% were contracted to the mine, on a full time (17%) or part time/casual basis (11%); and
- 36% had worked at Dendrobium Mine for 6-10 years and 34% had worked there for more than 10 years.

The results of the employee survey primarily inform Section 4.4.

## 1.4 Method

The following sub-sections outline the process undertaken for the SIA.

### 1.4.1 Scoping and preliminary significance assessment

The objective of the scoping stage was to identify the range of potential social impacts and benefits that may occur as a result of the Project, the geographic area in which they may occur, and the investigations required as part of the SIA. The scoping process identified:

- community views on potential impacts;
- Project elements with potential to affect the social environment;
- assumptions upon which the SIA is based;
- the SIA study area, including local and regional communities who may be affected (positively or negatively) by the Project, or by Dendrobium Mine's cessation;
- likely direct and indirect social impacts at local and regional levels, and cumulative impacts; and
- a preliminary assessment of social impacts and benefits, to identify material effects (potential social impacts that matter the most, and/or pose the greatest risk to those expected to be affected<sup>5</sup>), for detailed assessment.

This is documented in Section 2.

### 1.4.2 Social baseline

The social baseline provides a detailed picture of local and regional communities as the basis for assessing the Project's potential to change social conditions. Investigations undertaken to develop the social baseline included:

- a review of relevant recent research and local, regional and State plans and policies relevant to the SIA study area;
- description of the SIA study area's settlement pattern, community values and access to health and social infrastructure;
- analysis of the study area's demographic characteristics, forecast growth in local and regional areas, housing availability, health and safety status data, employment and labour force data; and
- review of key baseline findings as part of the SIA engagement process, and incorporation of engagement results in the baseline.

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<sup>5</sup> NSW DPE. 2017



The baseline is documented in Section 3.

### 1.4.3 Assessment

Based on the scoping exercise, baseline findings and stakeholder engagement outcomes, a detailed analysis of potential impacts was undertaken as documented in Section 4. This included:

- assessment of the Project's likely interactions with the study area including surroundings, private property, culture, community values and community wellbeing, considering the range of stakeholder views documented, and the potential for change to social values;
- consideration of potential impacts on population, housing and social infrastructure, with key inputs including population data, housing and employment indicators;
- describing the Project's potential employment benefits during construction and operation, and the potential benefits of local supply arrangements;
- assessment of the likelihood and materiality of potential cumulative social impacts; and
- description of the likely impacts of Dendrobium Mine's closure if the Project is not approved and planned closure of the Project.

A two-stage significance evaluation was undertaken. The Project's existing impact management, mitigation and engagement commitments were considered in evaluating the likelihood and consequence of impacts and benefits, and a final significance assessment was undertaken after applying the SIA's recommended mitigation, management and enhancement strategies to identify potential residual impacts, as shown in Section 4.10.

### 1.4.4 Mitigation, management and monitoring

Development of the mitigation and monitoring framework included identification of:

- Illawarra Coal's current mitigation strategies and commitments for the Project;
- proposed measures to mitigate significant social impacts; and
- measures required to realise or enhance predicted positive impacts.

Mitigation strategies were designed to incorporate adaptive management strategies that address potential changes in the socio-economic environment and the potential need for amendment to mitigation measures.

The monitoring strategy was developed based on targets and outcomes sought in relation to social impacts and benefits, and includes the timing and responsibility for each action, performance indicators and reporting provisions.

Mitigation, adaptive management, and monitoring strategies are detailed in Section 5.

## 2 Scope

This section describes the results of the scoping process for the SIA.

### 2.1 Stakeholder inputs to SIA scope

#### 2.1.1 Dendrobium Community Consultative Committee

The scope of potential social impacts and benefits identified in the SIA team's first meeting with the DCCC and interviews with DCCC members included:

- employment and economic benefits at the regional level;
- limited benefit from employment and/or increased business in Mount Kembla as the community is largely independent of Dendrobium Mine's operation;
- concern for landforms and biodiversity within the water catchment;
- concern that, if the Project lessens the catchment's potential to supply water for human use, this would be a significant social impact at regional and broader scales, with long term implications including inter-generational equity;
- increased traffic during construction, particularly on Cordeaux Road and Picton Road;
- amenity impacts associated with traffic, ongoing rail noise, and dust issues for some local residents; and
- potential for impact on local Indigenous cultural heritage values and artefacts not yet identified in the catchment area.

#### 2.1.2 Community survey

Comments by community survey respondents indicate that rail noise and the potential for increased traffic were the most common concerns, whilst the potential for increased jobs was the most commonly identified benefit (see Table 2-1). Dust and potential for impacts on the water catchment were also identified as concerns, and the benefits of South32's community investments were noted.

**Table 2-1 Survey respondents' comments about potential social impacts**

Comment by Issue	No. of comments	% of all comments	% of respondents	Examples
Traffic	32	27.4%	28.3%	<ul style="list-style-type: none"> <li>• Workers' cars are very noisy through the village</li> <li>• Over-sized trucks through Mount Kembla</li> </ul>
Rail noise	27	23.1%	23.9%	<ul style="list-style-type: none"> <li>• Rail line currently very noisy</li> <li>• Please stop brake squeal</li> </ul>
Dust	12	10.3%	10.6%	<ul style="list-style-type: none"> <li>• We have black dust outside/on our windows</li> <li>• Concerned about my family breathing coal dust</li> </ul>
Water catchment	13	11.1%	11.5%	<ul style="list-style-type: none"> <li>• It's too risky to mine under our water supply</li> <li>• No mines should be allowed in the catchment</li> </ul>

Comment by Issue	No. of comments	% of all comments	% of respondents	Examples
				<ul style="list-style-type: none"> <li>The catchment's biodiversity needs to be protected from mining</li> </ul>
Jobs	23	19.7%	20.4%	<ul style="list-style-type: none"> <li>The continuation would be positive for jobs</li> <li>Jobs and flow on economic benefits are good for our community</li> </ul>
Community benefit	10	8.6%	8.9%	<ul style="list-style-type: none"> <li>Community projects – school and events</li> <li>Continuation of Pathway project</li> </ul>
Total comments	117	100%	100% (n=113)	

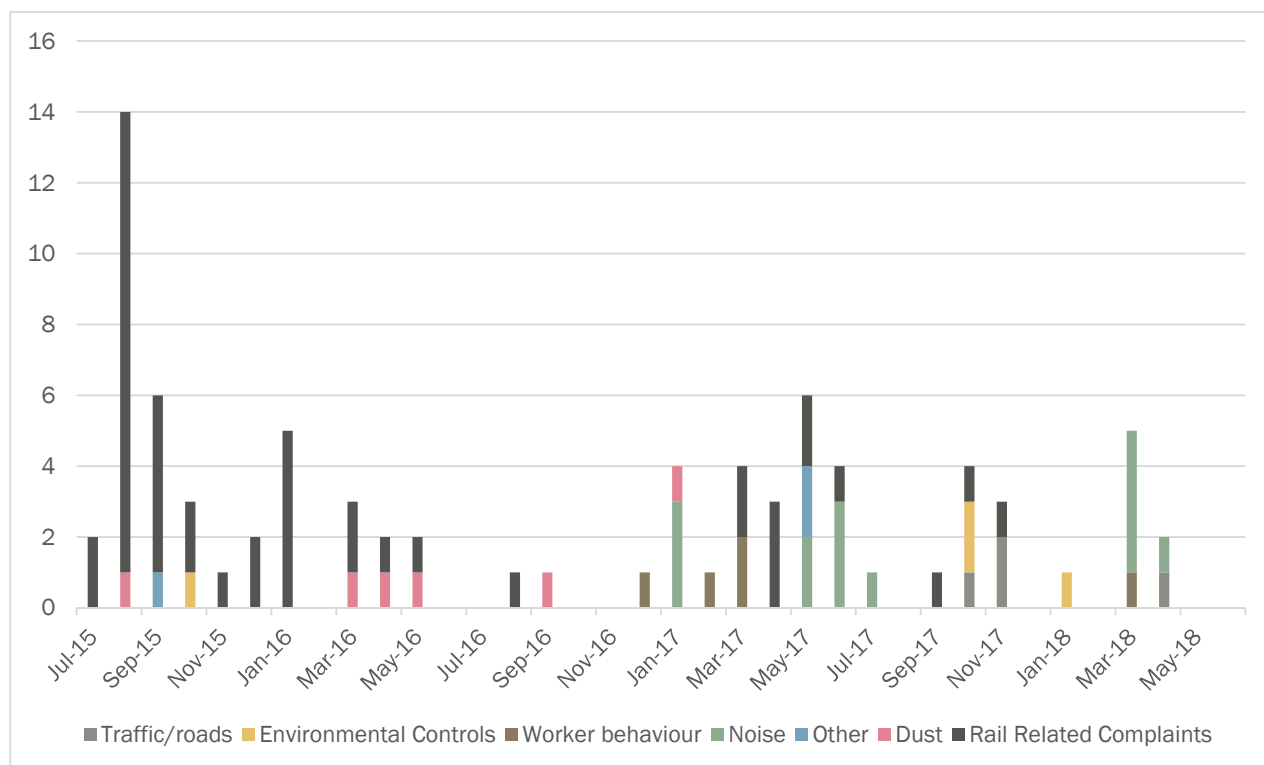
NB: Some residents commented on more than one issue, whilst approximately 30% made no comments, so the number of comments exceeded the number of survey respondents.

### 2.1.3 Community complaints

Issues identified by survey respondents are reflected in complaints to Illawarra Coal's complaints and enquiry line. Complaints about Dendrobium Mine and the KVRL during the three years to June 2018 were analysed to identify the nature of amenity impacts that could potentially persist as a result of the Project (see Figure 2-1).

During the three years, a total of 93 complaints were received by Dendrobium Mine. Of these, 57 complaints (61%) related to rail noise, 14 (15%) related to noise from the Dendrobium Mine and six complaints related to dust. Worker or delivery driver behavior (primarily on local roads) was the subject of five complaints over the three years, there were four complaints each about traffic or road conditions, and environmental controls including weed control and graffiti removal, and three miscellaneous complaints.

**Figure 2-1: Community complaints about Dendrobium Mine 2015/16 – 2017/18**



It is notable that rail noise complaints particularly have fallen over the analysed period.

## 2.2 Matters considered

The SIA has addressed relevant matter categories identified in the NSW Government's SIA Guideline, as summarised in Table 2-2.

**Table 2-2 SIA matters for consideration**

Impact areas	Potential issues
Surroundings, fears and aspirations	<ul style="list-style-type: none"> <li>• Changes to environmental qualities which support community wellbeing</li> <li>• Increased traffic in the local and regional area of influence</li> <li>• Community concerns about:               <ul style="list-style-type: none"> <li>○ potential impacts on water catchments</li> <li>○ the coal wash emplacement's location and operation</li> <li>○ climate change and potential Project greenhouse gas contributions</li> </ul> </li> </ul>
Personal and property rights	<ul style="list-style-type: none"> <li>• Potential for noise, dust or traffic to impact on local amenity</li> <li>• Interruption to existing social uses of the local area</li> </ul>
Culture	<ul style="list-style-type: none"> <li>• Effects on community values such as sense of place and appreciation of environmental qualities</li> <li>• Impacts and benefits relevant to Indigenous community values</li> </ul>
Community, decision-making processes	<ul style="list-style-type: none"> <li>• Project interaction with the settlement pattern</li> <li>• Potential for the Project to change population size or composition</li> <li>• Potential effects on housing access</li> <li>• Potential for development to be incongruent with community priorities</li> </ul>
Way of life	<ul style="list-style-type: none"> <li>• Employment benefits and impacts</li> <li>• Impacts and benefits for local businesses</li> <li>• Potential for impacts on housing access or affordability</li> </ul>
Access to infrastructure and services	<ul style="list-style-type: none"> <li>• Changes to demand for or supply of social infrastructure</li> <li>• Impacts on the amenity of or access to community facilities or services</li> </ul>
Health and wellbeing	<ul style="list-style-type: none"> <li>• Potential for any impacts on health, mental health or community safety</li> </ul>

## 2.3 Area of social influence

This section describes the Project's area of social influence, which is also referred to in this report as the SIA study area.

### 2.3.1 Local communities

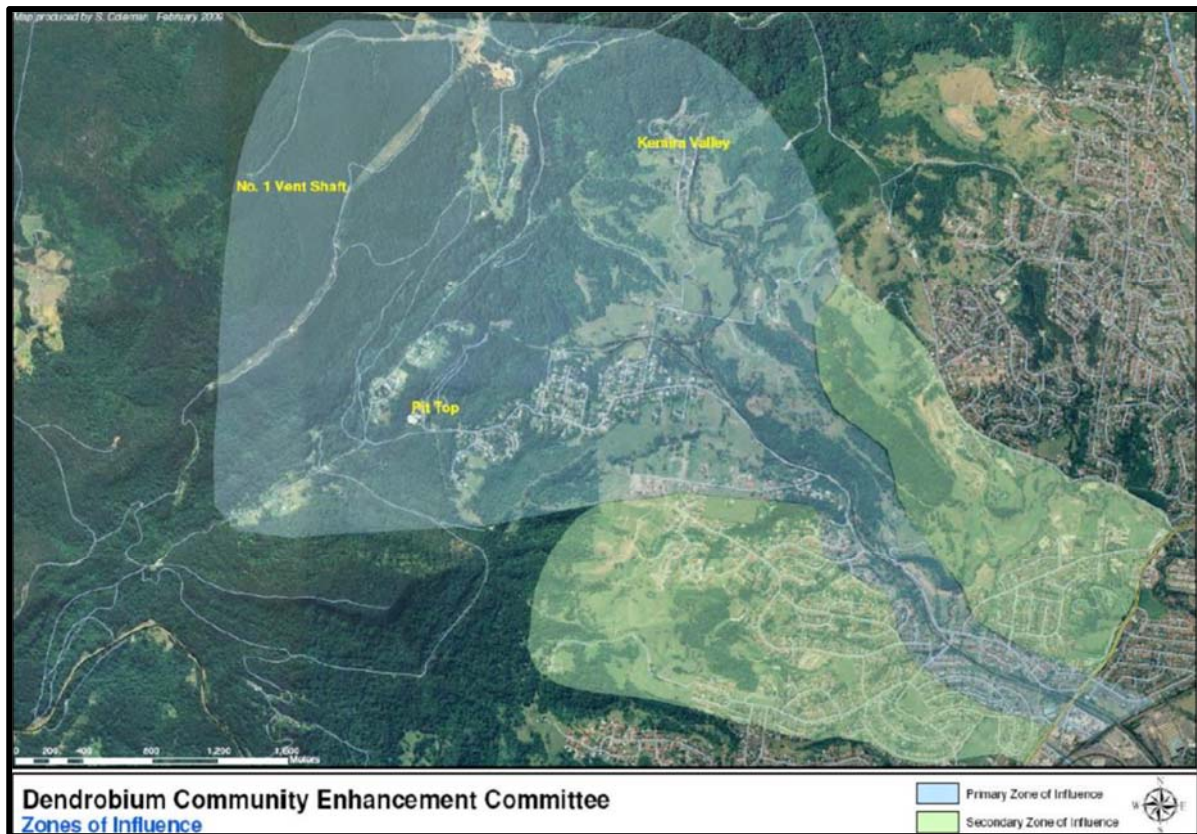
As part of the establishment of Dendrobium's Community Enhancement Program (DCEP), South32 has defined a Zone of Influence which reflects the area in which impacts may be experienced, including noise from the rail line or impacts such as traffic congestion, noise and/or dust from the Dendrobium Pit Top and KVCLF (see Figure 2-2).

The Mine's primary Zone of Influence includes Mount Kembla, Kemira Valley, Kembla Heights, and neighbourhoods in Cordeaux Heights, Unanderra and Figtree within 200 metres (m) of the KVRL. A Secondary Zone of Influence extends west of the KVRL into Cordeaux Heights and Unanderra, and east

to include an area within Figtree, in recognition that residents here may experience noise or traffic impacts. The DCEP was developed in 2002 to facilitate funding to community projects in the Dendrobium Mine's Zone of Influence (see Section 4.7.3.)

There are approximately 900 households within the Zone of Influence. The SIA community survey was distributed to households and community facilities in the area, and targeted consultation with residents affected by rail noise was undertaken.

**Figure 2-2: Dendrobium Mine's Zone of Influence**



Source: Illawarra Coal, 2002. DCEC Terms of Reference

The local communities of interest to the SIA where there is potential for social impacts include:

- Mount Kembla Village and Kembla Heights, which are closest to the Dendrobium Mine main surface facilities; and
- Cordeaux Heights, Unanderra and Figtree, which may be affected by the Project's rail transport or Project traffic.

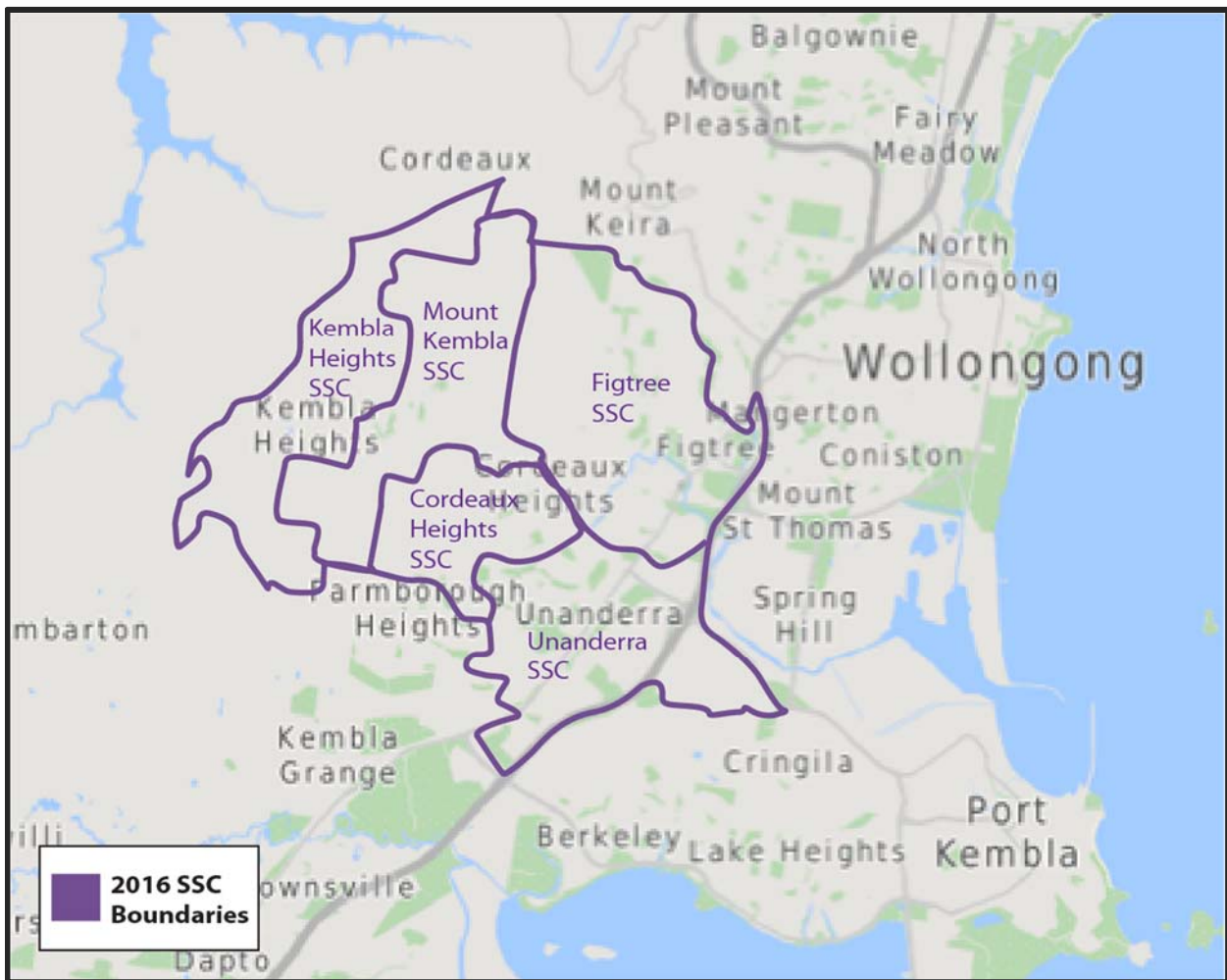
The Dendrobium CPP is located within the BlueScope Steel precinct at Port Kembla and is part of an extensive industrial complex. There would be no change to the CPP's operation and as such there is no potential for social impacts in the nearby suburbs of Port Kembla, Cringilla or Coniston.

Coal wash would continue to be transported from Dendrobium CPP to the West Cliff Coal Wash Emplacement south of Appin in the Wollondilly LGA. There would be no change to the Emplacement's approved operations, so there appears to be no likelihood of social impacts for nearby communities, however community concerns about road transport of coal wash are identified in the SIA (see Section 4.1.4).

The five communities of interest as represented by their 'State Suburbs' (SSC) are shown in Figure 2-3. Section 2.3.4 provides information on the statistical geographies in the study area.



**Figure 2-3: Local communities of interest**



Source: Australian Bureau of Statistics 2016 State Suburb Statistical Geographies on Australian Bureau of Statistics BetaWorks Map Base Layer.

### 2.3.2 Regional communities

Dendrobium Mine's existing approved surface infrastructure and the Cordeaux Pit Top are located within the Wollongong LGA. The proposed underground mining areas are wholly contained within WaterNSW's MSA, within the Wollongong, Wingecarribee and Wollondilly LGAs.

There appears to be a very low risk of social impacts in the Wingecarribee or Wollondilly LGAs as:

- the nature of the proposed activities (underground mining) and restricted access to the MSA catchment means that there would be no impact on private land, or on private or public amenity;
- no surface activities would occur in the Wingecarribee or Wollondilly LGAs apart from those associated with the approved West Cliff Coal Wash Emplacement Area;
- the Project would not increase the number of existing approved coal wash haulage movements from Port Kembla via the public road network;
- there are fewer than ten current Dendrobium Mine employees living in the Wingecarribee and Wollondilly LGAs (combined), so there is no potential for a discernible change to their populations, housing demand or social infrastructure as a result of the Project proceeding.

The regional community has therefore been defined as the Wollongong LGA, as shown in Figure 2-4. Some statistical data are provided at Statistical Area 2 (SA2) level, as also shown in Figure 2-4.

**Figure 2-4: Regional community of interest**



Source: Australian Bureau of Statistics 2016 Statistical Geographies on Australian Bureau of Statistics BetaWorks Map Base Layer.

### 2.3.3 Inter-regional and State impacts

The social impacts and benefits of major projects often extend across regional boundaries, and for projects of State Significance, may extend across NSW (the State). The Project is of interest to people beyond the Wollongong LGA from the perspective of environmental values, including the integrity of the water catchment in which mining would occur. Investigation of these issues is beyond the technical realms of this report however the SIA acknowledges the importance of these values.

The SIA recognises the potential for benefits to community wellbeing and economic development at the State level, but defers to the Economic Impact Assessment with respect to economic benefits.

### 2.3.4 Statistical geography

Table 2-3 summarises the statistical geography that corresponds to the local and regional communities of interest. Data are provided for SSC (Figure 2-2) with some additional data provided for SA2 areas (according to relevance and availability), and the Wollongong LGA (see Figure 2-4).

The boundaries of SSC in the social area of influence varied between the 2011 and 2016 Census periods. Of note:

- at the 2016 Census, the Kembla Heights SSC took in more of Harry Graham Drive and surrounding streets, which at the 2011 Census formed part of the Mount Kembla SSC. However, the combined SSC of Kembla Heights and Mount Kembla are comparable between the 2011 and 2016 Census periods;

- no population data was recorded against the Kembla Heights SSC in 2011, which in 2016 captures a population of 119 residents; and
- at the 2011 Census, Figtree SSC took in parts of Mount Keira, which is now defined by its own SSC, so analysis of variance between 2011 and 2016 is not possible for Figtree.

The Project underground mining areas (Areas 5 and 6) are in the MSA, which is covered by the Illawarra Catchment Reserve SA2 area and had a population of only eight people in the Illawarra Catchment Reserve SA2 at the Australian Bureau of Statistics (ABS) Census 2016. No detailed ABS data is available for this area, and therefore it is not discussed further in this report.

**Table 2-3: Study area statistical geographies, 2011 and 2016**

Local area communities			Regional Community
2011 State Suburbs (SSC)	2016 State Suburbs (SSC)	Statistical Area 2 (SA2)	Local Government Area (LGA)
Mount Kembla (6.2 km <sup>2</sup> ) Kembla Heights (NA) Cordeaux Heights (3.4 km <sup>2</sup> ) Unanderra (6.7 km <sup>2</sup> ) Figtree (13.3 km <sup>2</sup> )	Mount Kembla (6.1 km <sup>2</sup> ) Kembla Heights (6.1 km <sup>2</sup> ) Cordeaux Heights (3.4 km <sup>2</sup> ) Unanderra (6.5 km <sup>2</sup> ) Figtree (8.6 km <sup>2</sup> )	Unanderra – Mount Kembla SA2 - includes Unanderra, Farmborough Heights, Kembla Heights, and a portion of Cordeaux Heights (25.1 km <sup>2</sup> )  Figtree - Keiraville SA2 – includes a portion of Cordeaux Heights, Figtree, a portion of Mangerton, West Wollongong, Keiraville and Mount Keira (18.8 km <sup>2</sup> )	Wollongong (684 km <sup>2</sup> )

Recent data on housing costs and availability are presented for the two postcodes representing local communities and the postcode representing the nearest Wollongong suburbs (for comparison) as follows:

- Postcode 2526 – encompassing Cordeaux, Cordeaux Heights, Kembla Heights, Mount Kembla, Unanderra, and Farmborough Heights;
- Postcode 2525 – encompassing Figtree; and
- Postcode 2500 – encompassing Wollongong, Wollongong North, Wollongong West, Mangerton, Mount Keira, Mount Saint Thomas, Coniston, Gwynneville, and Keiraville.

Health status data included in Section 3.7 are provided for the Population Health Areas of Unanderra-Mount Kembla, which includes the area from Kembla Heights east to Port Kembla (all local area communities except Figtree) and Figtree – Keiraville, which includes Figtree, Mount Keira and a small portion of West Wollongong<sup>6</sup>.

## 2.4 Potential impacts

Social impacts and benefits may be experienced locally, regionally, or more broadly at inter-regional or State level. Impacts may be direct (closely related to the Project's actions or activities), indirect (the

<sup>6</sup> Torrens Institute. Public Health Information Development Unit. 2017

result of the Project's impacts causing changes to social structures or processes), or cumulative (interactive with or incremental to the social impacts of other projects or operations) as discussed below.

In defining the assessment framework, the potential for direct, indirect and cumulative social impacts, both positive and negative, has been considered for:

- the construction stage;
- the operational stage; and
- cessation and decommissioning of Dendrobium Mine (with and without the Project).

Impacts may be temporary, longer term or permanent, and may be of low, moderate or high significance. This has been considered as part of the preliminary assessment of impacts discussed below.

#### **2.4.1 Direct impacts**

Local communities are more likely than other areas to experience direct impacts and benefits originating from construction and operational activities including changes to:

- population size or composition;
- housing availability (demand and/or supply);
- the amenity and enjoyment of private or public areas;
- access to social infrastructure such as schools and health services;
- community health or safety;
- employment access; and
- income or housing affordability.

Changes to project workforces may also directly affect regional employment levels, housing access or demand for higher order social infrastructure, depending on the distribution of employees within and across regions.

Direct impacts may also be experienced at regional level in relation to the Project's supply network, including road use and relationships with businesses.

#### **2.4.2 Indirect impacts**

Indirect impacts may be experienced at either local or regional level, for example:

- changes to workforce numbers or land use which affect population distribution or composition, and potentially the sustainability of social infrastructure;
- changes to supply opportunities and/or employee incomes, with consequences for local businesses' viability and/or regional business confidence; or
- the potential for changes to the environment to affect the use or appreciation of an environmental resource (such as water) or community values (such as amenity or community cohesion).

At the inter-regional level, indirect impacts may also be experienced if a project affects a resource, such as labour availability or water, which is shared between regions.

#### **2.4.3 Cumulative impacts**

Cumulative impacts refer to the incremental changes to the level of social impacts, and to interactions between the impacts of a range of projects or existing operations. For example, the collective demands of a range of projects may significantly diminish housing stocks at the local or regional level, whilst an

area experiencing traffic from a range of major projects may experience cumulative impacts on road safety or amenity.

Complexity exists in that the Project may commence contributions to ROM coal production from 2020, but would also extend the life of the surface facilities from 2030 to 2048. The cumulative context is likely to be very different in the latter years of the Project's life. This is discussed as part of the cumulative assessment provided in Section 4.8.

#### **2.4.4 Links to EIS findings**

The SIA draws on the assessments of potential air quality, noise and blasting, traffic, cultural heritage (Indigenous and historic), and economic impacts conducted for the EIS, as summarised below and detailed in relevant sections including Section 4.1, 4.2 and 4.3.

##### **Aboriginal cultural heritage**

Cultural Heritage assessment including archaeological surveys and Aboriginal community consultation has been undertaken as part of Project planning and EIS processes. The assessment identified a total of 37 Aboriginal heritage sites within the Subject Area, of which four sites were assessed as having moderate scientific significance and three were of high significance. The majority of the sites (29) may be subject to some subsidence impacts from the Project and one site is within proximity to the proposed Ventilation Shaft Site No. 5B location. The Project has adopted detailed avoidance, mitigation and management measures to reduce potential impacts on Aboriginal heritage.

The SIA acknowledges Aboriginal cultural values as identified in Appendix F of the EIS, but focuses primarily on the potential for the Project to impact on Indigenous social uses in the study area or conditions relevant to Indigenous people, including the potential for Indigenous people to participate in Project employment or supply opportunities.

##### **Historical cultural heritage**

Historical cultural heritage assessment for the EIS identified only three heritage items within the study area; being the Cordeaux and Avon Dams, which are State significant heritage items listed on the NSW State Heritage Register and the former Nebo Colliery which is of local heritage significance and listed on the Wollongong Local Environmental Plan (i.e. the Dendrobium Pit Top).

The assessment has found that the proposed mining of Areas 5 and 6 would result in a negligible impact on the heritage significance of the two Dams and their associated infrastructure, provided proper precautions and monitoring are put in place to prevent impacts from subsidence movements and recommendations in regard to the potential visual impacts of Shaft Site No. 6A are implemented.

Historical heritage assessment of potential impacts of upgrades to the Dendrobium Pit Top on important features (such as the Nebo Colliery building) are detailed in EIS Appendix G. Mine closure planning would also consider these heritage values and closure activities would be undertaken in accordance with a Conservation Management Plan for the Nebo Colliery.

##### **Economic values**

The SIA considers the social benefits that attach to economic benefits, e.g. the Project's potential to continue the Mine's existing relationships with local and regional businesses, and households' well-being as a result of ongoing employment.

With respect to economic benefits (including taxes, royalties, Gross Regional Product and indirect employment) at local, regional or broader levels, the SIA defers to the Economic Assessment (Appendix L of the EIS).

##### **Environmental values**

Environmental conditions such as noise levels, traffic volumes, landscape qualities or air quality have the potential to affect the social environment with respect to health, amenity, social character, lifestyle



and safety. The SIA draws on the outputs of the EIS's Air Quality and Greenhouse Gas Assessment (Appendix I), Noise and Blasting (Appendix J) and Road Transport (Appendix H) assessments.

## 2.5 Preliminary assessment of social impacts

As the Project would extend the operational period of the existing surface facilities at the Dendrobium Mine, the existing operation's social impacts and benefits are a reference point for determining the level of risk for the Project's potential social impacts. The Project may also change some aspects of the Mine's interactions with communities, which have been considered below. Table 2-4 details the potential impacts and benefits of the Project and includes:

- Project elements which may affect the social environment including on-lease and off-lease activities, project workforce, supply and partnerships, and project closure;
- assumptions about Project elements and the social environment upon which the assessment is based;
- consideration of direct and indirect social impacts considered;
- potential material effects, i.e. impacts which are likely or possible, prior to the application of any mitigation strategies and would matter to stakeholders; and
- a preliminary assessment of the consequences of likely impacts, considering the duration, extent, severity and sensitivity to impacts.

Potential impacts identified in Table 2-4 were assessed in detail, as reported in Section 4.

**Table 2-4: Preliminary assessment of impact pathways and potential impacts**

Project elements	Assumptions	Direct impacts considered	Indirect impacts considered	Potential material effect	Preliminary significance assessment
<b>On-lease activities</b>					
<b>Use of and rights to land within the Mining Lease</b>  (Construction and operational phases)	<p>Areas 5 and 6 are within WaterNSW's MSA, where public access is restricted.</p> <p>Illawarra Coal owns all private land that would be affected by use of surface infrastructure, with the exception of some land within the Port Kembla industrial precinct controlled by BlueScope Steel. Commercial arrangements are in place with BlueScope Steel for the use of this land by Illawarra Coal. Commercial arrangements are in place with private landholders whose land is affected by other activities within the Mining Lease.</p> <p>Subsidence would occur in some areas within Areas 5 and 6, resulting in changes to the landform. These impacts would be consistent with the conditions of the Project's Development Consent.</p> <p>The potential for impacts on groundwater and surface water has been assessed as part of the EIS.</p>	<p>Minimal additional works (e.g. upgrading of Pit Top infrastructure within the Mining Lease and upgraded parking areas on land owned by Illawarra Coal) would occur outside of the WaterNSW Special Areas, so additional direct impacts on private or public landholdings are not anticipated.</p> <p>The Project would not make significant changes to land owned by Illawarra Coal that would affect the area's settlement pattern.</p> <p>WaterNSW access restrictions prevent public access to the areas which may be disturbed by subsidence, so there is no potential to affect existing social access and use of the area.</p>	<p>Whilst public access is limited, individuals or groups may be granted access to the catchment in Areas 5 and 6, on request to WaterNSW, so there is potential for public awareness of subsidence impacts that may concern them.</p> <p>Some community members may experience anxiety about the potential for subsidence to change the physical environment in Areas 5 or 6, including its use as a water catchment area.</p>	<p>Changes to the natural land form, surface and groundwater, or biodiversity within Areas 5 and 6 may cause community concern about effects on environmental values.</p>	<p><b>Duration:</b> Construction period and Life of Project, (until 2048).</p> <p><b>Extent:</b> Moderate - most people are accustomed to mining in the Wollongong region, however concerns about the environmental effects of mining on catchment values is expected.</p> <p><b>Severity:</b> Low - concern about potential impacts is unlikely to affect general community wellbeing.</p> <p><b>Sensitivity:</b> Low, given limited public access to land in the MSA.</p>

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

Project elements	Assumptions	Direct impacts considered	Indirect impacts considered	Potential material effect	Preliminary significance assessment
<b>Ground disturbance</b> (Operations and post operations)	<p>Cultural heritage assessment for the EIS has identified the potential for impacts on Aboriginal cultural heritage items or sites as a result of subsidence or surface activities, as well as appropriate mitigations for potential impacts on cultural heritage.</p> <p>The Avon and Cordeaux Dams walls and surrounds are listed sites on the State Heritage Register. The Project would be implemented such that there were no impacts to the Dam walls.</p> <p>Biodiversity impact assessment for the EIS has identified the potential for impacts on biodiversity due to subsidence or surface activities, as well as appropriate offsets and/or mitigations for potential impacts on biodiversity.</p>	<p>WaterNSW access restrictions prevent public access to the areas that may be disturbed by subsidence, so changes to social use of the area are not anticipated.</p> <p>The proposed Dendrobium Pit Top Carpark Extension area is outside the Mining Lease, but is separated from the nearest residence by some 200 m of bushland and is not expected to impact on the amenity of the residence.</p> <p>Potential impacts on biodiversity due to subsidence effects or surface disturbance on natural features (e.g. upland swamps, streams) and flora and fauna are expected to be minor.</p>	<p>Traditional Owners may experience anxiety or a sense of loss in relation to disturbance of cultural heritage values.</p>	<p>No impacts on social use of areas within the Mining Lease are anticipated.</p> <p>The Project has adopted detailed offset, avoidance, mitigation and management measures which would be developed to reduce potential impacts on biodiversity and cultural heritage, however there is a possibility of anxiety or a sense of loss in relation to disturbance of biodiversity and cultural heritage values.</p> <p>There is also potential for increased Indigenous employment as part of the Project.</p>	<p><b>Duration:</b> Commencing during operations and potentially persisting for Life of Mine.</p> <p><b>Extent and severity:</b> Addressed in detail in the Aboriginal Cultural Heritage Assessment and Biodiversity Assessment Report for the EIS.</p> <p><b>Sensitivity:</b> High – any damage to cultural heritage values is of concern to Aboriginal people.</p> <p>Moderate – impacts to biodiversity value, particularly within the MSA is of concern to relevant stakeholders.</p>
<b>Continued use of approved surface facilities</b> (Operations)	<p>The Dendrobium and Cordeaux Pit Tops and KVCLF would operate on a continuous basis, 24 hours per day, seven days per week.</p> <p>The Project would comply with noise limits, adhere to curfews and implement Trigger Action Response Plans (TARP) as committed to in the EIS and associated with Development Consent conditions.</p>	<p>Any existing amenity impacts in Mount Kembla and Kembla Heights may continue.</p> <p>As maximum ROM volumes would not increase, noise, dust or traffic volumes are anticipated to remain similar and therefore not deteriorate residential amenity or social use of areas near the Dendrobium Pit Top and KVCLF.</p>	<p>Indirect impacts a result of continued use of the Mine's surface facilities are unlikely, given the localised nature of impacts, and that the Project is required to be conducted in accordance with Development Consent and Mining Licence conditions which mitigate any impacts on e.g. air quality or traffic safety in the local or regional area.</p>	<p>It is likely that any existing impacts on amenity from existing approved surface facilities would continue.</p>	<p><b>Duration:</b> Life of Project (until 2048).</p> <p><b>Extent:</b> Low – confined to small areas of Mount Kembla village and residences near the KVCLF.</p> <p><b>Severity:</b> Low, as indicated by infrequent complaints about surface facilities</p> <p><b>Sensitivity:</b> Moderate, as residents noted dust issues (not all specific to Dendrobium Mine) during SIA consultation.</p>

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

Project elements	Assumptions	Direct impacts considered	Indirect impacts considered	Potential material effect	Preliminary significance assessment
<b>Use of Cordeaux Pit Top</b> (Operations)	The Cordeaux Pit Top (Picton Road, Mount Keira) is currently in care and maintenance but its ongoing use is part of the Project.	There are no homes or community facilities near the Cordeaux Pit tip.  Use of the Cordeaux Pit Top for the Project would see an increase in traffic to the site, in the context of existing high traffic volumes on Picton Road. Traffic and transport issues relevant to Picton Road are assessed in Appendix H to the EIS. The potential for noise impacts (Appendix J to the EIS) and air quality impacts (Appendix I to the EIS) have also been assessed.	Given appropriate management of traffic and transport issues, indirect impacts (such as changes to traffic safety in the area near the Cordeaux Pit Top) are not anticipated.	With the exception of an increase in traffic on Picton Road, there appears to be little potential for impacts as a result of the planned use of the Cordeaux Pit Top.	<b>Duration:</b> Life of Project (until 2048). <b>Extent:</b> Minor - to be determined by reference to EIS findings. <b>Severity:</b> Expected to be low - to be determined by reference to EIS findings. <b>Sensitivity:</b> Low, as Cordeaux Pit Top is in a bush land area.
<b>Demolition and site rehabilitation</b> (Decommissioning)	Following Project completion, facilities and plant would be decommissioned and demolished or sold.  Rehabilitation and remediation would then be undertaken to satisfy Mining Lease relinquishment criteria.  Future use of the Mining Lease area would be assessed in accordance with relevant development approval processes at that time.	Decommissioning of Dendrobium Mine's facilities may have potential for short term noise or traffic impacts in and around Mount Kembla and Kembla Heights.  To the extent that noise, dust or traffic impacts are currently experienced, these would cease when the Project is complete.	Decommissioning may see a change in social character near surface facilities, including changes to land use, visual amenity or sense of identity.  Other indirect impacts as a result of decommissioning are unlikely.	There is a possibility of short-term noise or traffic impacts as a result of demolition or transport to and from the site.	<b>Duration:</b> Up to twelve months. <b>Extent:</b> Moderate – may affect local amenity and traffic volumes in the wider area. <b>Severity:</b> Low - short term, and within a small area closest to the Pit Tops and KVCLF. <b>Sensitivity:</b> Low, given community would experience any noise or traffic issues as a temporary increase to the existing operation's impacts.

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

Project elements	Assumptions	Direct impacts considered	Indirect impacts considered	Potential material effect	Preliminary significance assessment
<b>Off-lease activities</b>					
Coal transport (Operations)	<p>ROM coal would be transported from the KVCLF to the Dendrobium CPP within Port Kembla via the KVRL, between – 6.00 a.m. – 11.00 p.m. daily.</p> <p>Train loads and management protocols would be maintained, so the current level of rail noise is unlikely to increase as a result of the Project.</p>	<p>Locomotive noise, track noise, and some degree of brake squeal/wheel squeal noise would continue during the Project's operation, with resulting noise impacts.</p> <p>Noise impacts from the KVRL may have a negative effect on amenity or enjoyment of private properties or impact on individuals' health through sleep disturbance or stress.</p>	The Project would not increase the number of trains using the rail line and level crossings, but would extend the duration of KVRL use. Assessment of traffic delays (Appendix H to the EIS) found that the probability of being delayed at a level crossing would be expected to increase only slightly over the life of the Project at the Central Road level crossing, and to remain at the current level at the Marley Place level crossing.	Wheel squeal noise may continue to affect the amenity of neighbourhoods near the KVRL and may cause stress to affected residents.	<p><b>Duration:</b> Life of Project (until 2048).</p> <p><b>Extent:</b> Moderate – neighbourhoods in Mount Kembla Village, Cordeaux Heights and Unanderra may be affected</p> <p><b>Severity:</b> Moderate – no intensification, but continuation of some level of noise impacts</p> <p><b>Sensitivity:</b> Moderate –some households are highly sensitised to rail noise.</p>
Coal wash transport (Operations)	The Project would involve continued use of the approved West Cliff Stage 3 and Stage 4 Coal Wash Emplacement Area for coal wash that is not diverted to alternate uses. Coal wash from the Dendrobium CPP would continue to be transported by trucks to the Emplacement Area. Trucks transporting washed coal from the West Cliff Colliery to Port Kembla would continue to be back-loaded to transport coal wash from the CPP to the Emplacement.	<p>Coal wash transportation would continue to contribute to traffic volumes on the regional road network.</p> <p>Assessment of traffic and transport impacts for the EIS found that the Project is not expected to exacerbate any existing safety issues with the operation of the road network, subject to management of traffic exiting at the Cordeaux Pit Top access in the long term, for which mitigations have been recommended.</p>	No changes are expected to the number or distribution of vehicle trips to and from the Dendrobium CPP as a result of the Project (as noted in Appendix H).	Coal wash transport would make a continued contribution to traffic volumes and any cessation of back loading arrangements from the Bulli Seam Operations may see a small increase in the number of trucks used for the Project.	<p><b>Duration:</b> Life of Project (until 2048).</p> <p><b>Extent:</b> Moderate.</p> <p><b>Severity:</b> Low – no intensification of impacts. High traffic environment in region.</p> <p><b>Sensitivity:</b> Low, experienced by a cross-section of road users.</p>



## Dendrobium Mine - Plan for the Future - Social Impact Assessment

Project elements	Assumptions	Direct impacts considered	Indirect impacts considered	Potential material effect	Preliminary significance assessment
Dendrobium CPP (Operations)	The Project would involve continued use of the approved Dendrobium CPP which is located within the BlueScope Steel site at Port Kembla.	The CPP is part of an extensive industrial complex which is managed in accordance with environmental approvals for respective operations taking place within it. Residents in adjoining suburbs of Port Kembla, Cringilla or Coniston have not experienced impacts related to the CPP, and South32 has had no complaints or community interactions regarding the CPP. There would be no change to the CPP's operation and as such there is no potential for social impacts in the nearby suburbs.	No potential for indirect impacts	No material effect	Not applicable
<b>Project workforce supply and partnerships</b>					
Operational workforce	<p>The Project would increase the availability of operational employment by approximately 102 jobs.</p> <p>The geographic distribution of the Project's workforce would be similar to that of the existing workforce.</p> <p>Regular CPP shutdowns (every quarter) are likely to require 100- 200 contractors for one to two days and approximately 100 people for a few weeks every year. Major maintenance for conveyors and production equipment could see crews of up to 20 people required for short periods.</p>	<p>The Project would support continuity of employment for approximately 405 personnel (employees and contractors) and enable creation of approximately 102 additional jobs. Employment numbers would begin to decline later in the mine life.</p> <p>The increase in jobs has the potential to increase the population and therefore demands for housing or social infrastructure.</p>	<p>Project workers would continue to make a contribution to local social networks.</p> <p>Employees would continue to spend locally, and to support local businesses and community organisations.</p> <p>New employees may increase the diversity (gender or cultural) of the Mine's workforce and consequently, employment equity for less advantaged groups.</p>	<p>The Project would continue the provision of approximately 400 existing jobs with consequent benefits for workers' and families' well-being, and community cohesion in the communities in which they live.</p> <p>It would also contribute to the maintenance of employment levels in the Wollongong LGA.</p> <p>A contribution to greater employment diversity is possible.</p> <p>Personnel numbers would decrease in the years prior to the mine's closure and decommissioning.</p>	<p><b>Duration:</b> Life of Project (until 2048) noting some decline in personnel numbers in later years.</p> <p><b>Extent:</b> Moderate – contribution to wellbeing for workers' families, and business owners and employees.</p> <p><b>Benefit:</b> Moderate - continued employment supports well-being, however, other mining employment options may be available.</p> <p><b>Sensitivity:</b> Low, given the LGA's labour force size and anticipated workforce increases over time.</p>

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

Project elements	Assumptions	Direct impacts considered	Indirect impacts considered	Potential material effect	Preliminary significance assessment
<b>Business supply arrangements</b>  (Construction and Operations)	<p>The Project's construction contractors would be encouraged to engage local construction companies and other businesses.</p> <p>Project requirements for supply by local and regional businesses and services would approximate those of the existing operation, and continue until the Mine is decommissioned.</p>	<p>Local and regional businesses would benefit from longer term supply arrangements. Some businesses may be largely dependent on the Mine for their viability.</p> <p>There may be opportunities for the Project to increase Dendrobium Mine's current level of engagement with businesses in the Wollongong LGA.</p>	<p>The Project's continuation of local and regional supply arrangements is likely to contribute to business confidence in the Wollongong region.</p>	<p>Ongoing support for local and Dendrobium Mine suppliers is likely.</p> <p>Opportunities to increase engagement with businesses in the Wollongong LGA are possible.</p>	<p><b>Duration:</b> Construction and Life of Project (until 2048).</p> <p><b>Extent:</b> Moderate – businesses would benefit from supply arrangements.</p> <p><b>Benefit:</b> Moderate - supply arrangements would support the well-being of business owners and employees.</p> <p><b>Sensitivity:</b> Low - anticipating significant diversification in the LGA's economy by 2030.</p>
<b>Community partnerships and investment</b>  (Operations)	<p>The Project would continue the provision of 3 cents per saleable tonne (plus CPI since 2002) for funding of community projects in the Dendrobium Mine's Zone of Influence.</p> <p>Illawarra Coal also makes contributions (which include consideration of Dendrobium Mine) to community partnerships with a wider scope of influence (e.g. the Wollongong LGA).</p>	<p>Continuation of Dendrobium Mine's operations would see continuation of funding to the DCEP for the support of community projects and partnerships in the local area.</p>	<p>Community investments would contribute to community cohesion, health, vitality and education projects, which may have broader regional benefits.</p>	<p>Continued funding of the DCEP would continue to make a positive contribution to community well-being in the Project's Zone of Influence.</p>	<p><b>Duration:</b> Life of Project (until 2048).</p> <p><b>Extent:</b> Moderate – DCEC projects are focused on the local area, but have benefits for other community members in the LGA.</p> <p><b>Benefit:</b> High – DCEC-funded projects make significant contributions to local amenity and social infrastructure.</p> <p><b>Sensitivity:</b> Moderate - some local community groups rely on funding to sustain projects and services.</p>

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

Project elements	Assumptions	Direct impacts considered	Indirect impacts considered	Potential material effect	Preliminary significance assessment
<b>Workforce contraction and redundancies</b>	<p>Cessation of mining would see the loss of most jobs at Dendrobium Mine and the Dendrobium CPP, with a small staff remaining to manage decommissioning and rehabilitation.</p> <p>Contraction of the workforce may precede cessation of production.</p>	<p>Mine cessation would see up to 367 redundancies and the loss of contractor positions, with a consequent loss of income and financial security for affected households.</p> <p>The loss of jobs is likely to be less significant compared to social indicators in 2048 because the Wollongong LGA's economy would be increasingly diversified.</p>	<p>There may be a loss of community cohesion due to families moving away for other employment.</p> <p>If concentrated in one area or in a short period of time, redundancies may affect the local housing market, and potentially demand for social infrastructure (e.g. local schools).</p>	<p>Loss of jobs may affect household wellbeing.</p> <p>The loss of jobs may affect local population numbers and therefore schools' enrolments or the housing market.</p>	<p><b>Duration:</b> Unknown, dependent on availability of jobs in local and regional areas.</p> <p><b>Extent:</b> Moderate - up to 200 Wollongong LGA residents affected.</p> <p><b>Severity:</b> Employee survey and consultation to identify likely effects.</p> <p><b>Sensitivity:</b> Low - as employees are distributed across the LGA.</p>
<b>Supply chain termination</b>	<p>Contraction of supply chain requirements would commence prior to cessation.</p>	<p>Supply chain arrangements would contract and then cease on cessation of mining, resulting in loss of income for participating businesses and potential for significant decreases in revenues.</p> <p>There is potential for a small number of commercial opportunities to arise to service rehabilitation and decommissioning activities.</p>	<p>If a number of local or regional businesses were dependent on the Project for their viability, wider changes such as damage to industry clusters could result.</p>	<p>Cessation would see decreased revenue for businesses in the Mine's supply chain.</p>	<p><b>Duration:</b> Permanent.</p> <p><b>Extent:</b> Low to Moderate – business relationships of many years' standing would end for local and regional businesses.</p> <p><b>Severity:</b> Low – businesses would be aware well ahead of the cessation with adequate time to plan ahead.</p> <p><b>Sensitivity:</b> Low - given economic diversification</p>

## 2.6 Focus for investigation

Table 2-5 summarises focus areas for the SIA, including potential impacts that were considered, investigations that were conducted, and the SIA section where each impact is assessed.

Section 4 provides a detailed assessment of potential social impacts and benefits.

**Table 2-5 Focus of assessment**

Potential impact Area	Investigations conducted	SIA Section
Surroundings - changes to environmental qualities or the water catchment	<ul style="list-style-type: none"> <li>Consideration of how changes to the biophysical environment may affect stakeholders or communities</li> <li>Reference to consultation data regarding stakeholders' fears and concerns about potential Project impacts</li> </ul>	3.1 and 4.1
Surroundings/Personal and property rights – noise, air and traffic impacts	<ul style="list-style-type: none"> <li>Community and stakeholder engagement</li> <li>Analysis of community complaints</li> <li>Consultation with people currently affected by rail noise</li> <li>Identification of current and planned mitigations</li> <li>Reference to EIS findings on noise, air and traffic impacts</li> </ul>	3.2 and 4.2
Community - changes to the size or distribution of populations, leading to increases in housing demands	<ul style="list-style-type: none"> <li>Analysis of population and workforce characteristics, and projected population</li> <li>Analysis of employees' residential locations</li> <li>Analysis of changes to the workforce size or profile and consequent changes to the population</li> <li>Analysis of current housing stock and projected housing demands</li> <li>Size and duration of construction and operational workforce</li> <li>Capacity of short-term accommodation in the Wollongong LGA</li> </ul>	3.4 and 4.5
Way of life – continued and increased employment and supply opportunities; potential for impact on housing access	<ul style="list-style-type: none"> <li>Analysis of employment levels and economic strengths in the Wollongong LGA</li> <li>Employee survey (household composition and school use)</li> <li>Identification of opportunities for greater workforce diversity</li> <li>Review of supplier types</li> <li>Consultation with suppliers</li> <li>Analysis of likely housing impacts</li> </ul>	3.5, 4.4, 4.5.2 and 4.4.7
Access to services and infrastructure – increased or decreased demands for social infrastructure	<ul style="list-style-type: none"> <li>Existing provision of education, health and emergency services</li> <li>Engagement with social infrastructure managers and WCC</li> <li>Analysis of potential for increased demand on social infrastructure</li> <li>Analysis of potential for impacts on the amenity or use of social infrastructure</li> </ul>	3.6 and 4.6

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

Potential impact Area	Investigations conducted	SIA Section
Culture/surroundings – impacts on environmental appreciation	<ul style="list-style-type: none"> <li>• Community and stakeholder engagement</li> <li>• Describe concerns about environmental values or water supply</li> <li>• Consider potential for impacts on sense of place and appreciation of environmental values</li> <li>• Review of EIS findings regarding cultural heritage impacts</li> </ul>	4.3
Health and wellbeing - noise, traffic and air quality, and contributions to well-being	<ul style="list-style-type: none"> <li>• Stress in relation to noise impacts or environmental values</li> <li>• Reference to EIS findings on noise, air quality and traffic impacts</li> <li>• Identify benefits available to community groups as a result of the Project</li> </ul>	3.7 and 4.7
Way of life and surroundings - Impacts as a result of Mine closure	<ul style="list-style-type: none"> <li>• Employees' residential locations</li> <li>• Employee survey</li> <li>• Regional labour force structure</li> <li>• Identify potential impacts as a result of redundancies and loss of supply opportunities</li> </ul>	4.9



## 3 Social Baseline

This section describes the Project's area of social influence, including a description of:

- surroundings, including the settlement pattern and social character, residential and recreational amenity and access to and use of ecosystem services;
- personal and property rights and surroundings, including planned land uses, land which would be impacted by the Project and residential amenity;
- culture, including Indigenous community values, community identity, sense of place and community cohesion;
- community, including planning, governance and community representation, population characteristics, settlement pattern and social character;
- way of life including employment profile, housing availability and affordability, and economic characteristics;
- access to and use of infrastructure, services and facilities, focused on social infrastructure access; and
- health and wellbeing, including community health and safety, and recreational amenity.

Stakeholder engagement inputs, including fears and aspirations for local environments, have been incorporated in relevant baseline sections.

### 3.1 Surroundings

This section describes the history, settlement pattern, access to transport and access to the natural environment in the Wollongong LGA and local communities.

#### 3.1.1 Wollongong LGA

##### Settlement history

European use of the Illawarra - Shoalhaven region began in 1810 for cedar felling, followed by settlement from 1815 with the first pastoral land grants near Lake Illawarra<sup>7</sup>. Wollongong township was gazetted in 1834<sup>8</sup>. Land uses during the early decades of the 19th century were primarily grazing, timber-cutting, agricultural operations and later, dairy farming.

Coal mining began in the Wollongong area in the 1840s, with ten mines along the Illawarra Escarpment by the 1880s and small villages grew around coal mines and their supporting infrastructure that were formed along the Illawarra Escarpment<sup>9</sup>. The Municipalities of Wollongong and Central Illawarra were proclaimed in 1859<sup>10</sup> and then amalgamated in 1947 to form the City of Greater Wollongong.<sup>11</sup>

Growth of the Wollongong area during the 1880s was supported by the construction of the Sydney to Wollongong railway line. Enabled by coal mining in the region, the steel industry commenced with

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<sup>7</sup> Wollongong City Council. 2017b

<sup>8</sup> Ibid

<sup>9</sup> Profile.id®. 2017b

<sup>10</sup> Wollongong City Council. 2016c

<sup>11</sup> Wollongong City Council. 2016d

construction of a steelworks at Port Kembla, which has operated since 1927, and was a further strong catalyst for Wollongong's growth<sup>12</sup>.

Industrial expansion and post-war immigration further contributed to regional development and rapid population growth in the Wollongong area<sup>13</sup>. The University of Wollongong, a key civic and educational institution and major employer, was established in 1975<sup>14</sup>.

### **Settlement pattern**

Wollongong LGA covers an area of 684 square kilometres (km<sup>2</sup>), bounded by approximately 60 km of coastline<sup>15</sup> and extending inland to the Illawarra Escarpment. The LGA's settlement pattern is largely defined by its key natural features and the location of Port Kembla.

Wollongong's coastline includes dramatic cliffs, sandy beaches and rocky points. The coastline is home to a wide variety of land and sea life, and contributes to both scenic vistas of exceptional beauty and a high level of amenity for residents and visitors.

The Illawarra Escarpment is a defining feature, extending some 120 km from the sea cliffs in the Royal National Park, southwest to Macquarie Pass, and then generally southeast towards the coast near Kiama. The escarpment delineates the Wollongong LGA from its neighbouring shires to the west<sup>16</sup> and provides a visual backdrop to the City.

Lake Illawarra, approximately 9.5 km long and 5.5 km wide<sup>17</sup>, is a large coastal lagoon covering some 36.3 km<sup>2</sup> in the southeast of the LGA, and defining part of the LGA's southern border.

These features - the coastal cliffs and beaches, Illawarra Escarpment and Lake Illawarra - frame the City with areas of natural beauty and highly valued biodiversity. This has defined the City's settlement pattern as a linear city with suburbs nestled between key geographic elements. They have also influenced community values, including a strong appreciation of the environment and a love of outdoor activities.

Port Kembla is a fourth defining feature, both visually and economically. The Port is an import-export hub with significant value to both the Illawarra region and NSW, accommodating the State's largest motor vehicle import hub and grain export terminal, and its second largest coal export port. Port Kembla and its infrastructure are clearly visible from many parts of the LGA, reinforcing Wollongong's traditional identity as an industrial city.

### **Wollongong City**

Wollongong City is the LGA's urban centre, from which radiate the coastal suburbs to the north and an extensive urban area between the City, the Port and the foothills of the escarpment. Under the NSW DPE's Illawarra–Shoalhaven Regional Plan, Wollongong is designated as the Metropolitan centre for a region which is likely to be home to around half a million people by 2050<sup>18</sup>. The Wollongong LGA is projected to require an additional 16,500 dwellings by 2036 to accommodate population growth.

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<sup>12</sup> Ibid

<sup>13</sup> Profile.id@. 2017b

<sup>14</sup> University of Wollongong. 2017a

<sup>15</sup> Cardno Lawson Treloar Pty Ltd. 2010

<sup>16</sup> Young R.W. 1980

<sup>17</sup> Destination NSW (VisitNSW). 2017

<sup>18</sup> NSW Department of Planning and Environment. 2015

As advised by WCC, a significant opportunity for residential development exists at West Dapto, with smaller pockets available in and around other suburbs including Cordeaux Heights. Demand will otherwise be addressed through infill development, with unit development and uptake currently strong in Wollongong City. Figtree and Unanderra are also identified as urban centres in the Regional Plan and, as there is little available land for population growth, a gradual increase in density within these suburbs is likely.

To the north, the LGA is bordered by Sutherland Shire and to the northwest by Campbelltown City, which are part of Greater Sydney and include metropolitan, urban and semi-rural residential areas. To the south, the Wollongong LGA and Lake Illawarra are bordered by Shellharbour City LGA which comprises urban and semi-rural residential areas. West of the escarpment, Wollongong LGA is adjoined by Wingecarribee Shire and Wollondilly Shire.

Consultation for the SIA identified that locals have noticed a strong trend of Sydney residents settling in the LGA, attracted to Wollongong's natural features, city amenities and more affordable housing.

### **3.1.2 Local communities**

Land uses in the SIA local study area comprise primarily low density residential uses, mixed use commercial, reserves for environmental protection, water infrastructure, traffic and transport, recreation and community purposes. Defining features of each community's settlement are described below.

#### **Mount Kembla and Kembla Heights**

The village of Mount Kembla is located in the foothills of Mount Kembla on the eastern side of the Illawarra escarpment.

The first land grants for pastoral uses in the Parish of Kembla began in 1817, and the first record of the name "Mount Kembla" appeared on a map of the Illawarra in 1834<sup>19</sup>. The word 'Kembla' is said to be derived from an Aboriginal word meaning 'wild game abundant' or 'plenty of game'. The area is also suggested to have been referred to as "jum-bullah" or "Djembla" by local Aboriginal people, which means a wallaby<sup>20</sup>.

Australia's first kerosene mine was built on a plateau beside American Creek near Mount Kembla in 1849. By 1859, a National School had been established to support the settlement. Coal was first mined at Mount Kembla in 1865 to power the kerosene works. The village of Mount Kembla and adjoining Kembla Heights which runs along the Illawarra Escarpment developed slowly over the ensuing decades to support the mining, forestry and pastoral industries. A post office and the Mount Kembla Colliery opened in 1883<sup>21</sup>.

In 1902, an explosion at the Mount Kembla Colliery killed 96 men and boys, leaving 33 women in the village widows and 120 children fatherless<sup>22</sup>. A number of descendants of these families still live in the Mount Kembla area today.

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<sup>19</sup> Wollongong City Council. 2016c

<sup>20</sup> Ibid

<sup>21</sup> Ibid

<sup>22</sup> Sheldon, B (Shelldrill Pty Ltd). 2017

In 1946, the Nebo Colliery opened, operating under this name until 1990 when it was amalgamated with the Kemira Complex (derived from Kem[bla] and [Ke]jire) and Wongawilli Collieries to become the Elouera Colliery (all then owned by BHP Billiton)<sup>23</sup>.

Dendrobium Mine became an official entity on 23 December 2001 through a redistribution of Kemira, Mt. Kembla and Elouera Mine holdings.<sup>24</sup> In 2001 BHP Billiton described Dendrobium as “replacing the nearby Elouera Colliery which is expected to cease longwall operations following reserves depletion in 2005”<sup>25</sup>. Commencing with 150 employees, the Mine now employs a workforce of approximately 400 including direct employees and contractors.

Kembla Heights (an SSC that also has an area of 6.1 km<sup>2</sup>) is located on the escarpment to the village’s immediate west, and whilst it has its own historical identity as a distinct community, the population is largely dependent on and contributes to social life and social infrastructure in Mount Kembla (such as the school, hotel and fire brigade) and adjoining suburbs.

### **Cordeaux and Cordeaux Heights**

The suburb of Cordeaux Heights (comprising approximately 3.4 km<sup>2</sup>) is located east of Mount Kembla in the lower slopes and foothills of the escarpment, with Unanderra (approximately 6.5 km<sup>2</sup>) to its south and Figtree (8.6 km<sup>2</sup>) to the northeast<sup>26</sup>. Settlement of the area took place around the same time as for Mount Kembla and Unanderra (during the early 19th century) with early industries including dairying, farming, and mining. Cordeaux Road was constructed during the 1840s, connecting with O’Brien’s Road and the Southern Road, which became the primary access route between the Cordeaux and Mount Kembla areas<sup>27</sup>.

A small township at Cordeaux developed during the early 20<sup>th</sup> century, housing workers for the construction of Cordeaux Dam (1910-1926). Cordeaux Dam was upgraded in 1988, and with Cataract Dam, supplies drinking water to the Camden, Campbelltown and Wollondilly LGAs via the Macarthur water filtration plant<sup>28</sup>. An SSC of Cordeaux remains (within the Illawarra Escarpment SA2) but has no population.

The area on the lower slopes of Mount Kembla and west of Figtree remained as dairy farms until 1973, when the farms were purchased for the development of Cordeaux Heights as a planned suburb. The population of the Cordeaux area increased during the 1990s, but was relatively stable between 2001 and 2011, as fewer new dwellings were constructed and there was an increase in smaller households as families aged.

### **Unanderra**

In 1835, Unanderra was known as the village of Charcoal or Charcoal Creek, situated on 280 acres of land<sup>29</sup>. The Unanderra area was settled for farming and grazing, with further development from the 1880s as a result of industrial development, including coal mining. Major industries established in the area during the second half of the 19<sup>th</sup> century included a cokeworks, a butter factory and a tannery. In

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<sup>23</sup> Illawarra Heritage Trail 2017

<sup>24</sup> Whittall, P, 2004

<sup>25</sup> BHP Billiton. 2001

<sup>26</sup> Land area estimates based on Australian Bureau of Statistics 2016 State Suburb statistical geographies

<sup>27</sup> Wollongong City Council. 2016a

<sup>28</sup> WaterNSW. 2017a

<sup>29</sup> Wollongong City Council. 2016d

1881, Charcoal Creek was renamed Unanderra, which is a term said to be derived from an Aboriginal word meaning the "meeting place of creeks" (referring to Charcoal and Allan's Creeks)<sup>30</sup>.

In 1901, the Unanderra Community Hall opened as a key community and civic centre, and was used as the site of the Central Illawarra Municipal Council Chambers until the formation of the City of Greater Wollongong in 1947. The Hall remains located on the Princes Highway on the north-western corner of Factory Road, Unanderra. From the early 1990s, the population of Unanderra began a slight decline, as a result of decreasing household sizes<sup>31</sup>.

### **Figtree**

Pastoral settlement of the Figtree area began in 1815. A track developed in the 1820s over the Illawarra escarpment formed the original cattle road from Illawarra to the District of Appin, eventually becoming O'Briens Road which was a key connector road into the 1950s<sup>32</sup>. A giant fig tree located at the junction of this road gave rise to the Figtree township's name<sup>33</sup>.

During the 1830s, pastoral settlement commenced with two land grants totaling 2,000 acres approximating the current borders of Figtree and extending to Mount Keira. The area was later subdivided into smaller pastoral lots and by the 1880s, Figtree was described as "a thinly populated farming community dominated socially by pastoralists"<sup>34</sup>. The first Figtree Hotel commenced in the 1860's, lasting until the 1960's when it was replaced with the modern Figtree Hotel<sup>35</sup>. In 1956 Figtree Public School opened in response to the growing population, and Figtree Heights Public School followed in 1972<sup>36</sup> with the development of further residential subdivisions in the suburb.

### **3.1.3 Transport and access**

The local area is bordered by the Princes Highway to the south and east, separating it from the mixed use and light industrial areas located between the Princes Highway and the Princes Motorway, and from the heavy industrial land uses at Port Kembla. Key connector routes in the local area include:

- Cordeaux Road which provides access between Mount Kembla and Wollongong;
- Picton Road which links Picton and Wollongong, and provides an important link between the Hume and Princes motorways;
- Harry Graham Drive which connects Cordeaux Heights and Kembla Heights with Cordeaux Road in the south, and Mount Keira Road in the north; and
- O'Briens Road which provides access from Figtree to the Princes Highway.

Wollongong LGA is well connected to the north, south and west, supported by the Southern Freeway, the Princes Highway, Mount Ousley Road and the South Coast Rail Line. Unanderra Station provides a passenger rail connection to Wollongong City Station, and a Council bus system from Unanderra provides access to Kembla Heights, Cordeaux Heights and Mount Kembla.

Illawarra Regional Airport is located approximately 18 km south of Wollongong in Shellharbour LGA but has no current public passenger services. Sydney domestic and international airport terminals are

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<sup>30</sup> Wollongong City Council. 2016d

<sup>31</sup> Profile.id®. 2017a

<sup>32</sup> Wollongong City Council. 2016b

<sup>33</sup> Wollongong City Council 2016b

<sup>34</sup> Wollongong City Council. 2016b

<sup>35</sup> Wollongong City Council. 2016d

<sup>36</sup> Wollongong City Council. 2016b



approximately 70km north of Wollongong, connected by the Illawarra Rail T2 Airport and South Coast Lines.

### **3.1.4 Access to and use of ecosystem services**

Key environmental values identified in the consultation are outlined below.

#### **Natural environment**

Wollongong communities are set between outstanding natural features and have a high affinity with the natural environment. The diversity of natural environments, biodiversity, flora and fauna are intrinsic to local community values and social character.

The catchment covered by the MSA has been protected from most human activities (with the exception of development of large water supply dams) for over 130 years, so holds strong inherent value as wilderness and wildlife habitat. The catchment area hosts biodiversity and wilderness areas, including species of National Environmental Significance, as discussed in detail in other EIS technical assessments. Whilst access to Special Areas is restricted, the knowledge that these values exist is valued by local residents.

Consultation with a Cubbitch Barta elder indicated that the Metropolitan Special Area has been modified by its catchment status, as there has been no potential to practice traditional land management e.g. bushfire management techniques in the Special Areas, and impenetrable undergrowth has taken over in some areas where open forest had stood. Regardless, the catchment areas hold value as part of the country for which Traditional Owners feel responsibility, particularly in regard to cultural heritage values.

#### **Air quality**

Air quality is fundamental to human health. Particulates (small particles) affect air quality but may also be experienced as dust. Approximately 10% of SIA survey responses (representing the views of 12 respondents) identified concerns regarding coal dust and its potential effect at their home, on their personal health and/or their family's health. Some comments described observing black dust in and around their home, attributed by the respondent to the coal transportation process. These observations and concerns were also identified by some residents living adjacent to the KVRL during interviews with the SIA team.

#### **Water supply**

Sydney's drinking water is collected from five catchment areas occupying 16,000 km<sup>2</sup> and stored in 21 dams. The Upper Nepean Catchment collects water from the catchments of the Cataract, Cordeaux, Avon and Nepean Rivers, which are tributaries of the Upper Hawkesbury – Nepean River. The Upper Nepean catchment supplies raw bulk water to four water filtration plants administered by Sydney Water, which is then treated and supplied to the Macarthur and Illawarra regions, the Wollondilly Shire and metropolitan Sydney<sup>37</sup>.

As such, the Upper Nepean Catchment provides a critical social good to the people of Greater Sydney, and indirect benefits to other regions who are dependent on Sydney's role as a capital city and economic centre. The EIS technical assessment on groundwater provides a detailed assessment of the interaction

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<sup>37</sup> WaterNSW. 2015

between the Project and the water catchment. Community concerns about impacts on catchment values are described in Section 4.1 and documented in Appendix B.

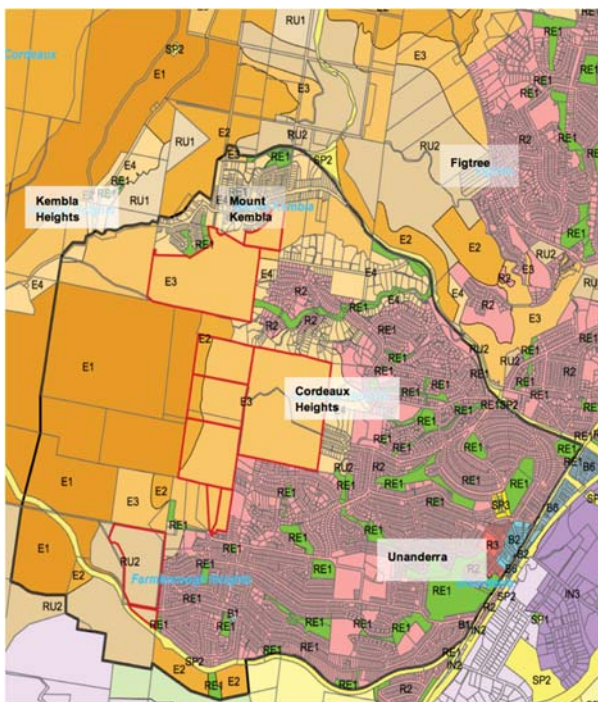
The original Upper Nepean Scheme was a series of weirs on the four rivers (completed in 1888) which diverted water to Prospect Reservoir to supply the growing city of Sydney, with dams subsequently built on the four rivers between 1907 and 1935<sup>38</sup>. The Upper Nepean system holds historic significance as part of the foundation for growth in the Sydney region, and each of the dams and their grounds are recognised in the State Heritage Register for a range of historical, associative and social values.

## 3.2 Personal and property rights

### 3.2.1 Planned land uses

Figure 3-1 provides an excerpt from WCC's Farmborough Heights - Mount Kembla Strategic Plan.

**Figure 3-1: Planned land uses in the local area**



Source: Wollongong City Council. 2011. Farmborough Heights - Mount Kembla Strategic Plan

Planned land uses in the area near the Project include:

- “Environmental Living” residential areas (pale gold areas) in the Mount Kembla-Kembla Heights area;
- Environmental Management and Conservation (tan areas) protecting the flanks of Mount Kembla; and
- low density residential areas (pink) in the Cordeaux Heights, Unanderra and Figtree areas,

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<sup>38</sup> WaterNSW. 2015a

interspersed with recreational and water management reserves (shown as green).<sup>39</sup>

### 3.2.2 Affected private landholdings

Illawarra Coal owns the majority of private (non-Government) land within the Development Consent Application area. The existing mining operations are undertaken in accordance with Development Consent DA 60-03-2001 (as modified), as well as the Approval Decision (EPBC 2001/214) under the *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act).

There are four private properties overlapping the proposed underground mining areas, none of which would experience any surface disturbance, and all of which have existing commercial agreements with Illawarra Coal.

The Development Application area incorporates land at Port Kembla that is owned by BlueScope Steel.

### 3.2.3 Affected public landholdings

The Project's underground mining areas are within the catchments of the Avon and Cordeaux Rivers. Area 5 is located north of Avon Dam, and Area 6 is located north-north-west of the Cordeaux Dam wall.

The two dams and the proposed mining areas are within the MSA declared under the Water NSW Act 2014 which covers approximately 90,239 ha. Special Areas are the protected catchment lands surrounding the water storages to ensure the supply of quality water to Greater Sydney.

Land uses within the MSA include<sup>40</sup>:

- National Parks and Wildlife Service reserves representing 30,111 hectares (ha) or 33.37% of the Metropolitan Special Area, including the Upper Nepean State Conservation Area, part of the Dharawal National Park and part of the Illawarra Escarpment State Conservation Area;
- WaterNSW freehold land representing 48,449 ha or 53.69%; and
- other uses, including Crown lands and private freehold and leases, at 11,679 ha or 12.94%.

WaterNSW's "no entry" restrictions cover the entire MSA, and original vegetation remains over most of the underground mining areas, with the exception of corridors used for fire roads, Picton Road, powerlines, and the incomplete and abandoned Maldon-Dombarton rail corridor, and other minor disturbances. WaterNSW notes that there are currently two mining companies with active longwall coal mining operations under the MSA that surrounds the Cataract, Cordeaux, Avon and Nepean Dams. WaterNSW and the National Parks and Wildlife Service undertake management of the area including fire management, pest and weed control, water quality monitoring and soil and erosion control<sup>41</sup>

WaterNSW notes that ecological integrity and connectivity have been generally maintained in Special Areas, which hold high biodiversity values, diverse natural landscapes, Aboriginal heritage sites and values, forests, swamps, and creeks, and wilderness areas<sup>42</sup>. The construction of three major water storages in the MSA is an exception to this.

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<sup>39</sup> Wollongong City Council. 2013

<sup>40</sup> WaterNSW and Office of Environment & Heritage. 2015

<sup>41</sup> WaterNSW. 2018

<sup>42</sup> Ibid

### 3.2.4 Residential amenity

The term “amenity” relates to the qualities, characteristics and attributes people value about a place which contributes to quality of life, the identity of an area and 'sense of place'<sup>43</sup>. Elements that contribute to residential amenity include safety, urban design and architectural features, views, green areas, heritage aspects, privacy and connectivity to places such as shops and community facilities. Amenity also includes the ability to live free of nuisances including those arising from noise, odour, vibration, dust, wastewater or waste products<sup>44</sup>. Socio-psychological factors such as feelings of security and safety, community belonging and local identity also make a contribution to amenity.

Communities in the local study area share a number of features contributing to residential amenity, including:

- village and suburban communities framed by bush land and park reserves;
- predominantly single lot housing, with privacy and yards suitable for families;
- treed streetscapes and good connectivity to and through the area;
- views to the escarpment and the foothills;
- access to local shops and services in Unanderra and other centres, and to services in Wollongong and other urban centres; and
- direct train travel from Unanderra to Wollongong and Sydney.

Mount Kembla's and Kembla Heights' residential amenity includes:

- access to a village school and church with multi-generational links, and to a hotel with character values;
- diversity in lot sizes and the built form of dwellings;
- visual amenity and views which are strongly enhanced by the physical setting on the escarpment; and
- easy every-day access to bush land, trails and wildlife habitat.

Mining operations have also been accommodated in the area for a long period, with associated approved impacts on amenity and local traffic generation.

While community survey respondents appreciated the semi-rural character in and around Mount Kembla and Cordeaux Heights (see Appendix B, Section B4), they also valued the convenience of the urban areas close by. People said Wollongong was close to their community but was not close enough to impede their rural way of life, and they were happy to visit it when needed.

However, residents are required to drive to access most goods and services.

The amenity of Cordeaux Heights, Figtree and Unanderra includes:

- gentler topography and easier walkability than in Mount Kembla and Kembla Heights;
- a wider diversity of housing forms, with more medium density housing;

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<sup>43</sup> Bell, K. 2000

<sup>44</sup> Leichhardt Municipal Council. 2000

- easy access to goods and services, including public transport connectivity;
- choice in facilities for community participation e.g. schools, centres, sporting facilities and parks; and
- easy access to National Parks, State Conservation Areas and beaches.

Survey respondents said they enjoyed the village feel of the shops in the local area (including Unanderra) and used the sporting, medical and educational facilities that were on offer, with Wollongong a short drive away to access higher order facilities and services when needed. Access to the train station and proximity to the freeway were also noted by survey respondents.

### 3.3 Culture

This section relies on the results of community engagement for the SIA (which is detailed in Section 4) and research as referenced.

#### 3.3.1 Traditional owners' values

The original inhabitants of the Wollongong region are the Tharawal Aboriginal people, also called Dharawal people<sup>45</sup>. WCC identifies the coastal areas of Sydney between Broken Bay / Pittwater, west to Berowra Waters, south to Parramatta and Liverpool and extending into the Illawarra and Shoalhaven districts as the traditional country of the Dharawal people<sup>46</sup>. The name 'Wollongong' is said to derive from an Aboriginal word meaning "the sound of the sea"<sup>47</sup>. Tharawal Local Aboriginal Land Council notes that most of the Tharawal people now live in the Campbelltown, Wollondilly and Camden LGAs<sup>48</sup>.

The Cubbitch Barta people of the Tharawal nation are identified with the area west of the Illawarra Escarpment, including the underground mining areas proposed as part of the Project. A Cubbitch Barta Elder consulted as part of the SIA noted that traditional access and cultural use of the Illawarra Escarpment has been prohibited and/or restricted for many decades, due to the "no entry" access restrictions placed on the MSA by WaterNSW.

Traditional access and cultural use of the Illawarra Escarpment included Tharawal people traversing a wide area including the escarpment and out to Campbelltown, where there continues to be a strong representation of the Tharawal community. Consultation with the Cubbitch Barta people of the Tharawal nation identified the enduring connection between Aboriginal people and their traditional lands, the historic significance of the Illawarra/Campbelltown area for Aboriginal people both pre- and post-European settlement, and the recognition of traditional knowledge and practices in contemporary life.

With respect to the Project area, key values include:

- protection of cultural heritage sites and artefacts, and continuity in the process for surveying, assessing and monitoring them;
- upholding integrity in the interpretation of local cultural heritage by encouraging involvement of recognised traditional owners; and
- engagement with and respect for Indigenous knowledge about the land and traditional land

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<sup>45</sup> Tharawal Local Aboriginal Land Council, 2017

<sup>46</sup> Wollongong City Council. 2017a

<sup>47</sup> Profile.id@. 2017c

<sup>48</sup> Wollongong City Council. 2017a



management practices.

With respect to the Dendrobium Mine operations, key values include:

- strengthening employment outcomes through apprenticeships, training, career pathways, and jobs;
- preservation of traditional country and the natural environment; and
- engaging with Indigenous knowledge through cultural awareness and competency inductions.

### 3.3.2 Cultural diversity

Wollongong's cultural diversity has benefited from the existence of Tharawal peoples and members of other Indigenous communities. The attraction of ethnically diverse workers to the mining, industrial and education sectors, and the relative affordability of housing, has further supported cultural diversity. Further information about cultural diversity is provided in Section 3.4.4.

## 3.4 Community

### 3.4.1 Planning, governance and decision-making systems

#### Regional Plan

The *Illawarra-Shoalhaven Regional Plan*<sup>49</sup> applies to the Wollongong, Kiama, Shellharbour and Shoalhaven LGAs. The Regional Plan provides the policy, planning and decision-making framework for the sustainable growth of the region over the twenty years from 2015, including ecologically sustainable development, a diverse and competitive economy, and a sustainable built environment that supports healthy and vital communities. Key priorities include:

- economic diversity and access to high quality jobs;
- greater housing choice for changing needs, improved public transport and urban design;
- growing Wollongong's national competitiveness to provide more jobs, housing and lifestyle opportunities;
- supporting the growth of Port Kembla as an international trade gateway; and
- protecting the landscape and environment.

The Regional Plan notes that the combined urban area of Wollongong and Shellharbour represents one of the top 10 largest urban areas in Australia. Key directions supporting Goal 3 (Communities that are strong, healthy and well connected) include:

- grow the opportunities for investment and activity in the region's network of centres;
- enhance community access to jobs, goods and services;
- build socially inclusive, safe and healthy communities; and
- protect the region's cultural heritage.

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<sup>49</sup> NSW Department of Planning and Environment. 2015

## Community Plan

The *Wollongong 2022 Community Strategic Plan*<sup>50</sup> documents the long-term vision for Wollongong City, based on the results of a 12 month community engagement program. The Strategic Plan's vision is to build an educated, creative and connected community, through six community goals and objectives as outlined in Table 3-1.

**Table 3-1 Summary of community goals for Wollongong 2022**

Community Goal	Key objectives
Value and protect the environment	<ul style="list-style-type: none"> <li>Protect and enhance the natural environment, including coastal areas and waterways</li> <li>Create a sustainable urban environment with a reduced ecological footprint (including greater support for local food production)</li> <li>Community awareness and appreciation of local heritage</li> </ul>
An innovative and sustainable economy	<ul style="list-style-type: none"> <li>Raise, extend and improve the profile of Wollongong</li> <li>Increased employment opportunities</li> <li>Diversify regional industry and economy, including green technologies and industries</li> </ul>
A creative, vibrant city	<ul style="list-style-type: none"> <li>Increase visibility and value of Wollongong's cultural diversity</li> <li>Create and foster creative industries and increase community participation in arts, culture and events</li> </ul>
A connected and engaged community	<ul style="list-style-type: none"> <li>Easy, equitable access to resources</li> <li>Increased sense of community ownership</li> <li>Increased participation in planning</li> </ul>
A healthy community in a liveable city	<ul style="list-style-type: none"> <li>Increased physical fitness, mental and emotional wellbeing of residents</li> <li>Residents demonstrate a high level of life satisfaction and happiness</li> <li>Community safety is improved</li> <li>Public domain is of a high standard</li> </ul>
Sustainable affordable and accessible transport	<ul style="list-style-type: none"> <li>Wollongong is supported by integrated transport system</li> <li>Reducing use of private vehicles and increasing use of active transport</li> <li>Equitable access to transport options for disadvantaged communities</li> </ul>

## Community representation

The DCCC is an advisory committee established under the conditions of the Dendrobium Development Consent DA 60-03-2001 (as modified on 8 December 2008). The DCCC provides representation for the areas which have the potential to be impacted by Dendrobium Mine, which are defined in the DCCC Terms of Reference as encompassing Mount Kembla, Kembla Heights, the communities along the rail corridor from Kemira Valley to Port Kembla, the surface areas located above current and potential

<sup>50</sup> Wollongong City Council. 2012

mining areas, and the West Cliff Coal Wash Emplacement Area.<sup>51</sup> As provided in its Terms of Reference, the DCCC provides a forum to:

- establish good working relationships between the company, the community and other stakeholders in relation to Dendrobium Mine;
- provide information and facilitate discussion on mining operations and the environmental performance of the mine;
- discuss community concerns and review the resolution of community complaints;
- discuss communication of relevant information on the mine and its environmental performance to the wider community, including the results of environmental monitoring, Environmental Management Reports and the results of audits; and
- work together towards outcomes of benefit to the mine, immediate neighbours and the local and regional community.

The DCEC is a sub-committee of the DCCC. Its purpose is to represent community interests and needs in considering applications for funding to the DCEP, as further described in Section 4.7.3.

The Wollongong LGA is rich in community networks that cross the environmental, cultural, economic and social spectrums. For example, community networks such as Parents and Friends' Associations, church communities, Indigenous communities and seniors organisations are involved in local level governance and administration for community facilities and services, and sporting networks are also extensive. Members of the Tharawal people and other Indigenous community members manage a range of services, programs and facilities for Indigenous people.

#### **Political representation**

The WCC is the administrative and local planning authority for the Wollongong LGA. The Council is led by Lord Mayor Councillor Gordon Bradbery OAM. There are three Council Wards, each with four Councillors. The local communities are within Ward 2, which is represented by Councillors Cath Blakely, David Brown (also Deputy Lord Mayor), John Dorahy and Tania Brown.

At State level, all local area suburbs are within the electorate of Wollongong, which is represented in the Legislative Assembly by Mr. Paul Scully MP (Australian Labor Party or ALP), with the exception of Figtree which is in the adjoining electorate of Keira and is represented by Mr. Ryan Park MP (ALP).

At the Commonwealth level, the Wollongong LGA is within the Cunningham Electoral Division which is represented by the Hon. Sharon Bird MP. The electorate approximates the majority of Wollongong LGA, but includes Warrawong to the south of Lake Illawarra. Some areas of the Wollongong LGA including parts of Unanderra, Kembla Grange and Farmborough Heights are in the Whitlam Federal Electorate, which is represented by the Hon. Stephen Jones MP.

#### **3.4.2 Community identity**

Wollongong has traditionally been a worker's city, with mining and steel making a strong influence on its economic and social character. Wollongong's identity is progressively moving from a region strongly based on mining, heavy industry and exporting, to one with diverse strengths in education, health, technology and port operations. As an example, the Illawarra Region's Transition Strategy<sup>52</sup>

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<sup>51</sup> South32. 2015

<sup>52</sup> Deloitte Access Economics. 2013

acknowledges historical mining's contribution to the region's economy, but its key directions target the tertiary and technology sectors. University of Wollongong has been a strong driver in this regard. The Illawarra-Shoalhaven Regional Plan reflects this transition, acknowledging that steel making remains a critical industry sector in the Illawarra region<sup>53</sup>. The Project represents important and ongoing support for the steel making industry in the Illawarra region.

In addition, population growth will see the Illawarra-Shoalhaven area transition to one of Australia's biggest urban centres, within an easy commute of Sydney's economic and social opportunities, and with potential for increased integration with the Greater Sydney region.

A member of Illawarra Coal's Bulli Seam Operations CCC was consulted on any known issues with respect to Illawarra Coal's activities in the Wollondilly LGA. The key baseline values identified as relevant to the Project in the Wollondilly Shire include traffic safety, water quality in Georges River and Brennan Creek, and the Georges River catchment's bushland and biodiversity. The increasing diversification of the regional economy and the drift of former Sydney residents to Wollongong and Wollondilly LGAs were also noted. As the thoroughfare to Campbelltown and the greater Macarthur region, the current high level of traffic including heavy vehicles on Appin Road is also a matter of community concern.

The natural beauty of the area is significant to the identity of the local communities and the Wollongong region as a whole. The escarpment, greenspace, wildlife and bushland were frequently mentioned by consultation participants, and identified as major attractions for migrating to or staying in the area.

At the local level, community identity varies slightly between the suburban areas and the escarpment villages. Mount Kembla and Kembla Heights are smaller communities, bordered by bushland and foothills, with a longer and richer history than the adjacent suburbs. As a result, they have a semi-rural, village identity characterised by a peaceful and quiet lifestyle, long term local bonds between neighbours and friends and self-sufficiency developed from their relative isolation. Opportunities for social interaction are centred on the school, the hotel, parks and bush pathways.

Mining history is a strong part of the local identity, with ongoing remembrance of the men and boys killed in the Mount Kembla Mine explosion in 1902, and social networks emanating from the mining industry and related services.

Cordeaux Heights, Figtree and Unanderra are more centrally located in the Wollongong LGA, situated between the escarpment and the Southern Freeway that separate them from the Port's industrial area. They are more densely settled than Mount Kembla and Kembla Heights, and have a more suburban character, with access to a wide range of opportunities for social and cultural interaction. As such they are more likely be defined by the Wollongong region's cultural characteristics and identity.

### 3.4.3 Sense of place

Sense of place refers to acknowledgement of the special characteristics that foster community identity and belonging, and a connection with natural land and physical environments. Wollongong residents' sense of place is closely related to the city's "frame" within the escarpment and the coast line, with beaches and bush land strongly infusing the local lifestyle. There is a strong and ongoing community respect for the region's diverse natural environments, natural beauty and high biodiversity, as recognised in regional and community plans (see Section 3.4.1).

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<sup>53</sup> NSW Department of Planning and Environment. 2015

Port Kembla is also a prominent part of the landscape that is visible from many parts of the region, and supports Wollongong's character as an industrial city. The LGA's many parks, recreational facilities and the city's low-to medium rise urban form also support Wollongong's sense of place. During the last five years' higher rise buildings have been developed in the Wollongong Central Business District, heralding a change to the city centre's low rise character.

At the local level, the most commonly cited community values identified in the community survey included access to a beautiful natural environment, wildlife appreciation, access to walking tracks, and the rural lifestyle where family, neighbours and community are important to daily life.

DCCC inputs about sense of place included:

- the strong community value placed on the unique character of Mount Kembla village, its mining history, and the natural surrounds;
- encroachment of urban development on Mount Kembla village is a concern for many residents wanting to preserve the village identity;
- strong environmental and conservation values associated with the Illawarra Escarpment and WaterNSW catchment areas; and
- community anxiety regarding perceived or potential impacts on catchment values, water supply and water quality.

Local residents actively utilise the bushland via the many walking/bicycle tracks, and said that the bushland and wildlife provided the backdrop for their sense of place. Mount Kembla survey respondents felt a strong sense of community in their area, characterised by its heritage, community pride and the small size of the village. The Mount Kembla school, which has educated multiple generations of local families, is particularly valued. Special mention of the Mount Kembla mine memorial was also made as a place that respondents liked to visit. Mining is part of the local history and heritage for the area and was perceived by many as part of the area's fabric.

Locally, environmental values are a strong part of residents' sense of place. In addition to the amenity and vistas offered by the escarpment, residents in the other local suburbs have access to a wide range of local parks and green spaces framing suburban neighbourhoods. Suburbs remain separated and protected by bands of green bushland and parks, which are a highly valued distinction by local residents.

### 3.4.4 Community profile

This section describes the population characteristics in the SSCs that represent the SIA study area's five local communities, along with data for the Wollongong LGA. As discussed in Section 2.3.4, the State Suburb boundaries for Mount Kembla, Kembla Heights and Figtree changed between 2011 and 2016, so direct comparisons between 2011 and 2016 were not possible for these SSCs. However, the combined SSCs of Mount Kembla / Kembla Heights are comparable between 2011 and 2016. Also of note, the ABS's sampling corrections for small populations (required to protect confidentiality) lead to minor variations between some data sets. Supporting data are provided in Appendix A.

#### Current population

In 2016, 1,187 people lived in the Mount Kembla/Kembla Heights area, or 159 more people than were recorded for Mount Kembla in 2011 (there were no Census data provided for Kembla Heights in 2011). Cordeaux Heights had a population of 4,559 people in 2016 (an increase of 161 people from 2011), and Unanderra had a population of 5,434 (an increase of 241 people). The Figtree State Suburb had the largest population of the local study area with 11,564 residents in 2016, and as the State Suburb had decreased in size since 2011 (when it had a population of 10,629 people), this indicates ongoing growth in the Figtree area. Collectively, the local study area's population had increased from 23,080 people to

23,931 people (851 people or 3.7% growth) over the five years, which was a slower rate of growth than the Wollongong LGA experienced.

At the 2016 Census, Wollongong LGA had a population of 203,630 people, which was an increase from 2011 of 11,212 people (see Table 3-2). This was a five year percentage increase of 5.8%, or an average of 1.16% per year. By contrast, NSW's average five year growth rate was 7.5%.

**Table 3-2: SIA Study Area Population 2011-2016**

State Suburbs	Mount Kembla/Kembla Heights	Mount Kembla	Kembla Heights	Cordeaux Heights	Unanderra	Figtree	Wollongong LGA
2016 Population	1,187	1,068	119	4,559	5,434	11,564	203,630
2011 Population	1,028	1,028	0	4,720	5,675	10,629	192,418
Variance	159	40	N/A	-161	-241	NA*	11,212

\*2011 and 2016 State Suburb geographies are not comparable.

Source: Australian Bureau of Statistics 2016a and 2011

### Future population

Figure 3-2 presents the NSW DPE's 2016 projections for the Wollongong LGA between 2011 and 2036.

As noted by the NSW DPE, the 2016 NSW population projections took into account the 2011 Census of Population and Housing Estimated Resident Populations (as rebased by the ABS), the latest data on births, deaths and migration, and assumptions about the geographic distribution of future residential development.<sup>54</sup> On this basis the Department estimated Wollongong's population in 2011 at 202,050 people (almost 10,000 more than the ABS 2011 Census estimated resident population count).

As shown in Figure 3-2, the projections anticipated a population of approximately 211,750 people at 2016, (8,120 more people than were counted at the 2016 Census) and 83,850 households in the LGA (slightly lower than the 83,916 counted in 2016).

By 2031 the LGA's population is anticipated to be approximately 237,150 people. The projections indicate that the LGA's population is expected to grow by an average of 0.8% per year during the decade 2016 – 2026, slowing to 0.7% in the following five years, and again to 0.6% in the five years to 2036. Overall, the LGA's population is projected to increase by approximately 15% between 2016 and 2036, and the number of households to increase by 18%. However, household sizes are expected to decline slightly from 2.48 people per household in 2016 to 2.4 people in 2036<sup>55</sup>. From a total of approximately 90,500 dwellings in 2016, the LGA is projected to require an additional 16,500 dwellings by 2036.

WCC representatives advised that residential development potential exists primarily at West Dapto, with smaller areas available in other suburbs (including Cordeaux Heights). Demand will otherwise be addressed through urban infill, with unit development and uptake currently strong in Wollongong City.

<sup>54</sup> NSW Department of Planning and Environment. 2016. Reference Notes

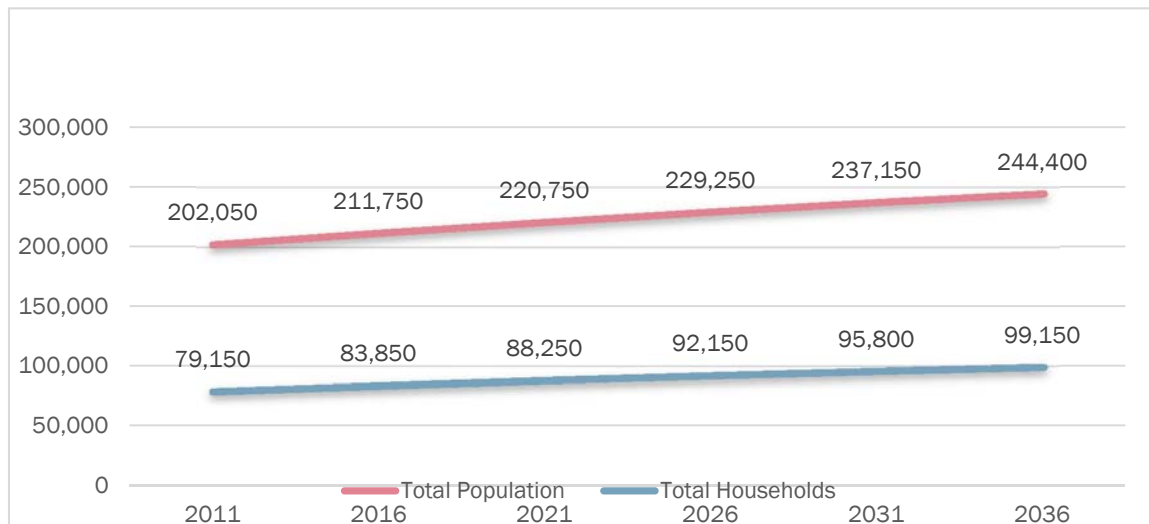
<sup>55</sup> NSW Department of Planning and Environment. 2016. Reference Notes



## Age and gender profile

Census 2016 data indicate that the median age of Wollongong residents increased from 38 to 39 years between 2011 and 2016. At the local level, the greatest variance in median age between 2011 and 2016 was in Cordeaux Heights where the median age had increased to reflect the LGA average. Unanderra maintains the oldest median age of the study area, increasing by two years between 2011 and 2016 to a median age of 43 years.

**Figure 3-2: Projected population and households, Wollongong LGA, 2011-2036**



Source: NSW DPE, 2016. New South Wales State and Local Government Area Population and Household Projections and Implied Dwelling Requirements

There was little variation in the male: female ratio in the study area, with the exception of the Unanderra and Mount Kembla SSCs where females represented 52.7% and 52.3% of the populations respectively. A summary of the age and gender profile for the study area in 2016 is available as Appendix A, Table A-2.

Findings of note in relation to the age profile include:

- Kembla Heights had a strong representation of children aged under 15 years (at 26.9% of the resident population), whilst in Mount Kembla 21.4% of the population were under 15 years, compared to 17.9% years in the LGA and 18.5% for NSW;
- Mount Kembla SSC and Cordeaux Heights SSC had a strong representation of older adults aged 35-64 years (43.2% and 44.0% respectively), compared to 37.6% for the LGA and 38.4% for NSW; and
- Unanderra SSC had the highest proportion of residents aged 65 years and over (at 23.9%, compared to 17.7% for the LGA and 16.2% for NSW).

## People with a disability

In 2016, 5.4% of the NSW population identified as needing assistance with core activities, which denotes moderate to severe disability (up from 4.8% in 2011). Consistent with national trends, the growth in disability rates in NSW is likely to correlate with an ageing population.

Disability prevalence in the study area varied. Rates above the average were recorded for Wollongong LGA (6.4%) and Figtree (5.9%) and were highest in Unanderra (10%), again reflecting the older population in this area. Results for Mount Kembla (2.2%), Kembla Heights (2.5%) and Cordeaux Heights (3.8%) were below the LGA and NSW average and likely to correlate with a marginally younger population (see Appendix A, Figure A-1).

### **Cultural diversity**

Wollongong residents who identified as Aboriginal, Torres Strait Islander or both at the 2016 Census represented a marginally smaller proportion of the LGA population (2.6%) compared to the NSW average (2.9%). Collectively, there were 426 Indigenous people in the local area communities, and a total of 5,343 people in the Wollongong LGA. The majority were Aboriginal people, with people of Torres Strait Islander descent representing just 109 people in the LGA and people with Aboriginal and Torres Strait Islander heritage representing 101 people (see Appendix A, Table A-4).

There were higher degrees of cultural diversity (as represented by birth place and speaking languages other than English at home) in Figtree, Unanderra and Cordeaux Heights than in the Mount Kembla and Kembla Heights suburbs. The highest percentages of people speaking other languages at home were in Cordeaux Heights (22% of the population) and Figtree (19.1%). Percentages of people speaking other languages in Mount Kembla and Kembla Heights were low at 5.4% and 4.2% respectively.

### **Families and household composition**

Key characteristics of the study area's family and household composition as shown in Appendix A Figures A2 and A3 included:

- higher proportions of family households in Cordeaux Heights (90.6%) and Mount Kembla (85.7%) compared to the other local suburbs, and the LGA and NSW averages (70% and 72% respectively); and
- a higher percentage of sole person households in Unanderra (at 31.4%, compared to 25.5% in Wollongong LGA and 23.8% for NSW), reflecting its older population;
- a higher representation of couple families with children in Mount Kembla and Cordeaux Heights (60.9% and 58.7% respectively) compared to the LGA and State average (44.6% and 45.7% respectively). The data indicate that sole parent families made up 50% of the family composition in the Kembla Heights, however this may have been affected by a data sampling error given the small population there.

NSW DPE's population projections with regard to household types indicate that the largest projected changes between 2011-2036 were for couple only households (an increase of 34.6% over the 25 years) and lone person households (a 35.4% increase over the 25 years). In line with this trend, the total number of family households is expected to increase by 23% over this period, whilst non-family households would increase by 30.7%, largely derived from the increase in lone person households (see Appendix A, Table A-5).

The implication is that future housing and social infrastructure provision will need to reflect both the aging of the population and the greater numbers of one person households.

### **Educational attainment**

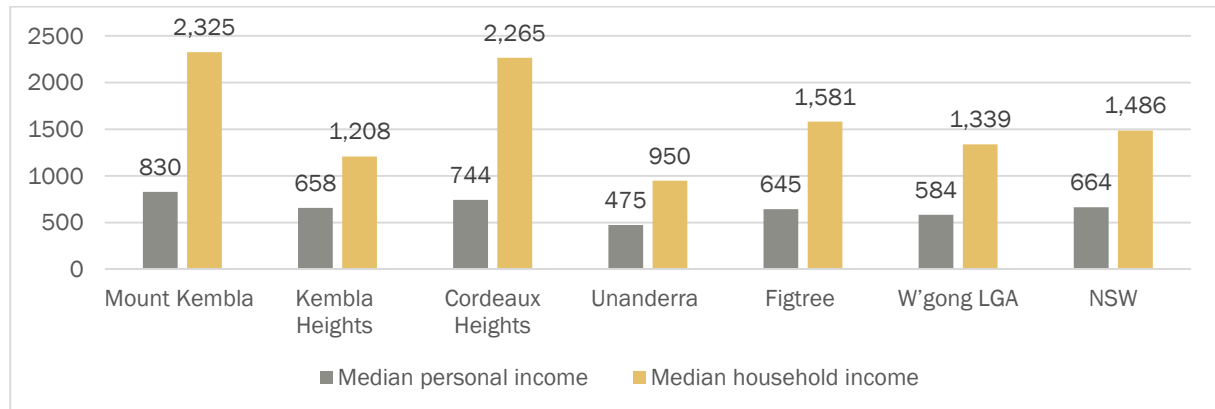
Highest Year 12 completion rates in the local study area in 2016 were shown in Cordeaux Heights SSC (60%) and Mount Kembla SSC (56.7%), and were lowest in Kembla Heights (at 25.6%) and Unanderra (at 31.5%) which reflects the older population. Year 12 attainment levels in the Wollongong LGA in 2016 had increased by approximately 5%, from 43% of residents aged 15 and over in 2011, to 47.9% (compared to 53.9% for NSW) (see Appendix A, Table A-6).

### **Income**

As shown in Figure 3-3, the average weekly income for individuals living in the Wollongong LGA (\$584 per week) was lower than the NSW average (\$664 per week), and also lower for households at \$1,339 per week compared to the NSW average of \$1,486 per week. At the local level, Mount Kembla and Cordeaux Heights had the highest personal incomes (\$830 and \$744 per week respectively) and highest

household income (\$2,325 and \$2,265 per week), above the LGA and State average income levels. Unanderra had the lowest personal income of \$475 per week, and lowest household income of \$950 per week, which is a reflection of an older population with lower workforce participation levels.

**Figure 3-3: Income 2016 (\$/week)**



Source: Australian Bureau of Statistics, 2016a. Census of Population and Housing. Derived from QuickStats for SSC, LGA and NSW STE

### 3.4.5 Community cohesion

The SIA community survey indicated that there were positive indicators of social capital and cohesion (85% of people agreed that their community works together on local issues), with some potential for improvement in the availability of local opportunities for community participation (only 53% agreed there were opportunities available).

Of the 113 local residents who participated in the SIA community survey (see Appendix B, Section B4), 85% agreed that their community works together on local issues, which reflects a healthy level of local social cohesion.

Results from the 2016 Census confirm that communities in the local study area continue to volunteer at a generally higher rate than the LGA and NSW average. Volunteering was highest among the Mount Kembla SSC (28.5%), followed by the Mount Kembla / Kembla Heights population (27.7%), Cordeaux Heights SSC (24%), Kembla Heights SSC (21.3%) Figtree SSC (20.6%) and Unanderra SSC (14.4%) (see Appendix A, Table A-1).

## 3.5 Way of life

This section describes economic strengths and employment in the SIA study area.

### 3.5.1 Economic strengths

REMPAN's estimates of the Wollongong LGA's outputs (the gross revenue generated by businesses/organisations in each of the industry sectors) indicates that the Wollongong economy's output in 2017 was approximately \$25.751 billion. Of this, the largest proportion (an estimated 14.5%) was generated by the manufacturing sector, with steel making a key strength. Port Kembla has significant economic value to the Illawarra region (and to the State) with key contributors including motor

vehicle imports, steel export, grain exports and coal export<sup>56</sup>. Port Kembla is home to a range of industrial, manufacturing and processing uses, including processing of Dendrobium Mine's coal and BlueScope's major steelmaking plant. As such it is a major employment generator for the LGA. The construction industry is also strong in the LGA, with an estimated 13.9% of outputs in 2017, followed by rental, hiring and real estate at 10.5%). The mining industry accounted for an estimated 4.7% of outputs (Appendix A, Figure A-4).

The LGA is currently undergoing an economic transition from a 'steel making city' to an 'innovation city', with key sectors driving the transition including:

- advanced manufacturing and logistics, including Port Kembla operations;
- business services and shared services;
- clean technologies, including renewable energy;
- creative industries, including publishing, media, architectural services and arts education;
- education, research, health, aged care and community services;
- information and communication technology;
- mining technology and services; and
- tourism based on the region's natural and cultural assets <sup>57</sup>.

Consultation with WCC affirmed that the LGA is broadening its economic base, however mining and manufacturing are major contributors to Gross Domestic Product. Council also noted the manufacturing industry is exploring ways to expand its customer base and work more closely with the mining industry in this respect.

Significant economic changes are anticipated during the period in which the Project would operate. In the context of the Illawarra Transition Initiative, where health, community services, education and technology are expected to be the fastest growing sectors for the next two decades, mining and manufacturing are also recognised as major contributors to the region's economic profile<sup>58</sup>. Port Kembla remains an important part of the transition as an international gateway, a key infrastructure asset and economic driver for the LGA, Illawarra region and the State<sup>59</sup>.

### 3.5.2 Labour force

Table 3-3 presents a summary of labour force indicators for the Wollongong LGA between 2016 and 2011. In 2016, there were 95,005 people in the LGA's labour force, of whom 52,443 (55.2%) were full-time workers and 34,340 (36.1%) were part-time workers, which was similar to NSW's proportions.

Between 2011 and 2016, the labour force had increased by 5,960 or 6.7%, including an increase of 5,399 employed people and 561 unemployed people. Labour force participation (the proportion of the people aged 15 years and over that were employed or looking for work) was lower for the Wollongong LGA in 2016 (at 56.9%) compared to NSW (59.2%), and Wollongong also had a higher proportion (7.1%) of people that were unemployed compared to NSW.

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<sup>56</sup> REMPLAN. 2017a

<sup>57</sup> Regional Development Australia. 2014; Wollongong City Council. 2017c

<sup>58</sup> NSW Department of Planning and Environment. 2015

<sup>59</sup> Wollongong City Council. 2017c

**Table 3-3 Labour force status 2011-2016**

Labour force status	2016			2011			Change
	No.	%	NSW %	No.	%	NSW %	2011 to 2016
Total labour force participation rate	95,005	56.9	59.2	89,045	56.8	59.7	+5,960
Not in the labour force	63,178	37.8	34.3	60,290	38.5	34.6	+2,888
Labour force status not stated	8,886	5.3	6.6	7,410	4.7	5.7	+1,476
Total persons aged 15+	167,076	100.0	100.0	156,745	100.0	100.0	+10,331
Employed	88,250	92.9	93.7	82,851	93.0	94.1	+5,399
Employed full-time	52,443	55.2	59.2	49,878	56.0	60.2	+2,565
Employed part-time	34,340	36.1	32.7	31,233	35.1	31.8	+3,107
Hours worked not stated	1,467	1.5	1.9	1,740	2.0	2.1	-273
Unemployed	6,755	7.1	6.3	6,194	7.0	5.9	+561
Looking for full-time work	3,347	3.5	3.4	3,521	4.0	3.5	-174
Looking for part-time work	3,408	3.6	2.8	2,673	3.0	2.4	+735
Total labour force	95,005	100.0	100.0	89,045	100.0	100.0	+5,960

Source: id the population experts based on Australian Bureau of Statistics Census of Population and Housing 2011 and 2016a <https://home.id.com.au>

### 3.5.3 Key industries

The three industries employing the largest proportions of employees in the Wollongong LGA in 2016 were:

- health care and social assistance (13,078 people, or 14.8% of employed people);
- education and training (10,392 people, or 11.8%); and
- retail trade (8,422 people or 9.5%).

By comparison, NSW employed 12.5% in Health Care and Social Assistance; 8.4% in Education and Training; and 9.7% in Retail Trade, demonstrating the relative strength of the health and education sectors in Wollongong LGA.

A total of 5,079 people were employed in the manufacturing sector (at 5.8%, directly comparable to the NSW proportion), and 1,730 people were employed in the mining sector (2.0% of the LGA's employed persons compared to 0.9% for NSW) (see Appendix A, Table A-8).

### 3.5.4 Occupational profile

The three most common occupations of employment in Wollongong LGA in 2016 were:

- professionals (20,485 people or 23.2%);
- technicians and trades workers (13,048 people or 14.8%); and
- clerical and administrative workers (12,002 people or 13.6%).

The major differences between the Wollongong LGA's occupational profile and that of NSW were:

- a larger percentage of persons employed as Technicians and Trades Workers (14.8% compared to 12.7%);
- a larger percentage of persons employed as Community and Personal Service Workers (12.4% compared to 10.4%); and
- a smaller percentage of persons employed as Managers (10.5% compared to 13.5%)

Data on the occupational profile is provide in Appendix A, Table A-9.

### 3.5.5 Unemployment trends

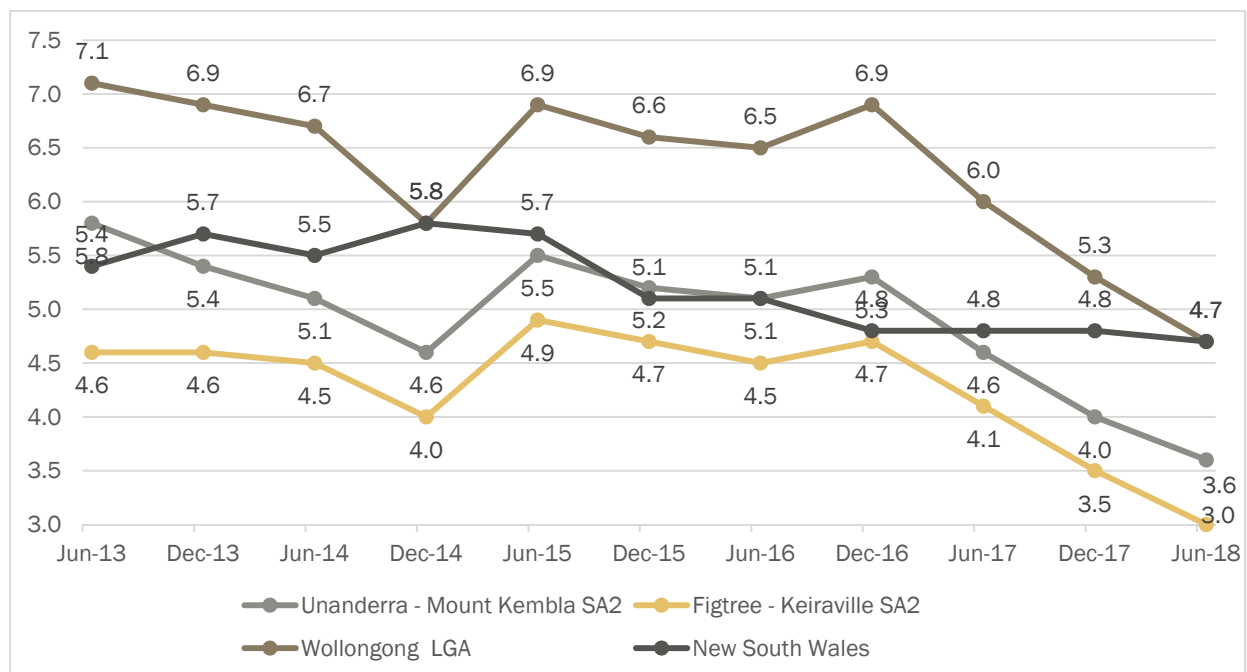
Inputs from the DCCC members suggest that residents of Mount Kembla and the surrounding local area are supported by employment in a diverse range of industries, but there are limited local employment opportunities due to the scale and function of Mount Kembla village.

The five-year unemployment trend from June 2013 to June 2018 indicates that unemployment in the Wollongong LGA was generally higher than the State average (see Figure 3-4) but declined during 2017, and continued to decline to June 2018 when the LGA had the same unemployment rate as NSW (4.7%). NSW's unemployment rate also declined during 2017 and the first half of 2018, but at a much slower rate.

Unemployment in the Unanderra-Mount Kembla SA2 also declined during 2017 and continued to decline during the first half of 2018 to reach a low 3.6%. A similar trend was seen in Figtree-Keiraville where unemployment was just 3.0% in June 2018. The data indicate that labour demands in the Wollongong LGA and the two SA2 areas have increased over this period.

The ABS Census indicates that Wollongong's Indigenous population experienced a much higher rate of unemployment at 14.7% (see Appendix A, Table A-11).

**Figure 3-4: Unemployment trends**



Source: Australian Department of Employment, 2017. Small Area Labour Market forecasts 2013 – 2018



### 3.5.6 Housing access

In 2016, Wollongong LGA had a total of 80,279 private dwellings of which 92.1% were occupied, slightly higher than the average 90.1% occupancy rate for NSW. A total of 6,330 private dwellings in the Wollongong LGA were unoccupied (see Appendix A, Table A-13).

There were approximately 348 dwellings in Mount Kembla and 41 in Kembla Heights in 2016. Occupancy rates were high across the local area, and highest in Mount Kembla and Cordeaux Heights at 96.4% and 95.1% respectively. There were just 18 unoccupied dwellings between Mount Kembla and Kembla Heights, and 51 in Cordeaux Heights. Occupancy in Unanderra and Figtree was comparable (at 94.4% and 94.5% respectively), with 122 unoccupied dwellings in Unanderra and 231 unoccupied dwellings in Figtree.

High occupancy rates in the study area are an indicator of limited available housing stock and a constrained market.

#### Housing stock and tenure

Characteristics of the housing stock and tenure in the LGA and local communities are shown in Appendix A, Table A-13. Key aspects include:

- percentages of unoccupied dwellings were lower than the State average (9.9%) in the local communities (with percentages of unoccupied dwellings ranging from a low 4.7% in Mount Kembla to 5.6% in Unanderra) and in the LGA (at 7.9%);
- homes that were owned outright in 2016 in Wollongong LGA represented 34.8%, which was higher than the NSW average of 32.2%. The proportion of households with a mortgage in the LGA was slightly less than the NSW average (32.3%);
- 30.3% of Wollongong LGA households were renting in 2016, which was slightly lower than the NSW average of 31.8%;
- in the local area, Mount Kembla and Cordeaux Heights had the highest rates of home ownership (at 47% and 43.5% respectively), and higher proportions of households with a mortgage (46% and 46.1% respectively); and
- rental tenure was very low in Mount Kembla at 4.8% and is very high in Kembla Heights at 92.7%, reflecting the historical development of the community on land owned by Illawarra Coal.

#### Dwelling types

At 2016, the Wollongong LGA had a slightly higher percentage of separate houses than the NSW average (69.5% compared to 66.4%) but this proportion had decreased since 2011. Larger, detached dwellings are more likely to house families and prospective families.

The percentage of flats and apartment dwellings in Wollongong LGA increased between 2011 and 2016 to represent 16.8% of all dwelling types, compared to 19.9% of all dwelling types in NSW.

In 2011, the proportion of semi-detached and townhouse dwellings represented 11.4% of occupied dwellings in the LGA, which was above the NSW average of 10.7%, while in 2016, the proportion was comparable to NSW (12.4% compared to 12.2%). These dwellings are more likely to attract young, single working adults and potentially older single people.

Separate houses represented more than 95% of all occupied dwellings in Mount Kembla, Kembla Heights and Cordeaux Heights. Results for Kembla Heights may be skewed due to the small population. In Figtree, separate houses represented 81.6% in 2016 (down from 83.6% in 2011), and semi-detached houses made up 8.2% of the mix (up from 6.1% in 2011). Flats and apartments continued to represent 5.6% of the mix.

Of the total occupied private dwellings in Unanderra in 2016, 77.8% were separate houses (up from 62.9% in 2011), 14% were semi-detached (down from 30.8% in 2011) and 7.2% were flats or apartments (up from 5.8% in 2011). Data on the dwelling structure profile of the local and regional communities between 2011 and 2016 is provided in Appendix A Table A-14.

### **Social housing**

Analysis of 2016 Census data on rental landlord types (see Appendix A Table A-15) indicates there were no properties being rented from State, community or church organisations in the Mount Kembla / Kembla Heights area. Social housing in other local communities included:

- 464 social housing properties in Unanderra (441 State Government properties and 23 rented from community or church organisations);
- 67 social housing properties in Figtree (including 47 State Government properties and 20 rented from community or church organisations); and
- 21 State Government properties rented in Cordeaux Heights.

Social housing also made up a larger proportion of the LGA's rental stock at 7.7% (compared with the NSW average of 4.7%) in 2016. At LGA level, there were 5,674 social housing properties, the majority of which were owned by the NSW Government.

### **Housing availability**

Data on housing availability in the study area has been sourced from SQM Research<sup>60</sup> and mortgage repayment data from the 2016 Census. With the exception of Census data, data are presented for the three postcodes representing the local area and the nearest Wollongong suburbs to the local communities (for comparison). They include the following locations:

- Postcode 2526 – encompassing Cordeaux, Cordeaux Heights, Kembla Heights, Mount Kembla, Unanderra, and Farmborough Heights;
- Postcode 2525 – encompassing Figtree; and
- Postcode 2500 – encompassing Wollongong, Wollongong North, Wollongong West, Mangerton, Mount Keira, Mount Saint Thomas, Coniston, Gwynneville, and Keiraville.

### **Stock for purchase**

A review of houses for purchase on Realestate.com.au (based on median price data at October 2018) shows that there were 75 dwellings available in Postcode 2526 (the suburbs closest to the Project), with a median asking price for houses of \$626,200 and a median asking price for units of \$539,000. Asking prices for houses had decreased during the preceding 12 months but increased by 15.5% over the preceding three years (See Table 3-4).

Postcode 2525 representing Figtree had a higher median house price but a much lower median unit price than in the other two postcodes. Minimal to no change in prices was seen in Figtree over the previous 12 months, however asking prices had increased by 28.5% for houses and almost 56% for units during the preceding three years.

Asking prices were highest in Postcode 2500 representing central Wollongong suburbs, at a median asking price of \$781,900 for houses and \$597,300 for units. Both houses and units had experienced

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<sup>60</sup> SQM Research. 2017a, 2017b, 2017c

similar decreases in the past twelve months but had increased by 24.3% and 29.8% respectively for houses and units over the preceding three years.

Increases in asking prices are likely to reflect generally high demand-led housing costs for coastal NSW, but also demand-pull inflation as people from more expensive areas in Sydney take advantage of Wollongong's liveability and the relative affordability of housing.

Residential building approvals made by WCC over the five years from 2011-12 to 2015-16 (Appendix A Figure A7) show consistent growth in residential development over the five years, with particularly strong growth in the number of 'other' residential dwellings (primarily units) in 2014-15 (832 dwellings) and 2015-16 (766 dwellings).

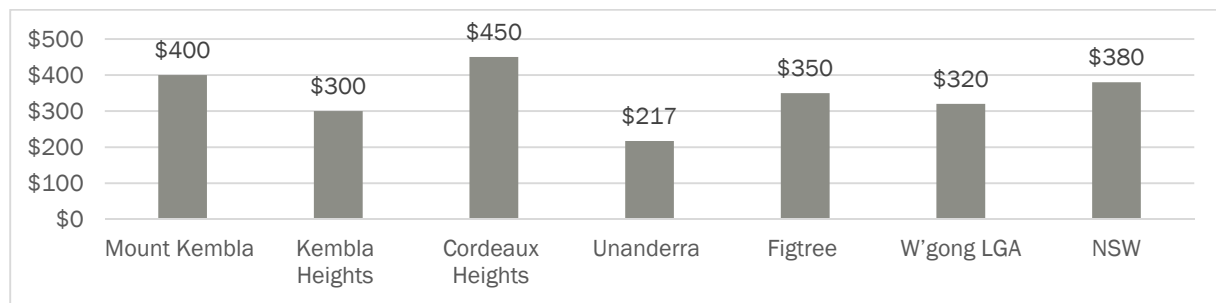
**Table 3-4 Housing price trends**

Dwelling Type by Postcode	Median asking price	12 month change %	3 year change %	Stock on market
2526				
All Houses	\$626,200	-10.2%	15.5%	-
All Units	\$539,000	15.80%	61.7%	-
All dwellings	-	-	-	75
2525				
All Houses	\$742,000	-2.6%	28.5%	-
All Units	\$300,000	0.0%	55.9%	-
All dwellings	-	-	-	64
2500				
All Houses	\$781,900	-4.5%	24.3%	-
All Units	\$597,300	-8.2%	29.8%	-
All dwellings	-	-	-	257

Source: SQM Research. 2017a

### Rental housing

At the 2016 Census, median weekly rents in Cordeaux Heights (\$450) and Mount Kembla (\$400) were higher than the LGA and NSW average (\$320 and \$380 respectively) (see Figure 3-5). The median weekly rent in Unanderra SSC was the lowest of the study area (\$217 per week). This reflects the high proportion of social housing dwellings in this suburb.

**Figure 3-5 Median weekly rents paid (\$/week)**

Source: Australian Bureau of Statistics, 2016a. Census of Population and Housing Quick Stats. Median Rent by SSC, LGA, NSW

Rental housing data current at September 2018 are shown in Table 3-5. Rents were lowest in the suburbs closest to the Project, with medians of \$448.50/week for houses and \$380.70/week for units in Postcode 2526. Asking rental prices had dropped slightly during the preceding 12 months, and there was minimal growth in rental prices over the preceding three years. The rental vacancy rate for postcode 2525 was a very low 0.9% in September 2018, so the minimal change in prices indicates minimal turnover in rental tenancies.

Figtree's (2525) median house rent was higher at \$513.50/week but unit rental prices were similar to the suburbs near the Project, whilst the Wollongong suburbs (2500) showed higher median house rents at \$533.40/week and slightly higher median unit rental prices at \$397.20/week.

Rental vacancy rates were at 2.3% (Postcode 2500) and 2.4% (Postcode 2525) which are low rates and indicate the possibility of an upward trend in rental prices. Again, there was minimal change in the preceding 12 months, but an increase of 5.4% for houses and 23.1% for units in Figtree over the preceding three years confirms demand is stable for houses and potentially increasing for units.

**Table 3-5 Rental cost trends**

Housing type by postcode	Median rent/week	12 month % change	3year change	Stock listed	Vacancy rate
<b>2526</b>					
All Houses	\$448.50	-4.10%	0.70%	-	-
All Units	\$380.70	-5.20%	6.10%	-	-
All rental dwellings	-	-	-	13	0.90%
<b>2525</b>					
All Houses 2525	\$513.50	2.20%	5.40%	-	-
All Units 2525	\$385.40	-8.60%	23.10%	-	-
All dwellings	-	-	-	18	2.40%
<b>2500</b>					
All Houses	\$533.40	0.80%	9.70%	-	-
All Units	\$397.20	-11.20%	5.60%	-	-
All rental dwellings	-	-	-	219	2.3%%

SQM Research. 2017a

## 3.6 Services and infrastructure

The following sub-sections describe the availability of social infrastructure (schools, childcare, health services and community facilities) in the local study area, including provision of data for Wollongong where a number of regional services are located.

Community survey participants indicated that there is limited local access to community and health services, with nearly half of the survey's respondents disagreeing that they had adequate access in their local area, whilst 27% thought access to services was adequate, and 23% didn't know. This may reflect the lack of local services in the Mount Kembla/Cordeaux Heights area, and the large proportion of older respondents (48% were aged over 60 years) who are more likely to need services.

Social infrastructure providers in the study area describe it as safe and well settled. Local school enrolments are declining, which is attributed to community maturation, in addition to large numbers of new families enrolling their children in private schools. There are no known enrolments at Mount Kembla Public School from families employed at Dendrobium Mine (verified by employee survey results).

For the NSW Police, interactions with the mine are on an as-needs basis, including participation in joint emergency response exercises and very infrequent incidents requiring police responses.

### 3.6.1 Childcare

Research identified a total of 19 childcare facilities in the local study area, and a larger cluster of facilities available in the Wollongong postcode area (see Appendix A, Table A-22).

The average cost of childcare per day ranges from \$88.50 in the Cordeaux – Unanderra – Mount Kembla postcode to \$97.05 in the Wollongong postcode area. At 25 May 2017, there were vacancies available in 20 of the 55 centres identified between the three areas, indicating that the area has an adequate supply of childcare. The nearest childcare centre to Dendrobium Mine is Mount Kembla Children's Centre, located adjacent to the Mount Kembla Public School.

### 3.6.2 Schools

There are five public primary schools and two private schools based in the local study area. Enrolment figures for local schools (see Appendix A, Table A-23) indicate consistently declining enrolments in four public schools since 2012, with Unanderra Public School down 15.3%, Mount Kembla Public School down by 4.6%, Farmborough Road Public School down by 18.8%, and Figtree Public School down by 4.4%. The only school which had experienced an increase was Figtree Heights Public School, where enrolments had increased by 11.2%.

Consultation with Mount Kembla Public School suggests the decline of enrolments in recent years is due to the established settlement and maturation of Mount Kembla community, where there is limited population turnover and limited land or property available for growth. Consultation with the DCCC suggested that the increasing value of real estate was attracting new families to the local area, many of whom were sending their children to private schools. The increasing local rental costs may also be resulting in an outmigration of lower income or family households that might otherwise be reflected in State enrolment figures.

There is one State secondary school, Figtree High School and one K-12 Christian school in the study area (at Cordeaux Heights). Analysis of NSW Department of Education and Communities data indicates that Figtree High School enrolments had decreased from 1,086 students in 2012 to 1,018 students in 2016, which was an average annual decrease of 1.3%.

The Wollongong LGA provides access to a range of additional state and private secondary education options which serve a broad catchment.

The employee survey conducted as part of the SIA showed that the residential locations of respondents extended north to Bulli and south to Kiama, with one employee located as far south as Nowra. The survey identified small concentrations of employees living in Dapto (13% of respondents), Wollongong (13%) and Albion Park (8%) but they were otherwise well distributed across the LGA (See Appendix B Figure B-1).

Of the 278 people who participated in the employee survey, 77% of respondents had least one child living with them. However, in line with their residential locations, respondents' children attended schools across the Wollongong LGA. No employees identified children attending school in Mount Kembla. Two respondents' children attended school in the Wollondilly LGA and one respondents' children attended school in the Wingecarribee LGA.

### 3.6.3 Tertiary education

There are no tertiary education facilities in the local study area, however at a regional level there are two Wollongong University campuses (the Wollongong Campus, and the Innovation Campus at North Wollongong). There are also four campuses of the TAFE NSW Illawarra Institute at Wollongong, West Wollongong, Dapto and Yallah.

The University of Wollongong claims an academic reputation within the top 1% of the world's universities with a research income of more than \$138 million in 2016<sup>61</sup>. It notes the key regional industries served as including manufacturing, education, health services, the port, tourism, mining, retailing, professional services and technology. The University has a current enrolment base of approximately 33,000 students including more than 25,000 Australian-based students and more than 7,500 offshore students<sup>62</sup>.

TAFE Illawarra is the leading provider of vocational education and training in the Illawarra region, with a campus network at 14 locations from Wollongong in the north, down to Bega on the South Coast and the Southern Highlands<sup>63</sup>. TAFE NSW Wollongong is the largest campus, which offers student pathways to Wollongong University.

### 3.6.4 Hospital and health services

There is one private hospital facility based in the local study area, whilst public hospital facilities and other private hospitals are accessed in Wollongong (see Appendix A Table A-24). Wollongong Hospital is undergoing redevelopment to meet the needs of the growing region<sup>64</sup>. The catchment area for Wollongong Hospital extends beyond the Illawarra region to the broader Southern Highlands

### 3.6.5 Police and emergency services

A summary of police and emergency services operating in the local study area is provided as Appendix A, Table A-25. The NSW Police's Wollongong LAC comprises four stations, with the local study area supported by the main station in Wollongong Central Business District (CBD). The Unanderra Police Station is currently non-operational. Interaction between the current Dendrobium Mine operation and Wollongong LAC is on an as-needs basis and was noted by Police consulted as generally low. Representatives from the LAC recently participated in an emergency response exercise at the mine, indicating good levels of communication around response protocols. Where required, wide load escort arrangements are organised through a standard contract on a user charges agreement, with any future

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<sup>61</sup> University of Wollongong. 2017c

<sup>62</sup> Ibid

<sup>63</sup> TAFE NSW. 2017

<sup>64</sup> NSW Department of Industry. 2015



requirements by the Project needing to follow this same protocol. The local area is also serviced by the NSW Ambulance Service for the Illawarra Zone, and the Illawarra District Rural Fire Service with a local brigade based at Mount Kembla.

### 3.6.6 Community services

There is a wide range of community services managed by Council, the State and Federal government, community organisations, churches and private service providers in the Wollongong LGA. As noted by the Illawarra Regional Economic Profile (2015), the health care and social assistance industries (including disability, aged care and community services) will continue to be a driver of economic output across the Illawarra region, largely due to growing demand for health services and an ageing population<sup>65</sup>. A summary of key community facilities services operating in the local area is provided in Appendix A, Table A-25

## 3.7 Health and wellbeing

According to the World Health Organisation (1948), health is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. An extensive range of factors (health determinants) influence and indicate the level of health and wellbeing in a community. Select health status indicators and social determinants of health are discussed below, followed by commentary on community safety.

### 3.7.1 Health status

Modelled estimates for select health indicators for the study area, the LGA and NSW averages are shown in Appendix A, Table A-16. These data are available at the composite statistical area known as ‘Population Health Area’ and are estimated as age standardised rates (ASR) per 100 persons or 100,000 persons as noted, however data varies as noted in Table A-16. Indicators were chosen to identify any differences in common illnesses and causes of mortality. Indicators where local communities had a higher prevalence of health issues included:

- a slightly higher estimate of respiratory system disease among adults in Figtree – Keiraville (30.3 per 100,000 persons), compared to the LGA and NSW average (ASR 29.3 and ASR 27.4 respectively);
- a higher hospital admission rate related to circulatory system disease in Port Kembla Industrial / Unanderra-Mount Kembla (2,924.3 per 100,000 persons), compared to Figtree-Keiraville (2,296.5), Wollongong LGA (2,293) and NSW (2,224.6); and
- a higher modelled estimate of premature death from road traffic injury in Port Kembla Industrial / Unanderra-Mount Kembla (8.1 per 100,000 persons), compared to Wollongong LGA (ASR 3.6) and NSW (ASR 4.3).

The data provide in Appendix A, Table A-16 suggest that local communities have comparable levels of mental health to the Wollongong LGA and NSW, e.g. slightly lower rates of people modelled as having mental or behavioural problems and lower rates of people admitted to hospital for mental health related conditions compared to the LGA and NSW.

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<sup>65</sup> NSW Department of Industry. 2015

### 3.7.2 Social determinants of health

Data representing key social determinants of health are presented in Table 3-6.

In 2015, local communities as represented by the relevant SA2s (Port Kembla / Unanderra - Mount Kembla SA2 and Figtree – Keiraville SA2) and the Wollongong LGA recorded a lower average of children who were developmentally vulnerable on two or more development domains (which can have long-term impacts on health)<sup>66</sup>. Percentages of children in jobless families were also considerably lower in the local area compared to the Wollongong and NSW averages.

The Index of Relative Socio-economic Disadvantage (IRSD) is one of four Socio-Economic Indexes for Areas (SEIFAs) compiled by the ABS. SEIFA scores reflect the relative level of disadvantage of a population, based on an index of attributes such as income, educational attainment, unemployment and housing access. Scores are compared to the standardised baseline score of 1,000 for Australia, with a low score indicating greater disadvantage. SEIFA IRSD scores for the relevant SA2s were slightly higher than the LGA and NSW scores in 2016, with 1,005 in the Port Kembla Industrial/ Unanderra - Mount Kembla Population Health Area, and 1,037 for Figtree-Keiraville. The IRSD score for Wollongong LGA was slightly lower than the NSW score.

**Table 3-6: Select health indicators and modelled estimates, population health areas**

Indicator	Year	Port Kembla / Unanderra - Mount Kembla	Figtree - Keiraville	Wollongong LGA	NSW
% Children developmentally vulnerable on two or more domains	2015	6.8	7.0	9.0	9.6
% Children aged less than 15 years in jobless families	2016	11.5	9.0	14.9	14.7
Index of Relative Socio-economic Disadvantage	2016	1,005	1,037	980	990

Source: Torrens Institute. Public Health Information Development Unit. 2017. Social Health Atlas of Australia. Data Tables for Population Health Areas, and Local Government Areas.

Select socio-economic indicators from the 2016 Census are shown in Table 3-7. Mount Kembla and Cordeaux Heights showed considerably higher percentages of households with average weekly incomes of more than \$3,000 per week compared to the LGA and State averages. Higher percentages of households in Unanderra and Kembla Heights earn less than the gross minimum weekly wage of \$650. A higher percentage of households in the Wollongong LGA did not access internet from their dwelling at the 2016 Census, compared to the State average (17.2% compared to 14.7% respectively). This measure captures any one person at a dwelling that accesses the internet through any type of device including a mobile phone.

<sup>66</sup> As defined by the Australian Early Development Census 2015, domains include physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, communication skills and general knowledge

**Table 3-7: Socio-economic indicators, 2016**

Indicator	Mount Kembla	Kembla Heights *	Cordeaux Heights	Unanderra	Figtree	W'gong LGA	NSW
<b>Less than \$650 gross weekly</b>	<b>10.2</b>	<b>27</b>	<b>8.9</b>	<b>32.3</b>	<b>18.4</b>	<b>23.1</b>	<b>19.7</b>
More than \$3,000 gross weekly	35.4	0	31.9	5.8	19.4	14.8	18.7
Rent greater than 30% of household income	2.1	28.1	2.4	15.3	6.7	13.0	12.9
Mortgage greater than 30% of household income	6.8	0	6.5	5.2	6.7	6.3	7.4
Internet not accessed from dwelling	8.4	17.4	6.5	26.1	14.4	17.2	14.7

Source: Australian Bureau of Statistics. 2016a. Census of Population and Housing, Data derived from QuickStats at SSC and LGA level

Note: Results for Kembla Heights may be skewed due to the small SSC population and household count.

### 3.7.3 Community safety

Analysis of crime rates published by the NSW Police Service is presented in Appendix A (Tables A-17 – A-21) for the local postcode areas of 2525 (Figtree) and 2526 (Cordeaux – Unanderra – Mount Kembla), compared to the district centre postcode of 2500 (Wollongong) at December 2016. In summary, the results showed:

- the rate of assaults was much lower in the Figtree and Cordeaux – Unanderra – Mount Kembla postcodes (303 and 631 per 100,000 respectively) than in Wollongong and NSW (1,416.9 and 836.4 per 100,000 respectively);
- the rate of sexual offences was lower in Figtree and Cordeaux – Unanderra – Mount Kembla (72 and 69 per 100,000 respectively), compared to the Wollongong postcode and NSW (179 and 158 respectively);
- a stable three-year trend for theft in Figtree and Cordeaux – Unanderra – Mount Kembla (2,676 and 2,286 per 100,000 respectively), compared with Wollongong postcode and NSW (5,359 and 3,099 respectively per 100,000 respectively).

Activity of note in the Mount Kembla area identified by NSW Police included illegal access to the Illawarra Escarpment primarily to hunt wild deer. While example incidents are not frequent, the illegal use of firearms near the Dendrobium Mine has resulted in at least one temporary shut down of some mine operations in the recent past. This issue was identified as requiring an immediate police notification and continued police attention, if and when incidents occur.

Consultation indicates that the community safety matters of primary concern for local stakeholders relate to road and traffic safety. Local congestion created by more trucks and worker vehicles on Cordeaux

Road was identified as a key issue of concern during interviews with community members and from community and employee survey results.

Road and traffic safety on Picton Road was identified as another key issue where multiple fatalities had occurred in previous years, leading to recent and ongoing road upgrades. Any increased heavy vehicle transport on Picton Road was viewed by local stakeholders such as WCC and NSW Police as potentially increasing the risk of traffic incidents and associated traffic congestion.

NSW Police also noted the potential for congestion on arterials and feed-in road networks, particularly once an incident has occurred, with reference made to Picton Road, Mount Ousley Road to and from Port Kembla, with potential for secondary impacts on Spring Hill and Masters Roads. NSW Roads and Maritime Services have an established multi-agency working group focused on managing road safety and incident response times, particularly for Picton Road.

### 3.7.4 Recreational amenity

Residents in the Wollongong LGA have excellent access to natural resources offering opportunities for active recreation and environmental appreciation, ranging from suburban parks and foreshores and beaches, to extensive National Parks and Conservation Areas.

The Illawarra Escarpment State Conservation Area, with its sandstone cliffs, rainforest and bushland, is a key social resource. Local recreation options include scenic lookouts and picnic areas, hiking and walking trails, and photography and birdwatching values. Mount Keira Summit Park is located at the top of the Illawarra Escarpment which includes the Mount Keira Lookout<sup>67</sup>.

The Dharawal National Park is located north-west of Wollongong, generally between the Illawarra Escarpment and the Georges River. This area also offers a range of rich biodiversity and the area also contains a high density of Aboriginal sites. Use of the area is focused on natural and cultural heritage management, passive recreation opportunities such as photography, walking and bird watching, and access for education and research purposes<sup>68</sup>.

Further north is the Garawarra State Conservation Area, closely located with the Royal National Park and Heathcote National Park, which together offer recreational opportunities from picnics, bushwalking and birdwatching to fishing and whale watching<sup>69</sup>.

Cordeaux Dam, which features Egyptian-inspired architecture and landscaping and is open to the public for daytrip visits, walks and picnics, is a popular place for locals and tourists. South-west of Cordeaux Dam, with similar Egyptian-inspired features is Avon Dam with picnic areas, walks and viewing platforms.<sup>70</sup> Cataract Dam to the north-east of the Project area is described as “one of the most picturesque in Sydney” with an imposing dam wall, Tudor-style valve house, cascading spillways, lake and forested shores. Both over-night and daytrip visits to Cataract Dam are possible<sup>71</sup>.

Lake Illawarra, located between the Illawarra escarpment and the Pacific Ocean is a combination of fresh water (from the escarpment) and saltwater (from ocean tides), and is also an important social resource, as a popular recreational location for fishing, prawning and water sports<sup>72</sup>.

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<sup>67</sup> Wollongong City Council. 2017c

<sup>68</sup> NSW National Parks and Wildlife Service. 2006

<sup>69</sup> NSW National Parks and Wildlife Service. 2016

<sup>70</sup> WaterNSW. 2017a

<sup>71</sup> WaterNSW. 2017b

<sup>72</sup> Destination NSW (VisitNSW). 2017

Public gardens are another recreational asset locally, with the Wollongong Botanic Gardens and the Illawarra Rhododendron Gardens offering options for garden viewing, picnics and functions.

Central Wollongong features a good range of high quality cultural, sport, recreation and lifestyle facilities<sup>73</sup>, including:

- the WIN Sports and Entertainment Centre and WIN Stadium;
- the Beaton Park Leisure Centre;
- Lakeside Leisure Centre;
- Illawarra Performing Arts Centre<sup>74</sup>;
- Wollongong City Gallery;
- Wollongong Science Centre and Planetarium, rebuilt after flood damage in 1998, as the first building to be established on the University of Wollongong's Innovation Campus<sup>75</sup>; and
- the Nan Nien Temple, the largest Buddhist temple in the Southern Hemisphere, located in the industrial suburb of Berkeley, south of Unanderra.

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<sup>73</sup> Ibid

<sup>74</sup> Merrigong Theatre Co. Illawarra Performing Arts Centre. 2017

<sup>75</sup> University of Wollongong. 2017b

### 3.8 Summary of baseline findings

Table 3-8 presents a summary of baseline findings as relevant to the scope of assessment.

**Table 3-8 Key Indicators**

Baseline findings		SIA Considerations
Community composition	<ul style="list-style-type: none"> <li>In 2016, a total of 1,187 residents lived in Mount Kembla/Kembla Heights. Cordeaux Heights had a population of 4,559 people, Unanderra had 5,434 people, and Figtree had 11,564 people.</li> <li>The Wollongong LGA's population was approximately 203,630 in 2016. Growth is projected for the Wollongong LGA to 2036 at an average rate of 0.7%</li> <li>Cordeaux Heights and Mount Kembla have higher than average percentages of family households, whilst Unanderra has an older population with high proportions of sole person households and social housing.</li> </ul>	<ul style="list-style-type: none"> <li>Effect on population growth or demographic characteristics</li> <li>Potential for training or job opportunities for young people and Indigenous people</li> <li>Potential effect on personal and household wellbeing</li> </ul>
Employment and economic strengths	<ul style="list-style-type: none"> <li>The Wollongong LGA labour force increased by 6.7% between 2011 and 2016, but participation remained lower for the LGA (at 56.9%) than for NSW (59.2%) in 2016.</li> <li>The five-year unemployment trend from June 2013 to June 2018 indicates that unemployment in the Wollongong LGA was generally higher than the State average but declined during 2017, and to June 2018 when the LGA had the same unemployment rate as NSW (4.7%).</li> </ul>	<ul style="list-style-type: none"> <li>Employment opportunities during construction</li> <li>Effects on employment continuity</li> <li>Potential effects on unemployment levels if the Project was not approved</li> </ul>
Housing	<ul style="list-style-type: none"> <li>Rental vacancies in the local study area remain consistently low, as in Wollongong.</li> <li>Median rents in 2016 in Cordeaux Heights and Mount Kembla were above the LGA and NSW average. The median weekly rent in Unanderra was the lowest in the study area.</li> <li>Building approval data show consistent growth in residential development in the LGA over the last five years, with particularly strong growth in the number of "other" residential dwellings (primarily units).</li> </ul>	<ul style="list-style-type: none"> <li>Potential effect on local housing affordability or market</li> <li>Potential demand for short term accommodation during construction</li> </ul>



Baseline findings		SIA Considerations
Health and wellbeing	<ul style="list-style-type: none"> <li>Port Kembla Industrial / Unanderra-Mount Kembla Primary Health Area had higher than average hospital admission rates for respiratory disease and circulatory disease, and higher modelled estimates of premature death from road traffic injury.</li> <li>There were lower rates of people of 18 years plus in the local area modelled as having mental or behavioural problems.</li> <li>Crime trend data confirms stable or declining crime rates in the study area.</li> </ul>	<ul style="list-style-type: none"> <li>Potential effect on road and traffic safety</li> <li>Potential effects on amenity and wellbeing</li> </ul>
Social Infrastructure	<ul style="list-style-type: none"> <li>Enrolments in four local schools including at Mount Kembla Public School have declined since 2012.</li> <li>The Wollongong area provides access to a range of State and private education options, two Wollongong University campuses and TAFE NSW Wollongong.</li> <li>There is one private hospital in the local study area, with multiple hospital options available in Wollongong.</li> <li>There appears to be an adequate supply of emergency services in the study area with some capacity in police services to meet any moderate increase in demand during construction.</li> </ul>	<ul style="list-style-type: none"> <li>Effect on school enrolments</li> <li>Demand for local hospital and health services</li> <li>Potential effects on emergency services during construction</li> </ul>

## 4 Impact Assessment

This section describes the Project's potential social impacts and benefits, and evaluates their significance for stakeholders and communities.

### 4.1 Surroundings

This section describes the potential for changes to local communities' environment which could affect community values such as sense of place or community identity.

#### 4.1.1 Environmental qualities

Environmental qualities within both the local area and the Wollongong LGA are integral to community values.

Survey respondents' primary concern in relation to community values was in relation to potential impacts on the environment, with 60% indicating they anticipated a negative effect on environmental qualities. Respondents' comments indicated that their concerns related to the noise environment, air quality, climate change and/or mining in the catchment.

Potential social impacts and benefits identified by DCCC members included:

- concern for landforms and biodiversity within the water catchment; and
- concern that impacts in the MSA would affect its capacity to supply water for human use, which would have widespread negative impacts and implications for inter-generational equity.

#### Environmental change

As described in Section 3.1, mining has co-existed with communities on the Illawarra Escarpment for more than 140 years, and traditionally there has been a level of comfort about this co-existence. There is limited potential for disturbance to private land or its environmental qualities, bushland near Mount Kembla or the escarpment's qualities.

Impacts on land controlled by WaterNSW may occur during construction at the surface and in the operational stage, when longwall mining within Areas 5 and 6 would cause subsidence. There are no residences or other social uses in the areas that would be affected, and there is no potential for the Project to affect public use of the area as access is restricted, which is likely to continue during the Project's operation.

However, there is significant community concern about the potential for impacts to land and surface water systems within the MSA catchments. Consultation participants expressed concern and may feel anxiety about any transformation of the land through subsidence, or the potential for environmental impacts. People who feel strongly attached to a particular environment may feel a sense of loss if it is disturbed. As noted in Section 3.3.1, this has particular relevance to Traditional Owners (see also Appendix B, Section B6).

It will be important to community well-being, and to the Project's relationships with interested stakeholders, for residents to understand how the Project's environmental impacts would be prevented or managed. The EIS and associated consultation processes are a first step in establishing a level of understanding based on scientific assessment. However, provision of accessible and transparent information about environmental management and the results of environmental monitoring would be required throughout the Project. This should include:

- maintenance of the DCCC for the life of the Project, as a forum for information sharing and discussion of the Project's environmental performance, with meeting frequency to be agreed with the DCCC members from time to time (in accordance with the NSW DPE's CCC guidelines); and
- regular community updates on issues such as subsidence, water quality, hydrological monitoring, operational and rail noise via the DCCC meeting minutes, and made available via South32's website.

#### 4.1.2 Water catchment

DCCC members described community concerns about the fear that longwall mining – as part of the Project or due to cumulative mining impacts - would negatively affect the MSA catchment's capacity to supply water. WCC managers also noted that Wollongong community members were likely to be concerned about environmental impacts and particularly any impacts on water quality or supply. Thirteen community survey respondents also provided comments indicating concern about mining's effects on the catchment.

These concerns relate to the potential for longwall mining or subsidence in Areas 5 and 6 to have negative impacts on surface and/or groundwater systems, with potential for long-term consequences for the health of the Greater Sydney region's population. Concern was also expressed that any diminishment of water supplies could affect the population size, growth forecasts and economic development in Greater Sydney. Consultation participants noted that this is a matter of inter-generational equity, as any loss of the catchment's capacity would affect both current and future generations.

DCCC members' inputs to the SIA at their meeting on 20 September 2018 centred on heightened concerns about potential impacts on catchment values and/or water storage, due to:

- the current drought having reduced dam levels e.g. in Cordeaux Dam to 37%, and Wollondilly/Upper Nepean dams down to a collective 42%;
- public discussion about activating the Sydney desalination plant by December 2018;
- the recent requirement for a remediation plan in relation to Tahmoor Mine's impacts on Redbank Creek;
- expected population growth of South West Sydney and the Wollondilly LGA, with increasing water supply needs; and
- the declining water levels of the Thirlmere Lakes (near Thirlmere in the Wollondilly LGA)

It was noted that the precautionary principle needs to be considered with respect to water catchments as they are a critical resource.

Assessment of impacts on groundwater is provided in EIS Appendix B, and indicates that the Project could be constructed and operated without materially affecting the MSA's provision of water to the major water storages maintained by Sydney Water. Potential losses from the catchment due to mining have been quantified and comprise approximately 4% of the annual Sydney Water losses due to leakages from the Sydney Water pipe network<sup>76</sup>.

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<sup>76</sup> Hydro Engineering Consultants. 2019

In addition, water that accumulates in the underground workings would continue to be recycled and used at the Mine with excess water discharged via the existing licensed discharge point to Allan's Creek at Port Kembla under an Environment Protection Licence. South32 is also investigating options for the beneficial reuse of excess mine water with major water users in the Illawarra. Subject to the finalisation of feasibility studies and commercial agreements, the existing water pipeline would be extended to other water users to facilitate the transfer of excess water for beneficial reuse.

However, community concerns and anxiety about current and future access to water are likely to persist. This would need to be addressed by maintaining transparency in how environmental impacts are identified, prevented, managed and monitored, along with regular communication with local and regional residents.

#### **4.1.3 Traffic volumes**

##### **Dendrobium Pit Top**

The potential for the Project to increase traffic on local roads was a key concern for local community members who participated in SIA consultation, particularly with respect to Cordeaux Road and Picton Road.

Five interviewees and 31 of the community survey respondents identified traffic congestion and/or traffic noise as an existing problem affecting local amenity, with Dendrobium Mine seen as one contributor. Survey respondents stated that traffic congestion was particularly bad at the change of Dendrobium Mine shifts, and speeding on Cordeaux Road was causing concern. Some people said that they felt uneasy when walking on some footpaths around Mount Kembla due to the number of vehicles, and that this was a concern if the Project proceeded. Illawarra Coal received a total of four complaints about trucks including speeding, inconsiderate driver behaviour and driving outside the curfew period over the three years to June 2018.

The Mount Kembla Mine Memorial Pathway Project (developed as a partnership between Illawarra Coal, local community groups and WCC) was acknowledged as mitigating current pedestrian safety and connectivity issues.

There would be an increase in large and heavy vehicles, as well as commuter vehicles, during the Project's construction. There would also be some increase in commuter vehicles during operation, due to the increased number of personnel. Traffic and transport impacts have been considered in detail in Appendix H of the EIS, which concluded that subject to the mitigation measures it describes, the Project can be satisfactorily accommodated by the road network, with acceptable impacts on the capacity, efficiency and safety of the road network.

The current Dendrobium Mine Drivers' Code of Conduct would be reviewed prior to the Project's construction, and its requirements extended to drivers during the construction and operational stages. Car-pooling for workers should also be encouraged to reduce the number of commuter vehicles travelling along Cordeaux Road.

##### **Cordeaux Pit Top**

The Cordeaux Pit Top on Picton Road was placed in care and maintenance in April 2001, and has since operated as an administration base for the Company's exploration, survey and field crews, with no issues from neighbours or complaints during that time.

The Project includes ongoing use of the Cordeaux Pit Top, including future use for personnel and materials access to the underground mine workings. Given its remote location, impacts on residential amenity are not anticipated, however there was some concern identified in consultation that traffic on Picton Road would increase as a result of the Project. This is assessed in Appendix H of the EIS, which found that:

- growth in traffic on Picton Road due to population growth and other sources over the life of the Project is expected to continue to result in deteriorating conditions on Picton Road if there is no change to its current arrangement; and
- commuter and heavy transport vehicles from the Project would constitute only a small proportion of the volume of traffic expected on Picton Road during the period of the Project's operation (approximately 2.5%) and would have negligible effect on the performance of the road.

#### Coal wash emplacement

The Project would see the continuation of coal wash transport from the Dendrobium CPP to the approved West Cliff Coal Wash Emplacement Area on Appin Road, east of Appin. Inspection of the West Cliff coal wash emplacement site indicated that the emplacement area is largely screened from the road and residences, however consultation identified views to the emplacement area from peaks within the Dharawal National Park. Coal wash is "back-loaded" in trucks that transport coal from the West Cliff Washery to Port Kembla. Illawarra Coal would also continue to supply coal wash for engineering purposes (e.g. civil construction fill) or for other beneficial uses.

Consultation identified a concern that the Project may increase traffic on Appin Road, which is a busy state road carrying cars and a large volume of trucks between Wollongong, Wollondilly and Campbelltown. Appin Road was described by consultation participants as 'very unsafe' leading to concern that any increases in traffic as a result of the Project would exacerbate current safety issues. This is assessed in Appendix H of the EIS, which found that the Project would not increase the number of existing approved coal wash haulage movements from Port Kembla.

#### 4.1.4 Coal wash emplacement area

Concerns that the coal wash emplacement area's operation could affect the Georges River catchment were raised by Bulli Seam Operations CCC members.

The West Cliff Coal Wash Emplacement operates under separate Development Approvals (DA 60-03-2001 for Stage 3 of the Emplacement, and Project Approval 08\_0150 for Stage 4). The Project does not propose changes to the approved extent and management of the West Cliff Coal Wash Emplacement. On the assumption that the emplacement area would continue to be managed consistent with existing approvals protecting the Georges River's environmental qualities, it appears that the likelihood of impacts on community appreciation or social use of the Georges River catchment arising from the Project is low.

#### 4.1.5 Climate change

The Lowy Institute's annual Climate Change and Energy poll shows an increase in Australians' concern about climate change over the past five years<sup>77</sup>. In the 2014 poll, 45% of Australians agreed that "*global warming is a serious and pressing problem. We should begin taking steps now even if this involves significant cost.*" By 2018 this percentage had increased to 59%.

Agreement with the statement "*the problem of global warming should be addressed, but its effects will be gradual, so we can deal with the problem gradually by taking steps that are low in cost*" decreased from 38% to 31% over the five years, whilst the statement "*until we are sure that global warming is really a problem, we should not take any steps that would have economic cost*" received 15% agreement in

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<sup>77</sup> Lowy Institute. 2018

2014 and 10% agreement in 2018. It is likely that these changing views are somewhat reflective of the views held by residents in the Project's area of influence.

The Lowy Institute's poll's results point to the ongoing tension between recognition of the need to reduce anthropogenic contributions to climate change, and an understanding that coal and other fossil fuels make significant contributions to employment and economic development.

Assessment of the Project's contributions to greenhouse gases (which are widely recognised as contributing to climate change) is provided in EIS Appendix I and indicates that Project estimated Scope 1 greenhouse gas emissions would represent 0.5% of NSW emissions and 0.1% of Australia's emissions in 2016 (Ramboll Environ, 2019).

## **4.2 Personal and property rights**

The Project would have no direct impacts on private property. The potential for impacts on residential amenity as a result of the Project is discussed below.

### **4.2.1 Construction impacts on amenity**

The majority of construction activities for the Project would occur underground and/or within the underground mining areas (Areas 5 and 6), which are remote from homes and businesses. One potential for impacts on residential amenity during construction would be as a result of vehicles bringing equipment and longwall components to the Dendrobium Pit Top or the Dendrobium Mine's other infrastructure sites including ventilation shafts. This has been assessed as part of the EIS's assessment of traffic and transport impacts in Appendix H.

The management strategies in the current Traffic Management Plan and the Driver's Code of Conduct are designed to mitigate the impacts of construction traffic on local residents and community facilities such as the Mount Kembla Public School (see Section 4.7.2).

The main potential impact of Project construction activities on amenity is from noise associated with the development of the new supporting infrastructure of the Dendrobium Pit Top.

The Noise and Blasting Assessment completed by Renzo Tonin (Appendix J of the EIS) indicates that daytime construction noise levels would exceed applicable guidelines at some of the most proximal private residences, particularly during construction of the carpark extension.

While these construction activities would be short-term only during the day, there is some potential for elevated noise levels to cause stress and anxiety for nearby residents.

Illawarra Coal would implement standard construction noise management techniques and consult with nearby neighbors during the duration of construction activities to minimise construction noise impacts.

### **4.2.2 Rail noise**

Rail noise from the KVRL is currently experienced in some neighbourhoods in Mount Kembla and Kembla Heights, Cordeaux Heights, Unanderra and Figtree. During the three years to June 2018, there were 57 complaints about rail noise. The majority of complaints about rail noise were from William James Drive in Mount Kembla. It is also noted that the KVRL passes proximal to the suburb of Cringila to the west of Port Kembla steelworks, however, complaints regarding rail noise or any other Project-related issue have not been received from this suburb.

On average, KVRL trains make 10 trips (i.e. 20 movements up and down) per day, or around 70 trips per week, and this would continue throughout the life of the Project. Whilst heavy haulage routes inevitably create noise, consultation indicates that engine and general track noise are generally tolerated. However, as loaded trains travelling from KVCLF brake, they can produce 'brake squeal' (a



loud screeching noise which can last for up to a minute). 'Wheel squeal' (which has a shorter duration) also occurs with trains going up and down the line, along with what interviewees described as 'clunking noises' which they attributed to particular sections of the track.

Illawarra Coal's communication process about rail noise has included meetings (individual and group) with residents, resident surveys to monitor noise frequency and severity, written communications (letters, emails and newsletters) and ongoing discussion of complaints and responses by phone and in person.

Six residents who had recently complained about rail noise were interviewed during June 2017 to obtain detailed input about their experience. Residents described hearing the rail noise frequently (other than during rail maintenance periods) including flange noise, braking noise, squealing, screeching, clunking, hissing and engine noise. Of these, brake squeal noise was identified as the most intrusive, interrupting conversations, outdoor activities, television viewing and social occasions. Residents also described occasional sleep disturbance, as trains run from 6.00 a.m. to 11.00 p.m. They described the noise as stressful and wearing, and the historical failure to resolve the issue as frustrating.

Illawarra Coal and Pacific National have progressively implemented mitigation measures to reduce rail noise impacts, including:

- engagement with residents and regulators to specify the problem and develop solutions;
- installation of super-elevated rails and resetting of track corners;
- development of a driver best practice guide and monitoring of driving behaviour;
- rail profile grinding and regular grease application to reduce flanging noise; and
- communication with residents and the DCCC about the success or otherwise of mitigations.

Rail noise complaints began to reduce at the beginning of 2016, with several months during 2016 and 2017 passing without complaints. During the twelve months to July 2017 there were only eight complainants, of which four were from William James Drive, with complaints also received from Benjamin Road and Cordeaux Road in Mount Kembla, and Leigh Crescent in Unanderra.

Residents interviewed in 2017 acknowledged Illawarra Coal's efforts, and two of the six said there had been improvement in rail noise impacts over the years, however they were dissatisfied that the problem had not been resolved. Actions suggested by stakeholders to help mitigate rail noise impacts included train driver education and monitoring, adjustment of track speed, which had already been implemented by Illawarra Coal or Pacific National for the existing operation. Other actions such as development of a conveyor to Port Kembla, lowering the railway line and reducing the rail line's operational hours have previously been reviewed by Illawarra Coal and determined to be uneconomic and/or impractical.

The most recent mitigation initiative involved a trial installation of modified brake shoes on one of the trains used on the KVRL. Illawarra Coal advised that independent monitoring in July 2017 had indicated that the trial was successful in significantly reducing the frequency of brake squeal, and that the duration and intensity were also reduced. On the basis of the trial's success, the modified brake shoes were also fitted to the other trains' wagons<sup>78</sup>.

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<sup>78</sup> Monitoring was conducted on behalf of a NSW Government agency so whilst the monitoring report was sighted by the SIA consultants, it has not been referenced

Following this initiative, there were only three complaints about rail noise during July 2017 - June 2018, which equates to a reduction from 2015-16 of more than 90%. Five of the six residents were re-interviewed in October 2018. All five noted a substantial reduction in the level and frequency of brake squeal noise, and a reduction in associated impacts on their amenity and lifestyle.

Assessment of current rail noise from KVRL suggests that Dendrobium Mine rail noise would not comply with contemporary criteria for a private rail line at a number of the nearest private residences. However, the majority of these residences were constructed in recent decades and the KVRL predates them. The fact that KVRL is legacy infrastructure, hence is not subject to contemporary rail noise criteria, is explored further in EIS Appendix J.

The Project would make use of existing rail noise mitigations, and Illawarra Coal anticipates a continual process of improvement throughout the life of the Dendrobium Mine to manage rail noise impacts. Based on consultation inputs to the SIA and Illawarra Coal's commitments to continual improvements, it appears likely that rail noise impacts on amenity associated with the Project would be substantially less than was experienced in relation to Dendrobium Mine prior to 2016-2017.

A continued engagement process with residents affected by rail noise is part of Illawarra Coal's commitment to continuous improvements in mitigating rail noise, and communication with residents about rail noise levels, the results of mitigation strategies and ongoing management of rail noise is likely to be required as part of the Project. This would include, as a minimum:

- writing to residents in the Zone of Influence prior to the commencement of Project operations to:
  - provide an update on the Project's commencement;
  - describe the potential for ongoing use of current coal transportation methods and strategies undertaken by Illawarra Coal or its rail provider to mitigate rail noise impacts, including details about making and resolving complaints;
- maintenance of a complaints management procedure (including continuation of 24 hour access to the complaints line) for the life of the Project; and
- continuation of regular updates about Dendrobium Mine operations for at least the first three years of operation.

The Dendrobium Mine's current response to noise complaints (as with all complaints) is to acknowledge the complaint, report the complaint to the relevant internal function / team, investigate the cause, instigate remedial action if required (often including further discussions with the resident) and advise the resident of the outcome. This procedure would be maintained for the Project.

#### **4.2.3 Pit Top and loading facility noise**

There were 14 complaints about noise coming from the Dendrobium Pit Top or KVCLF during the three-year period analysed. The most frequent issue reported was humming or droning noises from temporary compressors or generators used in the event of short-term power supply outages, but truck noise and noise from unloading of rubbish were also identified in the complaints resolution records. As such, concerns regarding noise impacts from the surface facilities have been episodic rather than systematic.

Community survey participants did not identify noise from the Dendrobium Pit Top as an issue affecting their amenity, and no interviewees (including the Mount Kembla School) expressed any concern about operating noise relating to the Pit Top.

Assessment of operational noise from the Dendrobium Pit Top and KVCLF indicates that five of the closest proximal private residences would continue to experience noise emissions above contemporary noise criteria. With the constructed implementation of operational noise mitigation measures at the

Dendrobium Pit Top, including curfews and mobile equipment controls, these exceedances would only occur at five neighboring houses and comprise negligible to marginal noise exceedances (and in some cases these noise levels would comply with the existing Dendrobium Mine noise criteria) (Renzo Tonin, 2019).

It is noted that the Project would not result in any material change or intensification of current surface operational noise generating activities, and with the benefit of knowledge gained through management of the current operation, noise impacts on amenity from surface facilities would continue to be actively managed.

#### **4.2.4 Dust**

As noted in Table 2-1, 12 of the survey respondents identified dust as a current issue which they thought the Project could exacerbate. Respondents suggested that mitigations should include better control and maintenance of coal particulates entering the atmosphere from stockpiles and rolling stock and closer monitoring of particulates.

There were six complaints to Illawarra Coal about dust during the three years to June 2018, with no particular pattern throughout the period. This suggests that the occurrence of dust issues associated with the current operation is probably low and related to wind-borne dust.

However, four of the six households interviewed with regards to rail noise identified dust on outdoor surfaces necessitating regular cleaning, exacerbated when the wind blows down the Valley. Illawarra Coal has confirmed that testing of dust deposition in neighbourhoods down-wind of the KVCLF coal stockpile identified some coal dust content (within air quality standards), but testing in neighbourhoods in the village did not identify coal dust. Other sources of dust found in local dust samples typically included salt, particulates from traffic emissions and road verges, soil released from land disturbance, and environmental sources (e.g. pollen and lichen).

Dust from the KVCLF is currently mitigated by loading coal within a tunnel fitted with an extractor fan, profiling the coal level with the wagon top, and spraying the loaded coal with water. The coal stockpile required for the Project's operation has potential to contribute to airborne dust, which is mitigated by monitoring the coal's moisture content, automated spraying (with equipment connected to weather and moisture sensors) and modifying stockpile size and operations to limit the dust produced.

As described in Appendix I of the EIS, air quality modelling indicates that the Project's production of particulates (which contribute to dust) would be within air quality goals relevant to health and amenity. However, affected residents may still experience dust (including general environmental dust) as a nuisance.

It will be important to continue to communicate with residents about the measures undertaken to control dust, and to ensure that the complaints procedure remains responsive to potential dust issues.

### **4.3 Culture**

This section describes the potential for impacts on Aboriginal cultural values, community identity (which is tied to sense of place) and appreciation of environmental qualities.

#### **4.3.1 Aboriginal values**

Some landscapes within the Project area are culturally significant to Aboriginal people, as discussed in Appendix F of the EIS. However, as there is no public access to land above Areas 5 and 6, there is no current Aboriginal use of the area for social or cultural purposes which could be disturbed by the Project.

Consultation with a Cubbitch Barta Elder for the SIA identified concern that cultural heritage sites could be damaged as a result of subsidence within longwall mining areas, or cultural landscape values affected by any changes to creeks or hydrological structures. Whilst observation of any changes would be very limited, unease may remain, and would be addressed through transparent communication with Traditional Owners regarding any change in important landforms or effects on cultural heritage sites identified by ongoing subsidence monitoring in consultation with Aboriginal community representatives. Management of cultural heritage is discussed in detailed in Appendix F of the EIS.

Under current NSW Office of Environment and Heritage (2017) policy, a wide range of Aboriginal people and organisations are eligible for involvement in cultural heritage work such as surveys.

Illawarra Coal would maintain engagement with Tharawal Traditional Owners to ensure:

- Traditional Owners are aware of Project schedules, and have ready access to information about potential environmental and cultural impacts; and
- Traditional Owners' feedback about cultural heritage issues is considered in Project planning and environmental management.

As discussed in Sections 4.4.5 and 4.4.6, the Project would establish strategies to achieve Indigenous participation in the Project's workforce and supply chains. This would support the key objective of improving Indigenous community well-being through greater economic participation.

There is also potential for Illawarra Coal to support Indigenous community and economic well-being initiatives that benefit the communities in which the Dendrobium Mine operates, which would include consultation with Indigenous organisations within the Wollongong region who could identify community initiatives.

## 4.4 Employment and business opportunities

This section describes the potential for the Project to impact or benefit employment and business opportunities.

### 4.4.1 Construction employment

It is estimated that the Project would create approximately 207 jobs during the initial construction and development phase (potentially 2020-2022). This would include:

- approximately 90 personnel for development of underground roadways;
- approximately 52 personnel for development of coal clearance and other ancillary infrastructure;
- approximately 55 personnel for construction and development of ventilation shafts and associated infrastructure; and
- approximately 10 personnel to develop upgrades to the Dendrobium Pit Top.

Employment opportunities, with contracts of up to three years, will be experienced as a substantial benefit for local residents with construction industry skills and experience. WCC managers noted that any construction project with more than 100 jobs provides a substantial positive impact on employment and flow-on business activities.

Further-short term ventilation shaft construction activities are also anticipated during the life of the Project for Area 6, equating to up 55 personnel. An additional approximately 10 personnel would be required to construct the Cordeaux Pit Top at a later period in the Project life.

As noted in Section 3.5, Wollongong's business community and workforce have strengths in construction and mining technology and services. However, mine construction crews are highly mobile

by nature, so regional workforce availability is fluid. It is likely that a large proportion of the construction workforce could be drawn from the Wollongong LGA or other LGAs within a daily driving distance including the Shellharbour, Kiama, Sutherland, Camden, Campbelltown, Wingecarribee and Wollondilly LGAs.

The construction workforce is also likely to include non-local workers for technical specialties and installation works. For the purpose of assessing impacts on housing, accommodation and social infrastructure, this has been assumed at approximately 30% or a maximum of 62 workers over the three-year construction period.

Given the specialised nature of the work, the majority of Project demands are unlikely to compete with households or other businesses (apart from mining companies) for access to construction labour, and the size of the workforce demand is unlikely to change the distribution of construction labour within regions. As such it is likely that the Project could meet its construction workforce needs with no negative impacts on labour availability or “crowding out” of other construction projects.

Generation of 207 construction jobs is also likely to result in increased indirect employment as Project suppliers employ more people and construction workers spend in their local communities. An estimate of indirect employment that would result from the Project’s construction is provided in Appendix L of the EIS. Both direct and indirect employment would support community resilience to economic changes in other industries.

A very small positive change in the LGA’s unemployment rate could result during the construction phase but is not quantifiable, given the significant movement of construction labour between regions.

#### **4.4.2 Operational employment**

The employment opportunities offered by the Project would be a significant benefit to current and potential future employees.

Currently, Dendrobium Mine supports approximately 405 jobs, comprising of 355 jobs in mining operations, trades, supervision, management and support services, 40 positions in coal processing and 10 positions in material handling.

The Project would support the continuity of employment for mine personnel including 265 employees and 140 Full Time Equivalent (FTE) contractor positions. It is also anticipated that the operational workforce would be augmented during the Project to accommodate additional development units and additional gas management works. At full development, which is anticipated to be achieved soon after construction and development are complete (around 2023), it is estimated the Project would employ up to 507 operational personnel. This would include a mixture of Illawarra Coal staff and on-site contractor personnel which would vary year to year, with some tapering off in total Project employment levels also expected later in the mine life as coal productions levels are projected to reduce.

The Project would continue the availability of employment opportunities for longwall operators, machinery operators, trades people, coal processing operators, and engineering, environmental and site management staff, as well as a range of support services including administration, communications and human resource management. As current employees retire, there will be ongoing opportunities for other LGA residents to fill positions.

There is a likelihood of intermittent workforce increases for other construction and development activities and major maintenance throughout the life of the Project. Regular CPP shutdowns (every quarter) are likely to require 100- 200 contractors for one to two days and approximately 100 people for a few weeks every year. Major maintenance for conveyors and production equipment could see crews of up to 20 people required for short periods.

There are also 30 people (drivers, supervisors and logistics managers) employed by Pacific National to operate the KVRL, with Dendrobium Mine the only user of the line. The Project would support the continuation of these jobs for the life of the Project.

Analysis of Dendrobium Mine current employees' residential addresses indicates that approximately 8% (23 employees) lived in local suburbs including Mount Kembla, Kembla Heights, Unanderra, Cordeaux Heights, Figtree and Farmborough, and an additional 48% lived elsewhere in the Wollongong LGA. As such, the continuation of employment will be of substantial benefit to local workers, families and the Wollongong community. The remainder of employees live in the Shellharbour, Kiama, Shoalhaven, Wingecarribee, Wollondilly, Sutherland, or Camden LGAs, so there is also some broader regional benefit.

The Project represents a significant benefit to people whose working lives and careers are connected to Dendrobium Mine. Mining jobs offer higher than average wages, and the Project would support good livelihoods and income security, as well as training and career pathways.

As noted by employees who participated in the surveys, the long-term employment provided by Dendrobium Mine will also benefit the community financially, through the local economic contribution of employees. They also felt that associated employment opportunities and employment continuity at the mine would provide financial stability for families and enable them to stay settled in the region.

Whilst labour force characteristics would change over time, the Project would continue to be a significant component of the LGA's mining employment opportunities. However, with an increase of approximately 102 operational jobs (for mining and maintenance), any material change to the Wollongong LGA's employment rate is unlikely.

As in the construction phase, indirect employment would result from the Project's operation, as is described in Appendix L of the EIS.

#### **4.4.3 Training opportunities**

Over the four years to March 2017, the Wollongong LGA's unemployment rate fluctuated between 7.7% to 6.3%, and was (for all but one quarter) consistently above the NSW unemployment rate.

In 2017 the Dendrobium Mine employed three apprentices (electrical and mechanical trades, in their final years) and one graduate (electrical engineering). In 2018 the training intake was planned to include four apprentices and potentially another graduate.

As the Project would offer continuity and a long-term future for the Dendrobium Mine's operations, it would enable Illawarra Coal to provide apprenticeships and traineeships in the future. Assuming a similar commitment to training is continued, the Project would enable continuity in employment for the equivalent of four apprenticeships and one graduate traineeship until 2048.

To provide career pathways for Indigenous people, the Project could facilitate Aboriginal people being specifically targeted and encouraged to apply for apprenticeships and traineeships, as outlined in Section 4.4.5.



#### 4.4.4 Workforce diversity

South32 is committed to workplace diversity and inclusion, with respect to differences in “gender, ethnicity, disability, age, thought, education, experience, family responsibilities and sexuality”<sup>79</sup>. Workforce profile reports to the Australian Government’s Workplace Gender Equality Agency indicate that the company’s proportions of female employees increased over the most recent year, as shown in Table 4-1.

**Table 4-1: South32 female staff percentages 2016-2017**

Staff group	2016	2017
Managers	19%	20.8%
Non-management employees	10.5%	11.6%
Apprentices	31.6%	35.5%

South32’s current diversity objectives include demonstrating year-on-year improvement in the representation of women in the total workforce, and continuing to work towards gender pay equity. To address these objectives, South32 has allocated funding for salary increases to address the gender pay gap, instituted policies that ensure no new cases of bias are introduced, and mounted recruitment campaigns to attract female and Indigenous applicants, particularly in core disciplines such as engineering.

South32’s suppliers are also required to give due consideration to diversity in selecting personnel to work with South32 and provide a work environment in which everyone is treated fairly<sup>80</sup>.

Dendrobium Mine’s current female employees are primarily in professional and administrative services. In line with the company’s diversity policies, the Project offers the opportunity for an increased number of women to be employed in more diverse roles. To this end Illawarra Coal would:

- fully implement South32’s Diversity and Inclusion policies and strategies;
- work towards a 10% female workforce, including 20% of managers, by the commencement of the Project’s operation; and
- commit to demonstrating year on year increases in female participation in the Project’s workforce.

#### 4.4.5 Indigenous employment

Consultation with Indigenous community members consistently confirms Indigenous employment, and particularly youth unemployment, as key priorities. Employment access supports individual, family and community health at all levels.

Illawarra Coal does not currently request information that would identify employees as Indigenous, so the current number of Indigenous employees at Dendrobium Mine is unknown. To make a positive

<sup>79</sup> South32. 2015

<sup>80</sup> South32. 2016a

contribution to Indigenous employment and achieve a more diverse workforce, preparation for the Project would include:

- offering employees the option to identify as Indigenous when they apply for or accept employment at Dendrobium Mine;
- work towards setting a goal of at least 2.5% Indigenous employment, supported by targeted recruitment and support strategies;
- ensuring recruitment staff have access to cultural awareness training and are aware of the Project's employment targets;
- ensuring commercial and non-government organisations assisting Indigenous jobseekers are aware of Project employment opportunities;
- ensuring the Project's suppliers are aware of diversity and inclusion requirements; and
- in consultation with TAFE Illawarra's Aboriginal Education and Training Unit, identify pathways, barrier and initiatives to enable Indigenous young people to obtain and sustain employment at Dendrobium Mine.

Indigenous businesses can also be a significant primary source of employment for Indigenous people as discussed below.

#### 4.4.6 Indigenous businesses

Both the construction phase and operations phase present opportunities for Indigenous businesses to tender to and supply the Project. A search of the NSW Aboriginal businesses directory<sup>81</sup> identified at least 50 Indigenous business in NSW offering services that are potentially relevant to the Project, including:

- traffic management services;
- training and employment services, including registered training organisations and support programs;
- administration, payroll, SAP and accounting services;
- industrial cleaning;
- equipment and consumables supplies;
- facilities management, including workplace health and safety;
- earthworks, road construction and pipe laying;
- project management services;
- horticultural and environmental management services; and
- cultural awareness training.

As Indigenous businesses gain strength and maturity, their supply capacity is likely to increase. The viability and sustainability of Indigenous businesses could be enhanced if the Project includes some of

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<sup>81</sup> NSW Department of Industry. 2017

these businesses in supply arrangements. Indigenous businesses are a key source of employment for Indigenous people, which would achieve a secondary positive benefit.

Illawarra Coal would undertake the following actions to achieve Indigenous businesses' participation in the Project supply chain:

- Indigenous businesses in the Illawarra region and Greater Sydney regions are identified and encouraged to participate in supplier engagement strategies (see Section 4.4.6); and
- monitoring the percentage of and expenditure to Indigenous-owned businesses supplying the Project, with the aim of increasing participation and Project expenditure with Indigenous businesses over time.

#### **4.4.7 Project engagement with local and regional businesses**

The Project would enable continuation of existing relationships between Dendrobium Mine and suppliers in the Wollongong and adjoining LGAs. The supplier network derives direct economic benefit from Mine expenditure, and indirect benefit from Mine employee and contractor expenditure.

Locations where current suppliers are clustered include Port Kembla, Wollongong, Tomago and Sydney, with others located at Unanderra and Kurri Kurri. Project expenditure during both the construction phase and the operational phase is likely to support local and regional employment through businesses and services, as discussed in Appendix L of the EIS.

A review of the Mine's top twenty current suppliers (by company expenditure) indicates that the current primary supplier network encompasses:

- energy generation, supply and retail services;
- processing equipment and systems;
- rail line maintenance and supply;
- drilling equipment and supply;
- mine conveyor systems;
- freight and logistics;
- industrial labour;
- chemical supply and services;
- manufacturing and fabrication services; and
- septic and waste water management.

The owners of six local businesses who were interviewed for the SIA (see Appendix B, Section B9) indicated that they attributed anywhere from 5% to 100% of their business to the Dendrobium Mine operation, with four attributing around 40%. All interviewees said that the Project would have a positive effect on local and regional businesses, at a scale ranging from moderate to major. Benefits cited included the opportunity to extend existing supply arrangements to the Project, the continuation of employment for their employees, and the opportunity to tender for new work associated with the Project's construction phase. Some interviewees said that prioritising local supply from the Wollongong region would help the Project to maximise local community benefits.

For the larger businesses with a diverse client base, the anticipated effect of the Project not proceeding was a loss of revenue, however for smaller operators, the anticipated effects included the potential for redundancies and a major effect on the businesses' viability. All interviewees said there would be a negative effect on other local and regional businesses in the region to varying degrees, as the level of

reliance each business might have on Dendrobium Mine at the time of its closure was unknown. Most interviewees noted limitations in what South32 could do to mitigate the impacts of closure should the Project not proceed, however their suggestions included ensuring ample advance notice of the cessation of operations, the ramp down and any opportunities to transition business to supporting other South32 operations.

Prioritising local supply to the Project from within the Wollongong region would increase direct benefits to local businesses, and to the extent that it supports their growth, result in increased indirect employment. Actions to this effect would include:

- three months prior to construction, identify businesses headquartered within the Wollongong LGA who could supply the Project's construction phase, and invite their participation in a briefing to learn about the Project, supply requirements and tendering arrangements;
- during the Project's operation, conduct forums for businesses in the Illawarra region to learn about supply opportunities and support them to position themselves for tendering opportunities;
- maintain regular communication with the supplier network to identify any inefficiencies, inequities or other barriers which hamper local businesses' participation; and
- monitor the percentage of Project suppliers located within the Wollongong LGA and Project expenditure with businesses headquartered in the LGA, aiming for continual improvement.

## 4.5 Community

The potential for changes to population size, composition or distribution at local or regional level has been assessed, applying:

- the estimated percentage of personnel who would live in the Wollongong LGA;
- Census 2016 population data and population forecasts; and
- the Project's projected employment numbers.

This also provided the basis for estimating potential impacts on housing and social infrastructure.

Factors such as labour availability and rental housing availability can change quickly, so the following estimates should be regarded as indicative. A monitoring framework which would enable adaptive management of social impacts is provided in Section 5.

### 4.5.1 Planning and decision making

Community members and other stakeholders will have the opportunity to participate in review of the Project's EIS, and Illawarra Coal would maintain the DCCC and a range of community engagement mechanisms to enable ongoing representation of community views on the Project. The Project is not expected to have any adverse effects on community representation or governance.

The Project's potential contributions to the Wollongong community's goals (as outlined in the *Wollongong 2022 Community Strategic Plan*) are outlined in Table 4-2.

**Table 4-2. Summary of community goals for Wollongong 2022**

Community Goals		Project contribution
Value and protect the environment	<ul style="list-style-type: none"> <li>Protect and enhance the natural environment, including coastal areas and waterways</li> <li>Create a sustainable urban environment with a reduced ecological footprint (including greater support for local food production)</li> <li>Community awareness and appreciation of local heritage</li> </ul>	<ul style="list-style-type: none"> <li>The Project would have no material adverse effect on coastal areas and waterways, or on the LGA's urban footprint</li> <li>Illawarra Coal's social investment program includes a focus on maintenance of cultural heritage</li> <li>There is strong community concern regarding the potential for the Project to have negative impacts on water catchments. This would need to be addressed through transparent, ongoing communication about the Project's monitoring of potential impacts on surface water or groundwater.</li> </ul>
An innovative and sustainable economy	<ul style="list-style-type: none"> <li>Raise, extend and improve the profile of Wollongong</li> <li>Increased employment opportunities</li> <li>Diversify regional industry and economy, including green technologies and industries</li> </ul>	<ul style="list-style-type: none"> <li>The Project would support the Wollongong LGA's identity as a coal producing region.</li> <li>The Project would increase the number and longevity of employment opportunities in mining.</li> <li>The Project would provide opportunities for Indigenous employment and workforce diversity.</li> </ul>
A creative, vibrant city	<ul style="list-style-type: none"> <li>Increase visibility and value of Wollongong's cultural diversity</li> <li>Create and foster creative industries and increase community participation in arts, culture and events</li> </ul>	<ul style="list-style-type: none"> <li>Illawarra Coal provides a range of programs and partnerships that increase community participation in events.</li> </ul>
A connected and engaged community	<ul style="list-style-type: none"> <li>Easy, equitable access to resources</li> <li>Increased sense of community ownership</li> <li>Increased participation in planning</li> </ul>	<ul style="list-style-type: none"> <li>The Project would maintain employment for local and regional residents and support access to social resources through community investments.</li> </ul>
A healthy community in a liveable city	<ul style="list-style-type: none"> <li>Increased physical fitness, mental and emotional wellbeing of residents</li> <li>Residents demonstrate a high level of life satisfaction and happiness</li> <li>Community safety is improved</li> <li>Public domain is of a high standard</li> </ul>	<ul style="list-style-type: none"> <li>Illawarra Coal's community investments enable a range of projects that support health and wellbeing.</li> </ul>

Community Goals		Project contribution
Sustainable affordable and accessible transport	<ul style="list-style-type: none"> <li>Wollongong is supported by an integrated transport system</li> <li>Reducing use of private vehicles and increasing use of active transport</li> <li>Equitable access to transport options for disadvantaged communities</li> </ul>	<ul style="list-style-type: none"> <li>The Project would have no effect on active or public transport.</li> </ul>

#### 4.5.2 Population and housing

##### Construction

As outlined in Section 4.4.1, construction workers would be sourced from within the Wollongong LGA and adjacent LGAs with strengths in the mining and construction industries. Some construction personnel including specialists would be sourced from outside the LGA, so the SIA has assumed that approximately 30% of the construction workforce (i.e. approximately 62 people) could be drawn from areas outside a safe daily driving distance. Some non-local workers would be expected to stay locally during the week and travel home for weekends, whilst others may relocate to the Wollongong LGA for a short period.

The Mount Kembla Hotel offers rooms and may benefit from construction workers' trade, but with the proximity of accommodation and entertainment options in Wollongong's CBD, most non-local workers are likely to seek accommodation in Wollongong. At June 2016 there were 17 hotels, motels and serviced apartment facilities registered in central Wollongong, offering 887 beds, with an occupancy rate of 60.3% indicating an average availability of at least 350 beds. Additional accommodation facilities are also available in the nearby suburbs of Albion Park, Thirroul, Dapto and Balgownie for which bed numbers were not available<sup>82</sup>. WCC advised that there has been increased development of serviced apartments and units in the CBD during the past five years, however Wollongong hotels currently experience high occupancies on weekends as a result of increasing tourism numbers.

WCC managers consulted for the SIA view the use of short-term accommodation during the week positively, however heavier existing usage was noted at weekends, which will be considered in planning for short term accommodation use.

Co-incidence of all non-local workers' accommodation needs at the same time is not expected, however at an estimated maximum of 62 people requiring accommodation, the demand is likely to be experienced as a positive effect for providers. Some construction workers staying in short term accommodation are likely to return home for weekends, so it appears that there would be minimal potential to 'crowd out' other travellers or tourists.

Some non-local construction workers and managers on long-term contracts may relocate their families to the Wollongong LGA for a period of up to three years. On the assumption this may apply to one third of the non-local workers, or 10% of the total construction workforce, this could see approximately 20 families moving into the LGA.

<sup>82</sup> Australian Bureau of Statistics. 2016b



As described in Section 3.4.4, the Wollongong LGA's population was approximately 203,630 people in 2016 and is projected to reach approximately 220,750 people by 2021. As such any in-migration of non-local workers as temporary or part time residents is unlikely to cause a noticeable increase in the population size or composition at the LGA level.

### **Operations**

At full development (anticipated around 2023), the Project would employ up to 507 personnel.

The Wollongong LGA, with a mining workforce of 1,730 people in 2016, has considerable capacity to supply the Project. Some of the 102 new positions generated by the Project would be filled by Wollongong residents, however there is potential for some in-migration.

Assuming the geographic distribution of Project employees remains similar to that of current employees (approximately 56% living in the Wollongong LGA) and an average household size of 2.6 people (the LGA's 2016 average), the Project's operation would support approximately 738 Wollongong LGA residents directly, including existing and new LGA residents.

Conservatively assuming 50% of newly employed operational personnel moved to the LGA, a maximum of 51 new households could eventuate, so in the context of the 88,250 households projected to live in the Wollongong LGA by 2021, any population increases resulting from the Project would be minimal. A low level of demand for housing may also result, balanced between housing purchase and rental. In the context of the LGA's existing and planned future housing supply, this is likely to be a negligible impact.

The Project would also contribute to indirect employment through its supplier network and employees' expenditure, and therefore to the stability and potential growth of the LGA's population.

Regular CPP shutdowns are likely to require 100- 200 contractors for one to two days and approximately 100 people for a few weeks every year, so there may be very small temporary increases in the population. However, in the context of a population of some 215,700 people in 2021, this would not be noticeable, and is likely to be well within the City's short term accommodation capacity.

With this small increase in population, and no changes to surface facilities which would affect residential land, significant impacts on housing demand, availability or affordability are not anticipated as a result of the Project.

### **4.5.3 Community identity and sense of place**

The Wollongong LGA community's identity and sense of place is strongly influenced by its natural environment including the frame provided by the coastline and the escarpment, urban and natural amenities, and the LGA's industrial history, as outlined in Section 3.4.2. In the local study area, the escarpment, urban parks and natural bush land contribute to sense of place, and in Mount Kembla the School, Church, cemetery and physical fabric of mining history are also important.

The Project would not affect bush land around the local suburbs, the escarpment's qualities as a frame for the Wollongong LGA or its support for biodiversity, natural or urban amenities, or the physical fabric of local communities.

The Project would support ongoing recognition of the area's identity as a mining community. As described in Section 3.1.2, there have been few years since the late 19<sup>th</sup> century when mining was not occurring in the Mount Kembla area, and over the decades, hundreds of local people worked in the mines. As a result of this long history, the Mount Kembla area has a clear identity as a mining community, set within an area of natural beauty. Fewer mining employees now live locally, but families with long associations with local mines are still part of local communities. Elements of mining's historical fabric also remain, including the Nebo Colliery Building (built in 1946) which currently houses Dendrobium Mine's management and administration functions.

This identity is celebrated and commemorated through community events, and encapsulated by the Mount Kembla Mine Memorial Pathway. Of itself, the Pathway project has contributed to sense of place by commemorating the Mount Kembla men and boys who died in 1902, and enabling residents to walk through their area, experiencing the bush land.

The Project's continuation of mining would enhance the identity of Mount Kembla as a mining community. The Mount Kembla Heritage Centre and its committee have been central to local mining heritage protection however the Centre is currently inactive due to falling revenue and volunteer support. The Committee is in the process of seeking support from members of the local community to form a new group that will continue to share the same focus in preserving the area's rich heritage and drive other local community initiatives. Support for the Committee and its objectives (and/or for a local equivalent organisation) could be considered through the DCEP to facilitate ongoing access to the area's stories and sites.

Historical heritage assessment of the potential impacts of upgrades to the Dendrobium Pit Top on features such as the Nebo Colliery building are detailed in EIS Appendix G. Mine closure planning would also consider that these heritage values and closure activities would be undertaken in accordance with a Conservation Management Plan for the Nebo Colliery.

## 4.6 Access to services and infrastructure

This section describes the potential impacts on access to services and infrastructure as a result of the Project.

### 4.6.1 Local infrastructure

There are three social infrastructure facilities within approximately 600 metres of the Dendrobium Pit Top: Mount Kembla Public School and the Soldiers and Miners Memorial Church on Cordeaux Road, and Mount Kembla Children's Centre on Benjamin Road. The Mount Kembla Rural Fire Brigade and the Mount Kembla Heritage Centre are also located on Cordeaux Road.

The School did not identify any concerns regarding Dendrobium Pit Top noise or dust, but currently experiences traffic noise (primarily from trucks) from Cordeaux Road at levels which can disrupt outdoor assemblies. Progressive turnover in the vehicle fleets servicing the Project may result in quieter trucks over time, but it should be assumed that traffic noise would continue to impact on the amenity of the school's outside areas.

Dendrobium Mine has provided air conditioning for school classrooms fronting Cordeaux Road which are affected by traffic noise. In consultation it was noted that this was one of several investments in the School made by the DCEP or the Dendrobium Mine over the years.

There appears to be little potential for Dendrobium Pit Top noise or other amenity impacts to affect the Children's Centre, the church or the fire station.

The Dendrobium Mine has instituted traffic management initiatives to reduce the potential for Mine traffic to affect road safety or the traffic noise environment in this area, including:

- support for the 40 km/hour speed limit on Cordeaux Road near the school and Children's Centre;
- communication with the Rural Fire Station with respect to the Station's access/egress to Cordeaux Road and emergency management protocols;
- a curfew on all vehicles (other than personnel passenger vehicles) preventing travel through Mount Kembla Village on weekdays between 8.00 a.m. and 9.30 a.m., 2.30 p.m. and 4.00 p.m.

and after 5.00 p.m., and on weekends apart from 8.00 a.m. – 1.00 p.m. on Saturdays; and

- the Dendrobium Drivers' Code of Conduct requires drivers to take extreme care along Cordeaux Road and Stones Road, particularly in narrow zones, bridges, residential areas and near the Mount Kembla Public School and Children's Centre.

Consultation with the Mount Kembla Public School Principal and the NSW Police LAC indicated that both the School and Police Service have capacity to respond to any increased demand for services during the Project. The School currently benefits from the DCEC, and it is anticipated that similar benefits would continue as part of the Project.

Illawarra Coal is committed to ongoing communication with the School regarding its operations and plans, and to ongoing investment in the School's facilities and programs. Communication ahead of the Project's construction and the commencement of operations would include a focus on how the impact of Project traffic noise on the amenity of the school's outdoor area can be minimised.

#### 4.6.2 Regional infrastructure

Based on the estimates of non-local workers who would stay within the Wollongong LGA during Project construction (up to 62 people), the impacts of construction workers on demand for social and health infrastructure would be negligible. There would be some increased demand for policing of construction traffic (including workers' cars and delivery vehicles) and for police escorts for over-size vehicles. An occasional requirement for Ambulance or Fire Service response to traffic accidents or workplace accidents could also be anticipated. This level of demand is unlikely to disadvantage local residents through competition for police and emergency services, or to lead to a significant strain on services' resources.

The 278 personnel who participated in the employee survey identified approximately 200 children who were attending schools in the LGA. If 50 additional households moved to the Wollongong LGA by around 2022 as a result of the Project's additional employment opportunities and this ratio were replicated, approximately 36 new enrolments could result for schools in the LGA. As enrolments would be distributed across the LGA and between public and private schools, this would be a negligible impact on school resources in the LGA.

Similarly, any potential Project related increased demand for health services, policing, emergency services or other community infrastructure are likely to be negligible in the context of the regional population.

### 4.7 Health and wellbeing

This section discusses the potential for the Project to impact on or benefit community health and wellbeing.

Survey respondents' views on any Project effects on community wellbeing were mixed, with 37% stating that the Project would have no effect on community well-being in their area, 28% stating it would have a positive effect on wellbeing, and 24% stating there would be a negative effect on well-being. Views on community safety were also mixed, with 44% saying community safety would not change if the Project proceeds, 27% perceiving a potential negative effect, and 16% perceiving a positive effect on community safety. "Don't know" or "did not answer" accounted for the remaining percentages of respondents.

#### 4.7.1 Health

Residents in the Mount Kembla area who experience rail noise from the KVRL described feeling stress and frustration as a result of interruptions to their daily activities (such as conversations and social

activities), and three of the six interviewed in 2017 described occasional sleep disturbance. Whilst stress and frustration do not constitute mental illness, they affect quality of life, and for individuals with an existing vulnerability to mental health issues, are added stressors. Regular sleep disturbance is also known to affect health.

As noted in Section 4.2.2, the recent rail noise mitigation measures implemented by Illawarra Coal have resulted in a significant decrease in brake squeal noise. As a result, affected residents are likely to experience some relief from the stress and frustration experienced previously. With an ongoing process of continual improvement during the years before the Project commences, there is also some potential for further reductions in rail noise impacts.

Accessible information and respectful communication would be required throughout the Project to reduce residents' stress about rail noise and avoid frustration about how rail noise issues are managed. This would include:

- clear information about the level and geographic extent of rail noise impacts;
- regular communication with those most affected to ensure rail noise impacts are being reasonably and feasibly managed; and
- regular provision of rail noise monitoring data to affected residents.

Access to stable employment supports mental health by enabling housing security, self-development and social connections. The Project's continuation of employment would support positive mental health for those who work there, and provide a level of comfort and security to their families.

As noted in Section 2.1, 12 community survey respondents and four people interviewed about rail noise also noted that dust is perceived to be a current problem. A small number of survey respondents also expressed concern about the potential effects of coal dust on their health. As determined by air quality assessment for the EIS, the Project would operate within the compliance limits for air quality, including both health and amenity criteria (see EIS Appendix I).

Community concerns about dust are likely to persist regardless of the Project's compliance. Provision of information about existing air quality, the Project's air quality targets and the results of air quality monitoring may assist to reduce concern about coal dust and community health.

#### **4.7.2 Traffic safety**

Stakeholder engagement identified residents' concerns that the Project would contribute to traffic congestion in and around Mount Kembla, and therefore to an increased risk of traffic or pedestrian accidents. The potential for an increase in traffic on Cordeaux Road was raised as a potential concern during the construction period by both the Mt Kembla Public School Principal and the NSW Police representative.

There would be an increase in traffic on Cordeaux Road (from workers and for deliveries) to the Project's sites as a result of the Project's construction. This would be managed in strict accordance with the Traffic Management Plan and Dendrobium Drivers' Code of Conduct. Particular attention would be required to ensure construction contractors are aware of facilities such as the Mount Kembla School, Mount Kembla Children's Centre and Rural Fire Brigade.

With approximately 200 construction workers, there is also potential for workers' vehicles to access parking in local streets, crowding out both locals and visitors in Mount Kembla and Kembla Heights. Additional parking facilities for the Dendrobium Pit Top are proposed as part of the Project which would reduce this impact. All contractors would be directed to ensure their personnel park only in approved parking areas as advised by the Project.

Communication with the Mount Kembla and Kembla Heights community, including community facilities and the Hotel, would be required prior to construction to ensure community awareness of:

- the construction schedule, including periods when over-sized vehicles would be required;
- Project traffic operating hours and curfew periods;
- the Dendrobium Drivers Code of Conduct; and
- how to communicate with the company about any concerns regarding construction traffic, including workers' vehicles.

During the operational period, there is likely to be a modest increase in personnel vehicles, which would increase general traffic volumes through Mount Kembla.

Another concern identified in consultation was the potential for the Project to increase traffic on Appin Road or Picton Road. There would be no increased traffic on Appin Road as a result of the Project. However, Picton Road is likely to experience a modest increase in traffic when the Cordeaux Pit Top is in use, which is small relative to the total traffic, as discussed in Appendix H of the EIS.

The findings of the traffic and transport study (Appendix H to the EIS) indicate that the Project is not expected to exacerbate any existing safety issues with the operation of the road network, subject to management of traffic exiting at the Cordeaux Pit Top access in the long term.

The Project's traffic would be managed in accordance with the Traffic Management Plan. The Dendrobium Drivers' Code of Conduct would also apply to the Project's activities to maintain high standards of road and pedestrian safety and continue to address community expectations of safe driving.

#### **4.7.3 Community investment**

Illawarra Coal's primary channel for supporting community well-being (apart from the benefits of employment and supplier relationships as already described) is the DCEP. The DCEP was established in 2002 to ensure that the community in the immediate vicinity of Dendrobium Mine benefits from its operation.

The program is administered by the DCEC which includes an independent Chairperson, community representatives and Illawarra Coal representatives. The DCEC considers applications for funding against a Business Strategy which is reviewed annually. South32 contributes \$0.03 per saleable tonne of coal (plus CPI increases since 2002) to the DCEP to fund community projects. The FY18 contribution to the DCEP was \$146,215.63.

A review and categorisation of the DCEP's funded projects over the past four years (FY 2014/15 to FY 2017/18) showed that the DCEP supported a range of local initiatives including:

- community infrastructure, including the Mount Kembla Memorial Pathway Project and Signage;
- youth education and development programs including a three-year partnership with Life Education (2018 to 2020) and the Unanderra Youth Project;
- education projects, including school equipment, the Life Education program and the Unanderra Homework Club;
- a range of community events and festivals;
- early childhood projects, including playground equipment and classes;
- environment and conservation projects including the Kembla Heights Wetland rehabilitation Project;

- renewable energy projects including funding solar panels for the Kembla Heights Bowls and Recreation Club;
- social history and heritage projects, including Mount Kembla Living Memorial, Yesterday Stories Website Initiative, a Conservation Assessment for Mount Kembla Mining Heritage Inc, and Rental Assistance to the Mount Kembla Mining Heritage Inc; and
- sport and recreation projects including upgrades for Mount Kembla Tennis Club.

The Mount Kembla Mine Memorial Pathway Project is one of the DCEP's key initiatives, developed through a partnership between Illawarra Coal, local community members and WCC. Now comprising three stages, the Pathway has multiple benefits for local well-being including:

- enhanced connectivity between homes, facilities and bushland;
- creation of a variety of bushwalking experiences for people of varying abilities;
- social cohesion built through the shared efforts of volunteers; and
- avoidance of traffic and traffic noise on the main roads.

There is potential for the Project to support further stages of the Mount Kembla Memorial Pathway Project to extend the amenity, safety and environmental appreciation values it currently provides.

Illawarra Coal has also provided significant funding over the years to the Mount Kembla Lowries (football club) and Greenacres Disability Services Mountain 2 Mountain Challenge.

Other suggestions from consultation participants that could be considered by the DCEP included:

- support the historical committee to maintain a permanent base and showcase local history;
- continue to fund community projects to compensate for loss of village lifestyle;
- target community investment and partnership on long term goals and innovation; and
- support social procurement and social enterprise opportunities.

## 4.8 Cumulative impacts

Cumulative impacts are those that result from the *successive, incremental and/or combined effects of an action, project or activity when added to other existing, planned and or reasonably anticipated future ones*<sup>83</sup>.

There are no projects close enough to the Project to contribute to cumulative impacts on local amenity. This section has considered the potential for cumulative social impacts from existing and proposed coal mining projects in the Wollongong, Wollondilly and Wingecarribee LGAs as shown in Table 4-3. Consideration of other major infrastructure or industrial projects is also given that may be relevant to accommodation or construction workforce demand.

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<sup>83</sup> International Finance Corporation, World Bank Group, 2013



**Table 4-3: Current and proposed projects**

Approved Operations			
Owner	Operation	Approved to	Personnel
Wollongong Coal Limited	Wongawilli Colliery	2020 <sup>84</sup>	300 <sup>85</sup>
South32	Dendrobium Mine and Dendrobium CPP	2030	405
	Bulli Seam Operations (Appin Mining Complex and West Cliff Coal Wash Emplacement Area)	2041 <sup>86</sup>	800 <sup>87</sup>
Peabody	Metropolitan Mine	2032 <sup>88</sup>	300 <sup>89</sup>
SIMEC	Tahmoor Mine	2024 <sup>90</sup>	343 <sup>91</sup>
Wollongong Coal	Russell Vale Colliery (in Care and Maintenance)	2015 <sup>92</sup>	Nil current
TQ Holdings Australia Pty Ltd	Port Kembla Bulk Liquids Terminal	N/A	Construction: 140 Operations: 12 <sup>93</sup>
Roads and Maritime Services	Princes Highway Albion Park Rail Bypass	N/A	Construction: 400 <sup>94</sup>
Proposed operations			
Proponent	Proposal	Proposed extension to	Personnel Proposed
South32	Dendrobium Mine Plan for the Future (SEARs issued 6 February 2017)	2048	Construction: 207 Operations: Up to 507

<sup>83</sup> NSW Department of Planning and Environment. 2015

<sup>85</sup> Gujarat NRE FCGL Pty Ltd. 2010

<sup>86</sup> NSW Government Planning and Assessment Commission. 2011

<sup>87</sup> Ibid

<sup>88</sup> Peabody Australia. 2016

<sup>89</sup> Ibid

<sup>90</sup> SIMEC. 2018

<sup>91</sup> Glencore. 2017b

<sup>92</sup> NSW Department of Planning and Environment. 2014

<sup>93</sup> NSW Department of Planning and Environment. 2015.

<sup>94</sup> Roads and Maritime. 2015

Approved Operations			
SIMEC	Tahmoor South Coal Project (SEARs issued 20 June 2018)	2036	Construction: 343 <sup>95</sup> Operation: up to 510 <sup>96</sup>
Hume Coal Pty Limited	Hume Coal and Berrima Rail Project (Subject to Independent Planning Commission review) 10 August 2018	2043	Construction: 414 Operations: 300 <sup>97</sup>
Australian Industrial Energy (AIE)	Port Kembla Gas Terminal (SEARs issued 20 August 2018)	2035	Construction: Up to 150 Operations: 50 <sup>98</sup>

There is potential for the Project's construction period to overlap with that of other projects listed in Table 4-3. In the unlikely event that all projects proceed and all construction periods overlap, a maximum of approximately 1,500 construction jobs would be available. The Wollongong LGA's construction labour force numbered more than 7,500 people in 2016 (see Appendix 1 Table A-8), and as construction workforces are likely to be drawn from the broader region, including the Wollongong LGA, the Project's contribution to cumulative impacts on labour availability for other industries would be minimal.

The sources as referenced indicate that coal mines within the three LGAs currently provide approximately 2,100 jobs. Of these, more than 1,000 jobs would end by 2030 without extensions to current approved operations at Dendrobium Mine. All remaining jobs at current operations would end by 2041.

The Project and the currently proposed Tahmoor South Coal Project together have the potential to sustain a mining workforce of up to 1,117 personnel to 2036, with up to 1,417 jobs available if the Hume Coal and Berrima Rail Project also proceed. Between 2037 and 2043, the Project, with the addition of the Hume Coal Project (if approved) would sustain up to 807 jobs.

The potential for cumulative social impacts currently appears to be low, as:

- there are no mines currently operating in the direct vicinity of Dendrobium Mine that would contribute to cumulative impacts on amenity;
- the Project would have negligible additional impacts on population, social infrastructure or housing given the size of the regional population, and as such there is low potential for cumulative impacts on these factors;
- in a scenario in which one other project of similar size was constructed in the same timeframe as the Project, cumulative demand for mine construction workers would result. However, the specialised nature of underground construction work means that this is unlikely to cause significant impacts for other industries or businesses in the Wollongong region;

<sup>95</sup> Glencore. 2017a (ibid)

<sup>96</sup> AECOM. 2018

<sup>97</sup> EMM. 2017

<sup>98</sup> GHD. 2018

- Wollongong residents currently experience the cumulative impacts of mine-related and other traffic on roads including Cordeaux Road, Appin Road and Picton Road. The Project would continue Dendrobium Mine's contribution to these cumulative impacts, but would not significantly intensify impacts; and
- the Wollongong community is experienced in managing the cumulative impacts of mining operations, so a degree of resilience to impacts is likely.

Notwithstanding the above, if commencement of the Project is significantly delayed (e.g. more than four years beyond EIS submission), then potential cumulative impacts should be reviewed (in the context of projects approved at that time) prior to commencement of Project construction.

As noted in Section 4.1.2, there is significant community concern about the cumulative impacts of mining in the MSA, including concerns about the potential for intergenerational effects on access to water. Consultation for the SIA identified concerns about the effects of individual mining projects and the cumulative impacts of mining in the MSA on aquifers and creek systems. Community concerns have been heightened during the past twelve months by the initiation of studies including mine-specific investigations into impacts on groundwater and the Independent Expert Panel for Mining in the Catchment which will provide expert advice to NSW DPE on the impact of mining activities in the Greater Sydney Water Catchment Special Areas. DCCC members identified recent drought conditions and low dam levels as exacerbating current levels of concern about potential impacts on groundwater.

Technical assessment of these issues is provided in EIS Section 6. Notwithstanding the technical assessment findings, a level of anxiety about both Project impacts and cumulative underground mining impacts is likely to remain. This could be partially mitigated by providing ongoing, accessible information about observed/measured subsidence and groundwater effects as described in Section 4.1.2 (see also Appendix B).

## 4.9 Impacts of mine closure

The Project's coal reserves are required by 2020-2021 to ensure continuity of the Mine's operations. If the Project is not approved, mining would likely cease by 2026 as Area 3C may not be able to be mined within this timeframe. If Area 3C proceeds without the Project, mining would have to cease in 2030, based on current approvals.

If the Project proceeds, the potential impacts and benefits discussed below would be delayed by approximately 18 to 22 years. The effects then are likely to be similar, but of less magnitude, as the LGA's population will have grown and a more diversified economy developed.

### 4.9.1 Personal and property rights - amenity

Interruptions to or cessation of operations would see coal transport along the KVRL suspended or ceased, so the impacts of brake squeal and other rail noise would no longer occur. Traffic to and from the Dendrobium Mine would also significantly reduce or cease, with consequent improvements in the amenity of residents near Cordeaux Road.

Following the end of production, the Dendrobium Mine's facilities would be decommissioned and surface facilities (with the exception of any heritage-protected items) would be demolished. Episodic, short term noise impacts are possible as a result of demolition, along with a short-term increase in the number of oversized vehicle required to remove recyclables and waste material. These would be short-term impacts and are likely to be well tolerated. Preparation for community engagement prior to closure would identify potential traffic routes and neighbourhoods with whom communication (and or other mitigation measures) would be required.

#### 4.9.2 Community - population characteristics

If the Project does not proceed, the Mine's closure would see the loss of approximately 265 jobs and 140 FTE contractor positions. With approximately 56% of current employees living in the Wollongong LGA, some outmigration is likely to occur if the Project doesn't proceed. Mine personnel's partners' employment also supports the population base, and there is potential for some people to gain other local employment within a daily driving range, so a significant effect on the LGA's population is not anticipated.

At the neighbourhood level, relocations due to redundancies may affect social networks, but there is little likelihood that population size or housing demand would be impacted at the regional level.

In 2016, the Wollongong LGA had approximately 1,730 people employed in the mining industry, including Dendrobium Mine. Whilst this would change by the time of mine closure, the loss of up to 265 mining jobs plus contractor positions is likely to be experienced as a significant loss to the mining labour force in the Wollongong LGA and adjoining regions. To the extent that some would have to leave the industry, some de-skilling of the labour force could also result.

Illawarra Coal would be required to give notice to employees prior to reduction in production or closure at Dendrobium Mine, which would reduce the severity of the loss of jobs for the sector.

#### 4.9.3 Community - identity

Mining has been part of the Mount Kembla area's cultural identity for more than 100 years. Dendrobium Mine's cessation may remove the last link to mining in the local area, which may be experienced with a sense of loss, but is unlikely to cause significant adverse impacts on the region's community values.

#### 4.9.4 Health and wellbeing - hardship

If coal reserves are exhausted or are not accessible under active approvals, operations would cease, resulting in the redundancy of all remaining personnel, and the loss of an unknown number of indirect jobs as arrangements with suppliers and customers cease. As noted by Dendrobium personnel who participated in the employee survey, the end of Dendrobium Mine coal production would also affect the upstream production and downstream processes that the Mine supports, which includes jobs at the BlueScope steelmaking complex that uses a proportion of the coal produced.

The majority of employees (78%) surveyed as part of the SIA thought that they and their families would experience hardship if operations ceased in 2030. Of the remainder, 16% thought that they wouldn't experience hardship as they planned to retire in the interim, and only 1% of employees said they expected to find alternative employment (with 5% providing no response).

Employees who provided detail on anticipated hardship feared they wouldn't be able to find a similar job, and said that they would be unable to keep up mortgage repayments and would lose their homes. Others recognised the possibility of moving away from the area or having to fly-in-fly-out to retain employment which they thought could lead to an unstable family unit. Generally, respondents thought their family's well-being and lifestyle would be negatively affected if the Dendrobium Mine was to close. Business owners interviewed also expressed concern about loss of revenue and the likely need to make some employees redundant.

The extent to which hardship would result is largely dependent on the availability of jobs with similar skills sets and equivalent supply opportunities in the region. Illawarra Coal would be required to give notice to employees under relevant workplace laws and regulations, which would reduce the potential for hardship. However, it appears likely that some would be unable to find other jobs, and would experience loss of income, stress and diminishment of the family resources that support their wellbeing.

Illawarra Coal would ensure Mine employees and suppliers receive early advice and ongoing communication about the pending cessation of Mining operations, to enable them to consider future plans and diversification of skills and/or business offerings.

## 4.10 Significance evaluation

This section evaluates the significance of social impacts and benefits.

Impacts and benefits as a result of construction would have a duration of 24 – 36 months. The Project could contribute to continuity of operations by 2021, and extend currently approved Dendrobium Mine operations for approximately 18 years.

The risk matrix shown in Table 4-4 has been used to identify impacts with higher significance that require Project-specific social management strategies (as identified in Section 5). The Queensland Government's Social Impact Assessment Guideline (2013) provides a social risk matrix which incorporates definitions of social consequences and has been used here to assess the significance of social impacts.

The likelihood of social impacts and opportunities occurring has been assessed with reference to EIS findings, stakeholder inputs and the SIA consultants' experience in assessing and monitoring the impacts of mining projects.

"Consequence", as defined in Table 4-5, has been assessed based on how the social impact may be experienced by the relevant stakeholder(s) by considering:

- the duration of impacts and benefits, being either short term (during construction) or long term (during operation);
- sensitivity, including stakeholders' specific vulnerabilities and resilience to impacts; and
- the severity of potential effects on quality of life in the area of influence, as supported by:
  - access to employment, housing and social infrastructure;
  - appreciation and enjoyment of surroundings;
  - physical and mental health; and
  - community values, including cultural heritage, community cohesion and rural character.

**Table 4-4: Social risk matrix**

			Consequence Level				
			1 Minimal	2 Minor	3 Moderate	4 Major	5 Catastrophic
Likelihood	A	Almost certain	A1	A2	A3	A4	A5
	B	Likely	B1	B2	B3	B4	B5
	C	Possible	C1	C2	C3	C4	C5
	D	Unlikely	D1	D2	D3	D4	D5
	E	Rare	E1	E2	E3	E4	E5
Significance of Social Impact Ratings							
		Low		Moderate		High	

Source: Queensland Department State Development, Infrastructure and Planning Social Impact Assessment Guideline July 2013.

**Table 4-5: Consequence definitions**

Rating	Impact (-)	Benefit (+)
1. Minimal	Local, small-scale, easily reversible change on social characteristics, or the values of the community of interest or communities can easily adapt or cope with change.	Local small-scale opportunities emanating from the project that the community can readily pursue and capitalise on.
2. Minor	Short-term recoverable changes to social characteristics and values of the communities of interest, or the community has substantial capacity to adapt and cope with change.	Short-term opportunities emanating from the project.
3. Moderate	Medium-term recoverable changes to social characteristics and values of the communities of interest, or the community has some capacity to adapt and cope with change.	Medium-term opportunities emanating from the project.
4. Major	Long-term recoverable changes to social characteristics and values of the communities of interest, or the community has limited capacity to adapt and cope with change.	Long-term opportunities emanating from the project.
5. Catastrophic	Irreversible changes to social characteristics and values of the communities of interest, or the community has no capacity to adapt and cope with change.	N/A

Source: Adapted from Queensland Department State Development, Infrastructure and Planning Social Impact Assessment Guideline July 2013.

Application of the social risk matrix determines the level of significance of the social impact or benefit. As per the Queensland Department of State Development, Infrastructure and Planning Social Impact Assessment Guideline July 2013 impacts are ranked as “low”, “moderate” or “high”.

A two-stage significance assessment has been undertaken. Firstly, South32's existing impact management, mitigation and engagement commitments were considered in evaluating the likelihood



and consequence of impacts and benefits, and a final significance assessment was undertaken after applying the SIA's additional recommended mitigation, management and enhancement strategies.

Table 4-6 summarises:

- likely social impacts and benefits as a result of the Project proceeding or not proceeding;
- stakeholders affected;
- Project mitigations;
- the consequence of potential impacts after additional Project strategies and commitments are applied;
- the rationale for risk ratings; and
- residual impacts and benefits after the recommended strategies have been applied.

**Table 4-6 Impact summary**

SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
Construction							
4.1.3	Surroundings – traffic volumes	<p>Construction traffic may contribute to traffic congestion and noise in Mount Kembla, and over-sized vehicles may cause concern about traffic and pedestrian safety.</p> <p>Workers' parked vehicles may crowd out residents and visitors in Mount Kembla.</p>	<p>Mount Kembla residents and businesses.</p> <p>Mount Kembla facilities (School, Children's Centre, Church, Fire Station and Hotel).</p>	B2 (-)	<p>Illawarra Coal's existing vehicle curfews for non-personnel traffic would apply to protect school hours and weekend traffic.</p> <p>Dendrobium Drivers' Code of Conduct would govern driver behaviour for construction personnel and other construction traffic.</p> <p>Car parking facilities at the Dendrobium Pit Top would be expanded as part of the Project.</p> <p>Pre-advice and ongoing engagement with community members and community facilities on and near Cordeaux Road.</p>	B1 (-)	Inconveniences to local motorists and visitors are likely during the construction phase due to construction traffic, but this is short-term. The Project's traffic and transport assessment did not identify a significant risk to network functions or traffic safety.

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.2.1	Personal and property rights – amenity	<p>Construction noise is likely to affect amenity in some neighbourhoods near the Dendrobium Pit Top.</p> <p>Construction noise predictions indicate that daytime construction noise levels would potentially exceed applicable guidelines at some of the most proximal private residences, particularly during construction of the carpark extension (Appendix J of the EIS).</p>	Residents in Mount Kembla near the Dendrobium Pit Top, particularly those near the proposed Dendrobium Mine carpark extension.	A2 (-)	<p>The construction phase of the Project would be short-term.</p> <p>Illawarra Coal would implement standard construction noise management techniques and consult with nearby neighbours during the duration of construction activities to minimise construction noise impacts.</p> <p>Ongoing engagement with residents in the Dendrobium Mine Zone of Influence throughout the Project.</p>	A1 (-)	<p>Construction activities would be temporary in nature, and would only occur during the daytime at the most noise affected residents near the Dendrobium Pit Top.</p> <p>Standard construction noise management techniques would be implemented by Illawarra Coal.</p>
4.4.1	Employment – construction employment	Creation of approximately 207 jobs, for up to three years. This will support the well-being of construction workers and their families, and create indirect local and regional employment benefits as a result of Project expenditure.	<p>Wollongong LGA labour force.</p> <p>Specialist construction workers from outside the region.</p> <p>Current and potential suppliers.</p>	A2 (+)	Existing strong relationships with local and regional suppliers.	A3 (+)	<p>WCC identified the creation of more than 100 construction jobs as a significant benefit to the LGA.</p> <p>Proposed measures would support an increase in the value of the Project's supply opportunities to local and regional businesses.</p>

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.5.2	Community – population and housing	An estimated 62 personnel may stay in the LGA whilst on shift, in the context of heavy existing usage of short term accommodation facilities on weekends.	Wollongong LGA residents. Accommodation providers.	B1 (-)	None required.	B1 (-)	The small and temporary population influx may compete with other visitors for short term accommodation facilities, however displacement of other visitors would be minimal or non-existent.
4.6.1	Access to services and infrastructure	The construction phase is likely to result in increased large vehicles and commuter traffic using Cordeaux Road with potential for noise to affect the Mount Kembla Primary School's outdoor amenity.	Mount Kembla Primary School.	B2 (-)	Ongoing engagement with Mount Kembla Primary School.	B2 (-)	Communication with the school prior to construction would include a focus on how traffic noise would be managed and regular engagement to monitor the School's feedback.
4.6.2	Access to services and infrastructure	There may be small increases in demand for health services, police calls for service and ambulance services during the construction phase.	NSW Police. NSW Ambulance Service. NSW Health.	B2 (-)	A Traffic Management Plan would be implemented for the construction phase. The existing Dendrobium Drivers' Code of Conduct would apply to all companies and individuals engaged by the Project.	B1 (-)	Any increase in demand for services would be very small and temporary.

# Dendrobium Mine - Plan for the Future - Social Impact Assessment

SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
Operation							
4.1.1 and 4.1.2	Surroundings – environmental qualities and water catchment	Community members are concerned about the potential for impacts on environmental values including surface water systems, biodiversity and habitat within the MSA as a result of underground mining, and about the potential for Project effects on potential catchment losses to public water supply.	Wollongong LGA residents.	A3 (-)	<p>Illawarra Coal would operate the Project consistent with the Development Consent to manage impacts on the MSA's environmental qualities and water supply capacity.</p> <p>The EIS provides comprehensive analysis demonstrating that the Project can operate, with the application of recommended mitigation strategies, within acceptable environmental standards.</p>	A2 (-)	Access to EIS assessment findings and ongoing community engagement and reporting processes may reduce some concerns, but are unlikely to fully resolve them.

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.2.2, 4.2.3 and 4.2.4	Personal and property rights – rail noise, pit top noise and dust	<p>Rail noise is likely to continue to affect amenity in some neighbourhoods near the KVRL.</p> <p>Whilst the Project would operate within air quality compliance limits (see Appendix I to the EIS), nuisance dust effects may be experienced.</p> <p>Noise from the Dendrobium Pit Top would continue.</p> <p>The Project 's operation would result in negligible increases to traffic volumes.</p>	Residents in Mount Kembla and Cordeaux Heights near the KVRL and/or downwind of KVRLF.	A3 (-)	<p>Illawarra Coal's most recent rail noise mitigation initiative (installation of modified brake shoes) has resulted in reduced noise levels and complaints about rail noise, and would be maintained throughout the life of the Project.</p> <p>Illawarra Coal would implement its current mitigation strategies with regard to dust prevention including a responsive complaints management process (see Section 4.2.4) and has committed to implementation of recommended additional monitoring measures provided as part of the EIS (Appendix I).</p> <p>Potential traffic routes and neighbourhoods with whom communication may be required has been completed.</p>	A2 (-)	<p>Both NSW Government agency monitoring and affected residents identified a reduction in rail noise since completing the fit out of modified brake shoes on all rail wagons.</p> <p>The occurrence of complaints about dust for the existing operation has been low at an average of 2 complaints per year.</p>



## Dendrobium Mine - Plan for the Future - Social Impact Assessment

SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.3.1	Culture – Aboriginal values	Traditional Owners are concerned about the impacts of underground mining on Indigenous cultural values and/or environmental values. The Aboriginal cultural heritage assessment (Appendix F to the EIS) has indicated that all of the 58 Aboriginal heritage sites within the Subject Area may be subject to some subsidence impacts with one site located within the proposed Ventilation Shaft Site No. 5B location.	Cubbitch Barta people and other Tharawal people.	A3 (-)	The Project has adopted detailed avoidance, mitigation and management measures to reduce potential impacts on Aboriginal cultural heritage.  Illawarra Coal would maintain engagement with Tharawal traditional owners to ensure that they are aware of Project schedules and have ready access to information about potential environmental and cultural impacts, and that Traditional Owners' feedback about cultural heritage is considered in Project planning and environmental management.	A2 (-)	Impacts on cultural heritage and environmental values would be mitigated in accordance with EIS commitments and Consent Condition requirements.  Ongoing engagement with Tharawal people will support a co-operative relationship with respect to management of cultural heritage impacts, which is expected to reduce some concerns.
4.4.2	Employment and business opportunities - operational employment	Continuity of employment for existing personnel and an increase of approximately 102 operational jobs for the majority of the Project's life.  Periodic short term opportunities for 100-200 people throughout the Project's life.  Support for the financial security and well-being of Project employees and their families.	Project employees, contractors and family members.  Job seekers interested in mining industry employment.	A3 (+)	Illawarra Coal would continue its existing employment, contracting and training strategies for the Project.  This would include continuation of existing apprenticeship and graduate traineeship programs.	A4 (+)	Provision of employment for up to 507 people over a period of 18 years is a significant benefit to household wellbeing.  The Project would also support indirect employment through its supply arrangements, and through its contribution to the continuation of BlueScope Steel's production.

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SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.4.3 and 4.4.4	Employment and business opportunities - training opportunities and workforce diversity	Apprenticeship and training opportunities throughout the Project.  Increased gender diversity and Indigenous participation in Dendrobium Mine's workforce is likely as a result of the Project.	Female and Indigenous Job seekers in the Wollongong and adjacent LGAs.	A2 (+)	Implement South32's Diversity and Inclusion policy and relevant strategies.  Illawarra Coal has committed to a range of strategies that would increase Indigenous engagement in the Project workforce (see Section 4.4.5) and to working towards 10% female employment and 2.5% Indigenous employment during the Project (see Section 4.4.4).	A3 (+)	Increased employment opportunities in mining would be available to women and Indigenous people as a result of the Project.
4.4.6 and 4.4.7	Employment and business opportunities - Indigenous business and Project engagement with local and regional businesses opportunities	Continued engagement with local and Indigenous businesses would support their ongoing vitality and indirect employment.	Local and regional businesses within the Wollongong LGA.	A3 (+)	Illawarra Coal has committed to a range of enhancement strategies that would increase local and regional businesses' access to supply opportunities (see Section 4.4.7).	A4 (+)	Mitigation strategies outlined in the SIA are likely to increase the representation of capable local and regional business in the Project's supply chain.

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SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.5.2	Community – population and housing	The Project's employment opportunities would support a population of approximately 738 people in the LGA. Up to 51 households may move to the LGA as a result of increased employment opportunities., with potential for a minor increase in housing demand.	WCC. Local communities.	C1 (-)	Nil required.	C1 (-)	The Wollongong LGA's labour force has considerable capacity to participate in project employment opportunities. Impacts on population size and composition would be negligible in the context of the LGA's projected 88,250 households in 2021.
4.5.3	Community - identity and sense of place	The Project will support the Mount Kembla longstanding identity as a mining community, and continue to support promotion of local heritage values.	Mount Kembla community Visitors Mount Kembla Heritage Centre	A3 (+)	Applications to the DCEP for funding for the Mount Kembla Heritage Centre will be encouraged.  Further development of the Mount Kembla Memorial Pathway Project will also be considered by the DCEC.	A4 (+)	Mount Kembla's identity as an historic mining community would be enhanced by further investment in community programs that celebrate local cultural heritage.
4.6.1	Access to services and infrastructure – local infrastructure	The Project would see continuation of Mine-related traffic, including access and noise implications as currently experienced in Mount Kembla.	Mount Kembla. Primary School staff and students. Rural Fire Station and childcare centre.	A2 (-)	Illawarra Coal would implement its longstanding mitigations for traffic impacts as detailed in Section 4.7.2.	A1 (-)	The Mount Kembla School Principal did not identify any concerns regarding the Project but noted that ongoing traffic noise would be expected. The school regularly benefits from DCEP funding.

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SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.6.2	Access to social infrastructure - regional infrastructure	Population increases that are possible as a result of the Project would cause minimal incremental increases in demands for social infrastructure in the LGA.	Local schools, NSW Police and NSW Ambulance.  Local and regional community organisations.	B2 (-)	Illawarra Coal will maintain the DCEP as a means of contributing to local community development for the life of the Project.	B1 (-)	The Wollongong LGA has a well-established social infrastructure network of local and regional services and facilities which are unlikely to experience a noticeable strain on service capacity. DCEP funding is likely to offset any demands on the social infrastructure network due to the Project.
4.7.1	Health and wellbeing - health	Residents who are most affected by rail noise have experienced stress and some have experienced sleep disturbance. These impacts are expected to reduce as a result of the recent reduction in rail noise (brake squeal).	Residents in Mount Kembla and Cordeaux Heights near the KVRL.	A3 (-)	Illawarra Coal anticipates a continual process of improvement would be required to reduce rail noise impacts throughout the life of the Project. This would include regular updates to affected residents and ongoing engagement with them, if required.	A2 (-)	Ongoing improvements in the management of rail noise is likely to decrease stress related to rail noise over time, and in combination with existing restrictions on operating hours, reduce the potential for sleep disturbance.

Dendrobium Mine - Plan for the Future - Social Impact Assessment

SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.7.1	Health and wellbeing - health	Access to continued employment will support the health of Project personnel and their families by enabling income security and maintaining social connections. The wellbeing of business owners who supply the project will also be supported.	Dendrobium Mine employees and contractors.  Project suppliers.	A3 (+)	Nil required.	A3 (+)	Project employment would support the financial security and wellbeing of up to approximately 507 personnel and their families.
4.7.2	Health and wellbeing – traffic safety	The Project would continue Dendrobium Mine's contributions to cumulative traffic volumes on local and regional roads, however Project increases in traffic volumes would be small and the EIS findings indicate that the risk of traffic accidents is unlikely to increase as a result of the Project.	Mount Kembla residents, businesses, facilities and visitors.  Other motorists.	A2 (-)	Vehicle curfews for non-personnel traffic would continue to be applied in relation to school hours and weekend traffic.  Dendrobium Drivers' Code of Conduct would be applied and enforced for the life of the Project.	A1 (-)	The EIS (Appendix J) concluded that impacts on traffic safety would be negligible providing recommended mitigations are implemented.

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SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.7.3	Health and wellbeing – community investment	The DCEP will make ongoing contributions to community projects through the DCEP.	Community members within the defined Zone of Influence. And other Wollongong LGA Residents	A3 (+)	<p>Illawarra Coal would continue contribution of \$0.03 per saleable tonne (plus CPI increases). The DCEP will continue to operate in accordance with the Development Consent conditions for the life of the Project.</p> <p>The DCEC will remain responsive to funding applications which support community development, community identity and wellbeing in the Mine's Zone of Influence, as well as those which support community wellbeing at the regional scale.</p>	A4 (+)	Illawarra Coal's commitment to community enhancement in the Dendrobium Mine's Zone of Influence would be maintained for the life of the Project and would continue to facilitate community benefits at local and regional levels.



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SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.8	Cumulative impacts	The potential for cumulative impacts on social conditions appears low, as there are no mines or other major projects operating and no other projects proposed in the local area that would cause cumulative impacts on amenity or other social values, and potential increases in population, housing demands, social infrastructure requirements, and traffic volumes as a result of the project are very small.	Residents within the Wollongong and adjacent LGAs.	D2 (-)	If the project commencement is delayed more than four years beyond EIS submission, Illawarra Coal would review the cumulative impacts context prior to the commencement the Project.	D2 (-)	<p>The potential for cumulative impacts appears to be very low but would be reviewed prior to Project commencement if implementation is delayed.</p> <p>The Wollongong LGA's residents, Council and social infrastructure providers are experienced in responding to the impacts and benefits of the mining industry.</p>

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SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
Mine Closure							
4.9.1	Personal and property rights - amenity	Short term impacts such as episodic noise due to demolition or increased traffic a result of decommissioning.  Cessation of rail noise and any dust impacts and the reduction in traffic associated with the Mine's closure would reduce Mine impacts on local amenity.	Residents in Zone of Influence.	A3 (+)	Preparation for closure would include identification of traffic routes that may experience short term increases in traffic, and identify community engagement mechanisms required to ensure residents are aware of potential impacts and Illawarra Coal's plans for Project decommissioning.	A3 (+)	Relief of any rail noise, traffic impacts or dust concerns would cease following the Project's decommissioning.
4.9.2	Community - population characteristics	Some Dendrobium Mine personnel may need to leave the LGA as a result of Project cessation. This may result in a very small detraction from the LGA's projected population growth.	WCC and Wollongong LGA residents.	C2 (-)	Illawarra Coal would provide notice to employees and contractors to enable them to plan for alternative employment arrangements.	C1 (-)	Advance notice to Dendrobium Mine personnel will enable them to plan for future employment that maintains their residency in the LGA.
4.9.3	Community – identity	Closure would see the end of mining and a change to the mining community identity of Mount Kembla	Mount Kembla residents	B2 (-)	Illawarra Coal will implement the recommendations of the Project's cultural heritage assessment with respect to future management of local heritage items and places.	B1 (-)	Implementing cultural heritage assessment management measures will maintain elements of the community's identity.

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SIA Section	Impact Area	Impact/Benefit	Stakeholders	Risk/benefit	Mitigation/Proposed Measures	Residual impact	Rationale for residual risk rating
4.9.4	Health and wellbeing - hardship	Interruptions to employment and/or cessation of the Mine's operations would lead to redundancies and loss of revenue for suppliers. Dependent on the availability of suitable alternative employment, hardship would result due to loss of direct and indirect employment.	Dendrobium Mine employees, contractors, suppliers and suppliers' employees.	A3 (-)	Illawarra Coal would ensure Mine employees and suppliers receive early advice (where known), (two years prior to the likely cessation of operations) and ongoing communication about the pending cessation of Mining operations to enable them to consider future plans and diversification of skills and/or business offerings.	A2 (-)	Illawarra Coal's advance notice of closure to employees and suppliers would enable them to develop alternative plans for future employment and reducing the potential for hardship.

## 5 Monitoring and Management

Mitigation strategies are discussed in relevant sections of the impact assessment, and identified for each social impact in Table 4-6.

This section describes:

- the Project's adaptive management process;
- a summary of stakeholder groups who would require specific consideration as part of Illawarra Coal's ongoing engagement process;
- the requirement for supplementary SIA prior to the Project's execution; and
- how the Project would monitor and report on social impact mitigation.

### 5.1 Community and stakeholder engagement

South32's commitment is to work with stakeholders to identify and address concerns and expectations, and to maximise potential opportunities as a result of its operations<sup>99</sup>. For Dendrobium Mine, concerns and expectations are identified and addressed through:

- the DCCC, which provides a regular forum for discussion of operations and the Project;
- a process involving residents and regulators to address the rail noise issue;
- the community complaints procedure;
- regular community information distribution (currently quarterly) to all households in the Zone of Influence;
- workforce and driver Codes of Conduct which spell out community expectations and require personnel's compliance as a condition of employment;
- regular liaison with community organisations funded through the DCEP;
- participation in regular community forums; and
- day to day interactions with community members and suppliers to the Mine.

These communication channels would be continued for the Project, to ensure community members can raise issues during the construction and operations and have them addressed.

Actions identified in the SIA which would be integrated with the Project's engagement strategy include regular engagement with:

- Traditional Owners, to ensure they are aware of the Project's employment, apprenticeship and business opportunities, and kept apprised of any issues in relation to culturally sensitive areas;

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<sup>99</sup> South32. 2016b

- community and commercial facilities in Mount Kembla to ensure they are aware of potential Project impacts and Illawarra Coal's community engagement channels;
- residents affected by rail noise, to ensure they have access to information about the level of noise anticipated, and how Illawarra Coal intends to work with them throughout the Project;
- all households within Dendrobium Mine's Zone of Influence to ensure they are aware of the Project schedule, potential impacts, mitigation strategies and Illawarra Coal's community engagement channels; and
- businesses within the Wollongong LGA and Indigenous businesses within NSW who have capacity or could develop capacity to supply the Project.

The SIA has also highlighted community information and engagement requirements with respect to concern about impacts on cultural heritage, environmental values, subsidence management and surface and groundwater.

## 5.2 Adaptive management

As noted in Section 1.3, SIA is a process which supports good social outcomes throughout the life of the Project, through implementation of social impact management strategies, and application of an adaptive management process.

The recommended mitigations and their desired outcomes outlined in Table 5-1 form the basis for social impact management throughout the Project's life. To support adaptive management, the Project's monitoring and reporting process would include:

- collection, monitoring and reporting of mitigation performance data as outlined in Section 5.4 to ensure performance outcomes are being realised, at least six monthly during the first five years after Project execution and at an interval determined in consultation with the DCCC thereafter;
- regular monitoring of social indicators which may change how Project impacts and benefits are experienced (see Section 5.4);
- ongoing engagement with stakeholders who should benefit from mitigations, to ensure opinion is identified and considered in review of mitigation and performance outcomes;
- annual review of the delivery of mitigation strategies, performance outcomes, any unexpected impacts or benefits and the status of social indicators, conducted in consultation with the DCCC; and
- identification and implementation of required changes to mitigation and enhancement strategies, including recommended amendments, deletion or addition of strategies.

It will be necessary to review the cumulative context prior to construction, i.e. how many construction employees might be required if other currently proposed mining projects in the Southern Coalfield proceed during the same period. If the Project commencement is delayed more than four years beyond EIS submission, Illawarra Coal would review the cumulative impacts context prior to the commencement the Project.

### 5.3 Performance monitoring

A summary of recommended mitigation strategies and the monitoring framework for social impacts and benefits is provided in Table 5-1. It includes:

- targets and outcomes sought for each mitigation action;
- how management of the impact will be monitored and reported;
- the party responsible for the implementation of each monitoring strategy;
- key performance indicators; and
- monitoring and reporting requirements.



**Table 5-1: Performance Management and Monitoring**

Recommended Mitigations	Timing	Accountability	Target/Outcomes	Performance Indicators	Monitoring and Reporting
Construction					
Pre-construction briefing and tender-readiness building with local (LGA) construction and labour hire companies.	Three months prior to construction commencing.	Contracts and Procurement Manager	Maximise participation of local (Wollongong LGA) businesses in supply to the Project.	Number of Wollongong LGA businesses engaged in Project supply.  Project expenditure to local businesses as a percentage of Project expenditure.	The number of local businesses involved in the Project's construction would be reported in the Annual Report or a similar document which is made available on South32's website.
Identify and engage with Indigenous businesses with potential capacity to supply the construction phase.	Three to six months prior to the commencement of construction activities.	Contracts and Procurement Manager	Maximise participation of NSW-based Indigenous businesses in supply to the Project.	Number of Indigenous businesses engaged in Project supply.  Project expenditure to Indigenous businesses as a percentage of Project expenditure.	The number of Indigenous businesses involved in the Project's supply chain would be reported in the Annual Report, or a similar document which is made available on South32's website.
Articulate requirements of the Dendrobium Drivers' Code of Conduct to all individuals involved in Project construction.  Provide parking areas for construction workers' vehicles	Prior to award of major contracts.	Project Construction Manager	Prevent construction traffic including workers' vehicles from impeding village life or traffic safety in Mount Kembla and Kembla Heights.	Minimise community complaints about driver conduct including parking.  Any complaints would be investigated and a response provided to the complainant within 48 hours.	The number of complaints would be monitored monthly, reported as part of the Project's complaints reporting mechanisms, and published on the South32 website.

Recommended Mitigations	Timing	Accountability	Target/Outcomes	Performance Indicators	Monitoring and Reporting
and prohibit parking in Mount Kembla.					
Community information and engagement with Mount Kembla Public School, Mount Kembla Children's Centre, Mount Kembla Fire Station officer, Soldiers and Miners' Church community and Mount Kembla Hotel.	Three months prior to construction commencing.	Community Engagement Team	Community members are aware of the construction schedule, potential impacts and how to contact construction managers and South32's Project manager.	Community members in Mount Kembla and Kembla Heights are provided with information about the Project's construction schedule and potential impacts and mitigations.  Input from community facility managers is incorporated in planning for construction (e.g. traffic, drivers code and parking).	Community information and management strategies would be planned and reviewed annually, and reported annually in the Annual Report or a similar document which is made available on South32's website.
Operations					
Ongoing engagement with residents in the Dendrobium Mine Zone of Influence throughout the Project.  Pre-advice and ongoing engagement with community members and community facilities on and near Cordeaux Road.	Ongoing	Mine Manager/ Logistics Manager, with Community Engagement Team assistance	Residents understand how to contact the Project about any issues affecting their amenity.	Residents in the Dendrobium Mine Zone of Influence (as currently defined or amended in the intervening time) receive information about potential Project impacts, how they are managed and how to contact Dendrobium staff.	The number of complaints about rail noise would be monitored monthly, reported as part of the Project's complaints reporting mechanisms, and published on the Project's website.

Recommended Mitigations	Timing	Accountability	Target/Outcomes	Performance Indicators	Monitoring and Reporting
Enable access to dust deposition monitoring for concerned households in Mount Kembla and Cordeaux Heights, to provide reassurance about the potential for health issues due to coal dust.	Promote availability from the commencement of operations.	Environmental Manager/ Superintendent	Any dust attributable to the Project is compliant with Development Consent conditions, including criteria derived to protect human health and amenity.	Residents in Mount Kembla and Cordeaux Heights are aware that they can request dust monitoring.	The number of requests for dust deposition monitoring, analysis of results and a summary of monitoring results published on the South32's website.
Ongoing engagement with Traditional Owners.	Ongoing	Environmental Manager/ Superintendent	Traditional owners' involvement in the Project's cultural heritage management is optimised.	Traditional owners are engaged consistent with NSW regulatory frameworks.	Illawarra Coal would monitor Traditional Owners' views on Project impacts through ongoing engagement with them.
Provide clear, accessible and independently-sourced information to the local community about management and monitoring of subsidence and groundwater impacts in the lead up to Project execution.  Continue provision of public access to DCCC meeting minutes (including relevant monitoring	Three months prior to operations, and annually for the life of the Project.	Environmental Manager/ Superintendent	Community members have access to scientific information and regular monitoring data which may alleviate some concern about impacts on environmental values and the integrity of the catchment in the areas near mining.	Current monitoring data for water quality, air quality, noise limit compliance, hydrogeological monitoring and complaints is available to all community members via South32's website.	Community information and engagement strategies and outcomes in relation to subsidence and groundwater would be reported in the Annual Report or a similar document which is made available on South32's website.

Recommended Mitigations	Timing	Accountability	Target/Outcomes	Performance Indicators	Monitoring and Reporting
data) throughout the Project's life.					
Requirements of the Dendrobium Drivers' Code of Conduct provided to all employees and contractors.	Ongoing	Health and Safety Manager	Prevent Project traffic including workers' vehicles from impeding village life or traffic safety in Mount Kembla and Kembla Heights.	Number of community complaints made related to Project traffic related behaviour.	The number of complaints about Project traffic would be monitored monthly and reported as part of the Project's complaints reporting mechanisms.
Establish goals for female representation (10%) and Indigenous participation (2.5%) in the Project workforce.	Three months prior to commencement of operations.	Human Resources Manager	The Project's commencing workforce comprises at least 10% women and 2.5% Indigenous people, with progressive improvements achieved over time.	Year 1 – Year 5 percentages of female and Indigenous employees.	Progress towards labour force diversity would be reported as part of South32's reports to the Australian Government's Workplace Gender Equality Agency (or equivalent).
Illawarra Coal has committed to a pre-construction briefing with regional construction and labour hire companies, and to identifying and engaging with Indigenous businesses with potential capacity to supply the construction phase.	Commence six months before operations.	Contracts and Procurement Manager	Local suppliers have full and fair opportunities to participate in Project supply chains.	Project expenditure to Local (LGA) suppliers and Indigenous businesses is monitored and progressive increases achieved.	The number and percentage of local businesses as a percentage of all suppliers would be reported in the Annual Report or a similar document which is made available on South32's website.

Recommended Mitigations	Timing	Accountability	Target/Outcomes	Performance Indicators	Monitoring and Reporting
Request DCEC consideration of support for partnerships with the Mount Kembla Heritage Committee to perpetuate local stories and protect heritage values.	During Year 1 of operations.	Community Engagement Manager	Support for celebration and commemoration of local heritage and history is available.	N/A – within DCEC authority.	Investments in cultural heritage would be reported as part of annual reporting for the DCEP.
Mine Closure					
Identify potential traffic routes and neighbourhoods with whom communication (and or other mitigation measures) would be required.	Two years prior to decommissioning.	Environmental Manager/ Superintendent	Short term noise and traffic impacts as a result of demolition and decommissioning are minimised.	Community feedback on impact mitigation as measured through community engagement.	Community feedback on impact mitigation would be reported as part of annual reporting.

## 5.4 Social indicators

Monitoring of social indicators is part of the adaptive management process and would assist to determine whether the Project's mitigation strategies are successful in preventing negative impacts on social indicators, and identify improvements in social indicators as a result of the Project.

Performance monitoring as detailed in Table 5-2 would identify whether key mitigation and enhancement strategies have been implemented and outcomes achieved.

Social indicators for the Wollongong LGA would be monitored on an annual basis during the Project or as new data is available, and any significant changes considered in the annual review of social impact management described in Section 5.2.

**Table 5-2: Social indicators**

Indicator	Measures	Source	Frequency
Employment availability	Number of mining jobs available in Wollongong LGA.	Annual reports for Projects identified in Table 4-3.	Annual
Disadvantage	SEIFA Index of Relative Disadvantage.	ABS Census of Population and Housing	Five yearly
Social cohesion	Population stability (one and five year mobility).	ABS Census of Population and Housing	Five yearly
Wellbeing (local)	Number of community organisations funded by DCEP.	Illawarra Coal records	Annual
Housing availability	Availability of rental stock in local area and Wollongong LGA.	SQM Research	Six monthly during construction only.

## 5.5 Supplementary assessment

At the time of assessment, the Project if approved would be expected to commence construction in 2020. Social conditions in local and regional communities are likely to change during this period, including potential changes to:

- the size, composition and distribution of the population;
- the availability and cost of housing;
- labour force and supplier availability; and
- the contribution of mining to employment and regional outputs.

If the Project does not commence within four years of EIS submission, it will be necessary to undertake supplementary SIA (at least six months prior to the planned construction period) to identify changes in the social baseline which would modify the impacts and benefits as assessed, and refine the mitigation and enhancement strategies if required.

This would include:

- revision of the social baseline;
- consultation with local community members and other stakeholders;

## Dendrobium Mine - Plan for the Future - Social Impact Assessment

- assessment of any changes to the Project as currently proposed;
- consideration of any changes to Dendrobium Mine's social impacts and benefits since the SIA was completed; and
- any changes in regulatory or legislative requirement relating to SIA.

The Supplementary SIA should be made available to the stakeholders who participated in its preparation for review. Alternatively, if a Social Impact Management Plan is required for the Project, this would also satisfy this mitigation measure.



## 6 Conclusion

This section summarises the results of the SIA.

### 6.1 Distributive equity

As is typical for mining projects, there is more potential for people living close to the Project to experience negative impacts, however, local benefits may also be experienced as a result of Illawarra Coal's investments in local communities. At a regional level, negative social impacts are likely to be minimal, and benefits due to employment and business opportunities are likely to be experienced.

At the local level, Project impacts would include:

- potential for rail noise to affect residential amenity in Mount Kembla, Cordeaux Heights, Unanderra and Figtree, but with reduced severity and frequency than was experienced prior to 2017;
- an ongoing contribution to traffic in Mount Kembla, and on Cordeaux Road, Picton Road and Appin Road, with consequent community concerns about traffic safety;
- occasional contributions to dust affecting homes downwind of Kemira Valley; and
- concern about the potential for the Project to affect environmental values in the MSA and/or capacity for water supply.

Material increases or intensification of Dendrobium Mine's current impacts on amenity and way of life are not anticipated.

Potential benefits at the local level include:

- sustaining Mount Kembla's traditional identity as a mining community; and
- contributions to community well-being as a result of DCEP-funded projects and partnerships.

Residents in the Wollongong LGA and adjacent LGAs are likely to share concerns about the Project's potential impacts on the MSA's environmental values or the catchment's capacity to supply water for human consumption in the future.

LGA residents are also likely to share concerns about traffic safety, however the Project would not significantly increase the Mine's current contributions to traffic volumes.

Potential benefits at the LGA level include:

- support for employment levels in the Wollongong LGA;
- maintaining a major component of the LGA's mining employment opportunities;
- support for business vitality through ongoing supplier arrangements, with potential to increase local and Indigenous businesses' participation; and
- support for population stability and housing demand within the LGA.

### 6.2 Intergenerational equity

The SIA did not identify any significant potential for the Project to have negative impacts on social indicators such as population size, housing cost, or social infrastructure access. The Project would enable the continuation of local mining jobs for the next generation.

Concern was expressed in consultation that any effects on groundwater or surface water would have negative inter-generational impacts for people in the Illawarra and greater Sydney regions. The potential for impacts on groundwater is described in Appendix B of the EIS.

### 6.3 Assessor's details

This report was prepared by Dee Elliott, Director of Elliott Whiteing Pty. Ltd. Dee holds the degrees of Bachelor of Arts (Behavioural Sciences) and Master of Social Policy. Dee has 30 years' professional experience and has provided SIA and management services for more than 30 projects of State Significance in Queensland and NSW.

The SIA was undertaken during June 2017 – October 2018. It contains all information relevant to the SIA for the Project, and does not contain information that is false or misleading.

A handwritten signature in black ink, appearing to read 'Dee Elliott', with a stylized flourish at the end.

Dee Elliott BA MSocPol

Director, Elliott Whiteing

## Appendix A: Supplementary Data

This appendix contains additional data tables used to inform the Dendrobium Mine Plan for the Future Social Impact Assessment.

**Table A-1: Voluntary work for an organisation 2016**

Indicator	Mount Kembla / Kembla Heights	Mount Kembla SSC	Kembla Heights SSC	Cordeaux Heights SSC	Unanderra SSC	Figtree SSC	Wollongong LGA	NSW
People 15+ who participated for a volunteer organisation or group (%)	27.7	28.5	21.3	24.0	14.4	20.6	18.6	18.1

Source: Australian Bureau of Statistics 2016 and 2011 Census

**Table A-2: Median age and gender 2016**

Age and Gender	Mount Kembla	Kembla Heights	Cordeaux Heights	Unanderra	Figtree	Wollongong LGA	NSW
2011-16 Age Variance	NA	NA	+3	+2	NA	+1	0
Female (%)	52.3	50.4	49.5	52.7	50.6	50.6	50.7
Male (%)	47.7	49.6	50.5	47.3	49.4	49.4	49.3

Source: Australian Bureau of Statistics 2016 and 2011 Census

**Table A-3: Age profile 2016**

Age group	Mount Kembla		Kembla Heights		Cordeaux Heights		Unanderra		Figtree		Wollongong LGA		NSW
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
0-4 years	63	5.9	12	10	195	4.3	316	5.8	667	5.8	12,034	5.9	6.2
5-14 years	163	15.3	23	19	666	14.6	616	11.3	1,622	14	24,521	12	12.3
15-24 years	147	13.8	24	20	780	17.1	596	11	1,388	12	28,530	14	12.5
25-34 years	71	6.6	9	8	443	9.5	653	12	1,307	11.3	26,029	12.8	14.3
35-64 years	461	43.2	33	28	2006	44.0	1,942	35.7	4,381	37.9	52,301	25.7	38.4
65-84 years	140	13.1	23	19	440	9.7	966	17.8	1,869	16.2	54,958	27	14.0
85 years and over	12	1.1	0	0	46	1	333	6.1	333	2.9	5,253	2.6	2.2
Total	1056	99	119	104	4559	100	5434	100	11,564	100	203,630	100	100

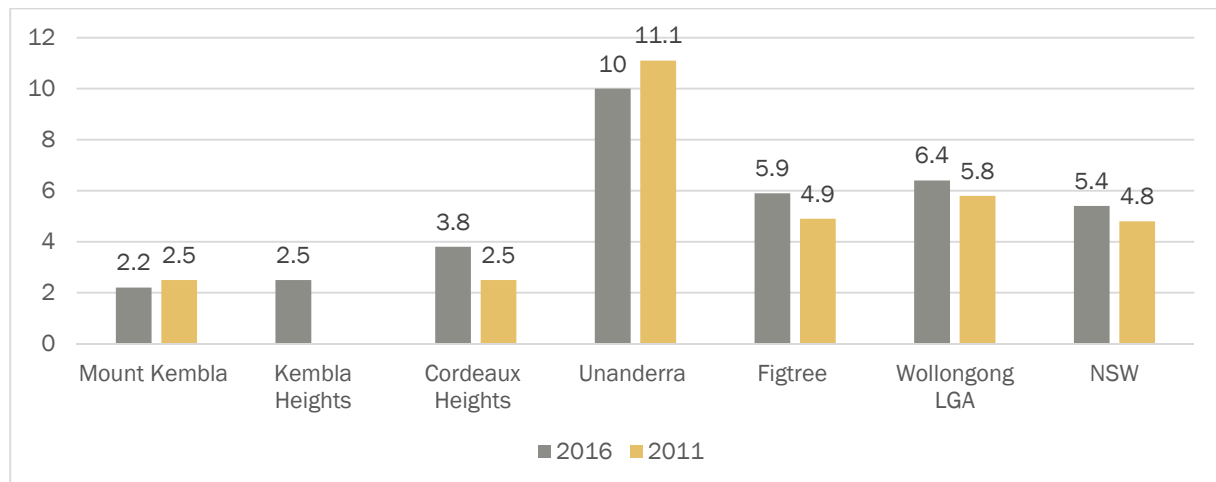
Source: Australian Bureau of Statistics 2016 Census of Population and Housing: General Community Profile. Note: ABS makes small random adjustments to cell values to protect the confidentiality of data. These adjustments may cause the sum of rows or columns to differ from published table totals.

**Table A-4: Cultural diversity 2016**

Cultural background	Mount Kembla		Kembla Heights		Cordeaux Heights		Unanderra		Figtree		Wollongong LGA		NSW
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Indigenous People	22	2.1	8	6.7	44	1	173	3.2	179	1.5	5,343	2.6	2.9
<i>Aboriginal</i>	22	2.1	8	6.7	43	0.9	172	3.2	168	1.5	5,136	2.5	2.8
<i>Torres Strait Islander</i>	0	0	0	0	0	0	3	0.1	0	0	109	0.1	0.1
<i>Both Aboriginal and Torres Strait Islander(a)</i>	0	0	0	0	0	0	5	0.1	11	0.1	101	0.0	0.1
People born overseas	137	12.8	9	7.6	963	21.1	1,099	20.2	2,522	21.8	43,917	21.6	27.7
People speaking other languages at home	58	5.4	5	4.2	1,004	22	854	15.7	2,208	19.1	34,296	16.8	25.2

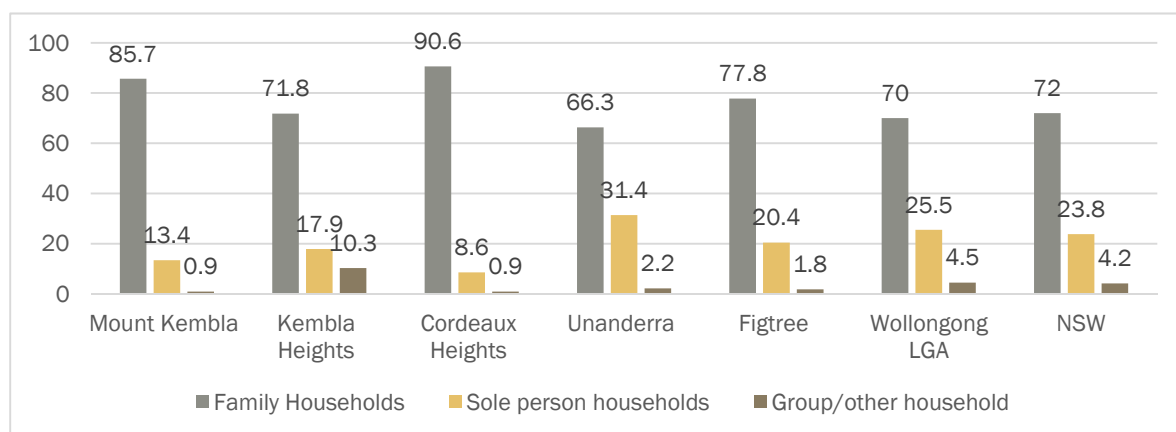
Source: Australian Bureau of Statistics 2016 Census of Population and Housing: General Community Profile.. Note: ABS makes small random adjustments to cell values to protect the confidentiality of data. These adjustments may cause the sum of rows or columns to differ from table totals.

**Figure A-1 Population needing assistance with core activities 2011-16**



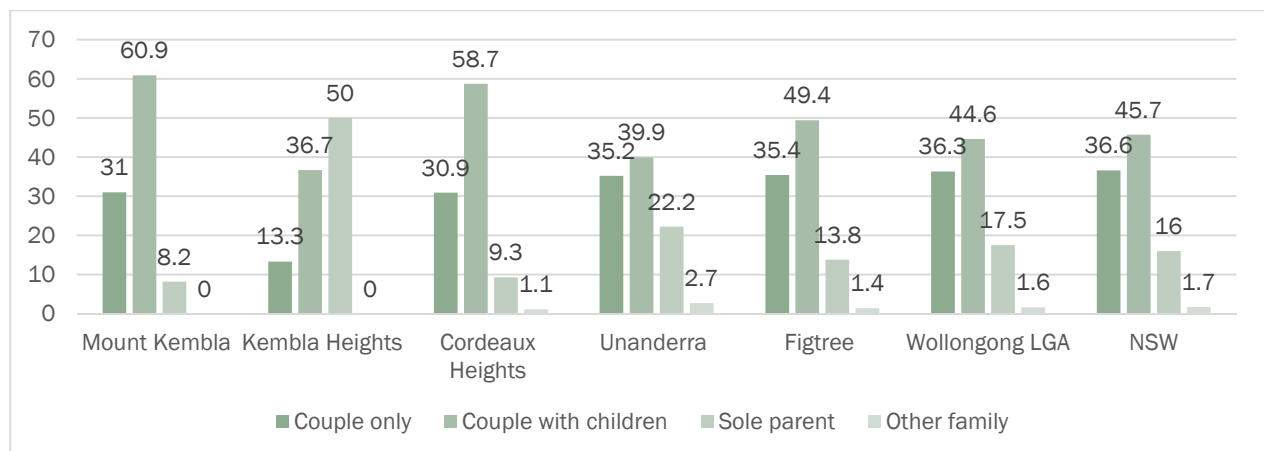
Source: Australian Bureau of Statistics 2016 and 2011 Census of Population and Housing

**Figure A-2: Household type (%) 2016**



Source: Australian Bureau of Statistics 2016 Census of Population and Housing

**Figure A-3: Family type (%) 2016**



Source: Australian Bureau of Statistics 2016 Census of Population and Housing

**Table A-5: Projected household characteristics Wollongong LGA 2011-36**

Household types	2011	2016	2021	2026	2031	2036	% Change 2011-36
<b>Couple only</b>	<b>19,800</b>	<b>21,650</b>	<b>23,300</b>	<b>24,600</b>	<b>25,650</b>	<b>26,650</b>	<b>34.6%</b>
Couple with children	25,400	26,200	27,150	28,000	28,750	29,350	15.6%
Single parent	8,600	8,950	9,250	9,600	9,950	10,250	19.2%
Other family households	800	850	850	850	900	900	12.5%
Multiple-family households	1,250	1,300	1,400	1,450	1,500	1,550	24.0%
Total family households	55,850	58,950	61,950	64,550	66,750	68,700	23.0%
Lone person	19,650	21,200	22,550	23,900	25,250	26,600	35.4%
Group	3,650	3,750	3,700	3,700	3,750	3,850	5.5%
Total non-family households	23,300	24,950	26,300	27,600	29,050	30,450	30.7%
Total	79,150	83,850	88,250	92,150	95,800	99,150	25.3%

Source: NSW DPE, 2016 New South Wales State and Local Government Area Population and Household Projections, and Implied Dwelling Requirements

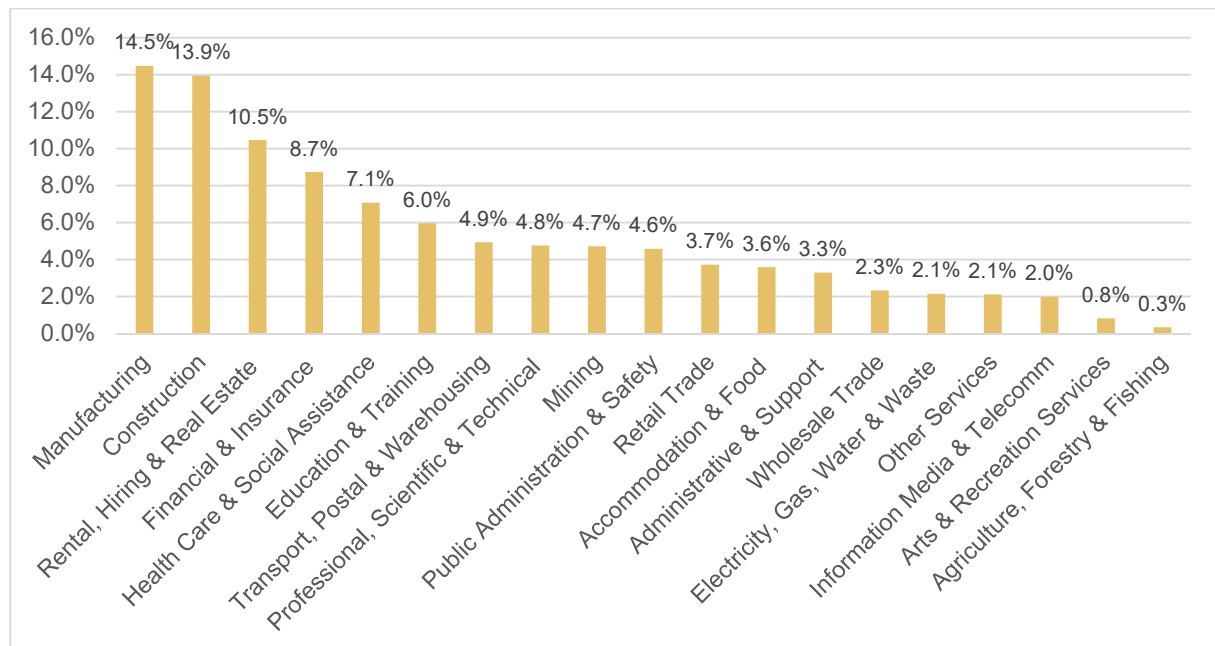
**Table A-6: Educational attainment 2016**

Year Level	Mount SSC	Kembla	Kembla Heights SSC		Cordeaux Heights SSC		Unanderra SSC		Figtree SSC		Wollongong LGA		NSW
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Year 8 or below	17	2.2	5	5.8	119	3.4	373	8.6	481	5.5	8,957	5.6	4.5
Year 9 or equiv.	41	5.3	5	5.8	105	3	405	9.3	482	5.5	10,677	6.7	5.5
Year 10 or equiv.	193	24.8	19	22.1	861	24.9	1,276	29.4	2,230	25.3	41,941	26.2	21.3
Year 11 or equiv.	39	5	16	18.6	183	5.3	235	5.4	405	4.6	8,487	5.3	4.9
Year 12 or equiv.	442	56.7	22	25.6	2,073	60	1,365	31.5	4,687	53.2	76,785	47.9	53.9

Source: Australian Bureau of Statistics 2016 Census of Population and Housing. Derived from General Community Profiles for SSC, LGA, and NSW STE.



**Figure A-4: Wollongong LGA economic outputs 2017**



Source: REMPLAN, incorporating ABS 2016 Gross State Product, June 2017 National Input Output Tables and 2014 / 2015 Census Place of Work Employment Data

**Table A-7. Wollongong employment and output by industry – top five (2016)**

Top 5 by Industry: Employment		Top 5 by Industry: Output (Gross Revenue)	
Health care and social assistance	11,118 jobs	Manufacturing	\$6.1 billion
Manufacturing	8,572 jobs	Real Estate	\$2.6 billion
Education	8,167 jobs	Construction	\$2.2 billion
Retail	7,529 jobs	Finance & Insurance	\$2.1 billion
Food and Hotels	5,456 jobs	Mining	\$1.6 billion

Source: REMPLAN, December 2016 cited by Wollongong City Council. March 2017. Wollongong: A City Transformed (Advantage Wollongong)

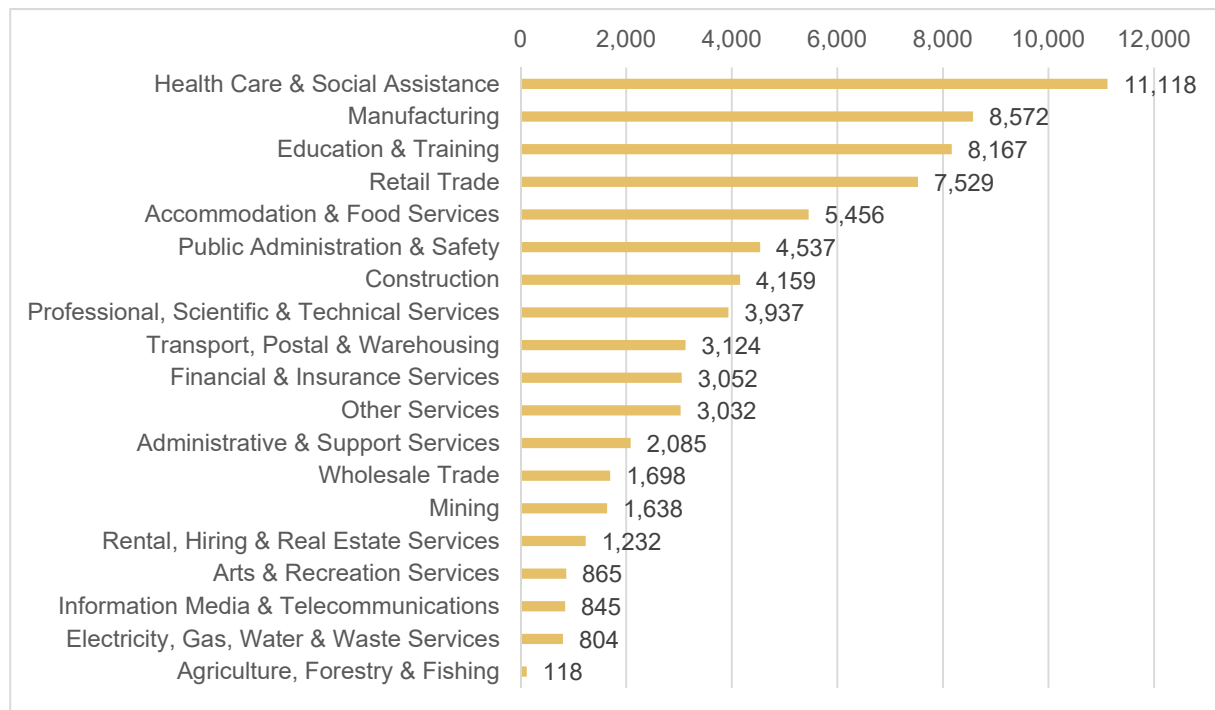
**Table A-8 Industry sector of employment Wollongong LGA 2016**

Employed persons	Wollongong		NSW
	No.	%	%
Industry sector			
Agriculture, Forestry and Fishing	294	0.3	2.1
Mining	1,730	2.0	0.9
Manufacturing	5,079	5.8	5.8
Electricity, Gas, Water and Waste Services	896	1.0	0.9
Construction	7,757	8.8	8.4
Retail Trade	8,422	9.5	9.7
Wholesale trade	1,779	2.0	3.1
Accommodation and Food Services	6,565	7.4	7.1
Transport, Postal and Warehousing	3,997	4.5	4.7
Information Media and Telecommunications	1,078	1.2	2.2
Financial and Insurance Services	3,390	3.8	4.9
Rental, Hiring and Real Estate Services	1,261	1.4	1.8
Professional, Scientific and Technical Services	5,085	5.8	8.1
Administrative and Support Services	2,993	3.4	3.5
Public Administration and Safety	6,342	7.2	6.0
Education and Training	10,392	11.8	8.4
Health Care and Social Assistance	13,078	14.8	12.5
Arts and Recreation Services	1,341	1.5	1.5
Other Services	3,517	4.0	3.7
Inadequately described or not stated	3,261	3.7	4.7
Total employed persons aged 15+	88,257	100.0	100.0

Source: id the population experts based on ABS Census of Population and Housing 2016, based on place of usual residence

**Figure A-5: Employment by industry in Wollongong LGA**

Source: REMPLAN. 2017a. WCC Economy Profile – Employment by Industry, accessed 1 August 2017



**Table A-9 Occupations Wollongong LGA 2016**

Employed persons	Wollongong LGA		NSW
Occupation	No.	%	%
Managers	9,245	10.5	13.5
Professionals	20,485	23.2	23.6
Technicians and Trades Workers	13,048	14.8	12.7
Community and Personal Service Workers	10,926	12.4	10.4
Clerical and Administrative Workers	12,002	13.6	13.8
Sales Workers	7,937	9.0	9.2
Machinery Operators and Drivers	5,467	6.2	6.1
Labourers	7,768	8.8	8.8
Not stated or inadequately described	554	0.6	0.8
Total employed persons aged 15+	88,252	100.0	100.0

Source: id the population experts based on ABS Census of Population and Housing based on place of usual residence 2016.

**Table A-10: Wages and salaries by industry Wollongong**

Industries	Wages & Salaries
Education & Training	\$850.697 M
Manufacturing	\$753.921 M
Public Administration & Safety	\$494.456 M
Financial & Insurance Services	\$427.548 M
Professional, Scientific & Technical Services	\$391.557 M
Retail Trade	\$363.461 M
Construction	\$362.502 M
Administrative & Support Services	\$310.650 M
Transport, Postal & Warehousing	\$258.368 M
Mining	\$239.034 M
Accommodation & Food Services	\$220.344 M
Wholesale Trade	\$208.811 M
Other Services	\$169.083 M
Rental, Hiring & Real Estate Services	\$119.945 M
Electricity, Gas, Water & Waste Services	\$103.511 M
Information Media & Telecommunications	\$81.975 M
Arts & Recreation Services	\$38.200 M
Agriculture, Forestry & Fishing	\$5.080 M
Total	\$6,280.222 M

Source: REMPLAN. 2017b. Wollongong City Council Economy Profile, accessed 1 August

**Table A-11: Indigenous employment status Wollongong LGA 2016**

People	People	Percentage
Employed	1,721	85.5%
Unemployed	295	14.7%
Total labour force	2,012	56.6%
Not in the labour force	1,475	41.5%
Labour force status not stated	69	1.9%
Total	3,556	100.0%

Source: ABS Census 2016 Indigenous Profile Wollongong LGA

**Table A-12: Employment status by age Wollongong LGA 2011**

Population	Age Groups						% 15+ years (of total population)
	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65 years and over	
Indigenous Population	21.1%	13.1%	11.6%	9.5%	5.3%	4.2%	64.7%
Total Population	14.21%	12.6%	13.3%	13.6%	11.4%	16.4%	81.5%

Source: ABS Census 2011 BCP and Indigenous Profile Wollongong LGA

**Table A-13: Housing stock and tenure 2016**

Dwellings	Mount Kembla		Kembla Heights		Cordeaux Heights		Unanderra		Figtree		Wollongong LGA		NSW
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	%
Total private dwellings	348	100	41	103	1,457	100	2,173	100	4,204	100	80,279	100	100
Occ. Private dwellings	332	96.4	39	95.1	1,401	96.2	2,051	94.4	3,972	94.5	73,953	92.1	90.1
Unocc. Private dwellings	16	4.7	3	4.9	51	3.6	122	5.6	231	5.5	6,330	7.9	9.9
Fully owned	156	47.0	3	7.9	610	43.5	586	28.6	1,723	43.4	25,727	34.8	32.2
Mortgage	153	46.1	0	0	644	46.0	507	24.7	1,479	37.2	23,035	31.1	32.3
Renting	16	4.8	38	92.7	118	8.4	821	40.0	639	16.1	22,378	30.3	31.8
Other tenure type	0	0	0	0	0	0	76	3.7	35	0.9	681	0.9	0.9
Not stated	3	0.9	0	0	28	2.0	60	2.9	96	2.4	2,141	2.9	2.8

Source: Australian Bureau of Statistics 2016 Census of Population and Housing. General Community Profile

\* Note: Data are derived from the ABS General Community Profile Tables, where there is small discrepancy noted between counts in Mount Kembla SSC and Kembla Heights SSC. This discrepancy is minimised by referring to the collective Mount Kembla / Kembla Heights SSC total as shown. Data disparities due to ABS sampling corrections were adjusted in favour of occupied dwellings for the Mount Kembla and Kembla Heights State Suburbs.

**Table A-14: Dwelling type (% of occupied private dwellings), SSC and LGA Study Area**

	Mount Kembla		Kembla Heights		Cordeaux Heights		Figtree		Unanderra		Wollongong LGA		NSW	
Dwelling type	2011	2016	2011	2016	2011	2016	2011	2016	2011	2016	2011	2016	2011	2016
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Separate house	98.6	96.1	NA	100	96.7	97.3	83.6	81.6	62.9	77.8	71.2	69.5	69.5	66.4
Semi-detached	0	0.9	NA	0	2.7	2.6	6.1	8.2	30.8	14	11.5	12.4	10.7	12.2
Flat or apartment	1.4	0	NA	0	0.3	0	5.6	5.6	5.8	7.2	16.2	16.8	18.8	19.9
Other dwelling	0	0	NA	0	0.3	0.4	4.6	4.1	0.4	0.9	1	0.3	0.3	0.4
Not stated	0	1.8	NA	0	0	0	0	0.4	0.1	0.2	0.1	0.6	0.1	0.5
Total Occupied Private Dwellings	357	332	NA	39	1,389	1,401	3,702	3,972	2,186	2,051	71,764	73,953	2,471,299	2,604,314

Source: ABS 2016 and 2011 Census of Population and Housing. Quick Stats Note: Data adjusted for minor ABS sampling errors in favour of occupied dwellings. Boundary changes between Mount Kembla and Kembla Heights State suburbs account for the decrease in dwellings in Mount Kembla.

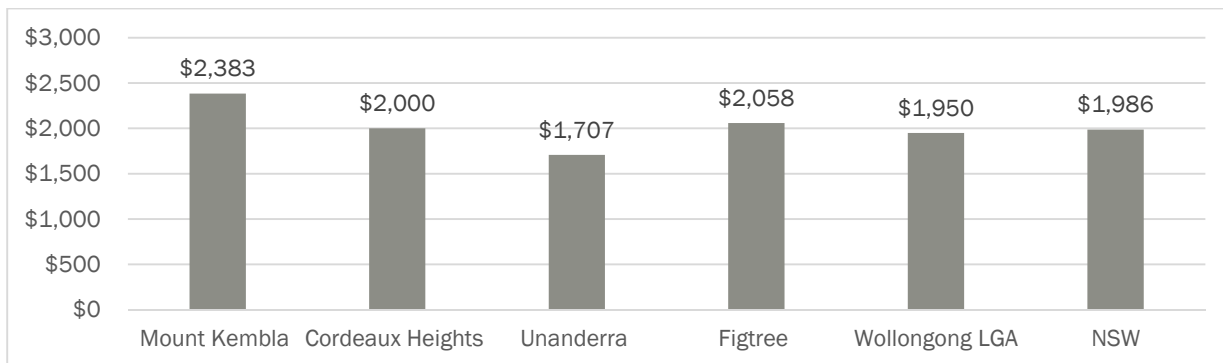


**Table A-15: Social housing 2016**

<b>Tenure</b>	<b>Cordeaux Heights SSC</b>		<b>Unanderra SSC</b>		<b>Figtree SSC</b>		<b>Wollongong LGA</b>		<b>NSW</b>
<b>Occupied dwellings</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	<b>%</b>
State authority rental	21	1.5	441	21.5	47	1.2	5,296	7.2	4.0
Community/church owned rental	0	0	23	1.1	20	0.5	378	0.5	0.7
Total social housing	21	1.5	464	22.6	67	1.7	5,674	7.7	4.7

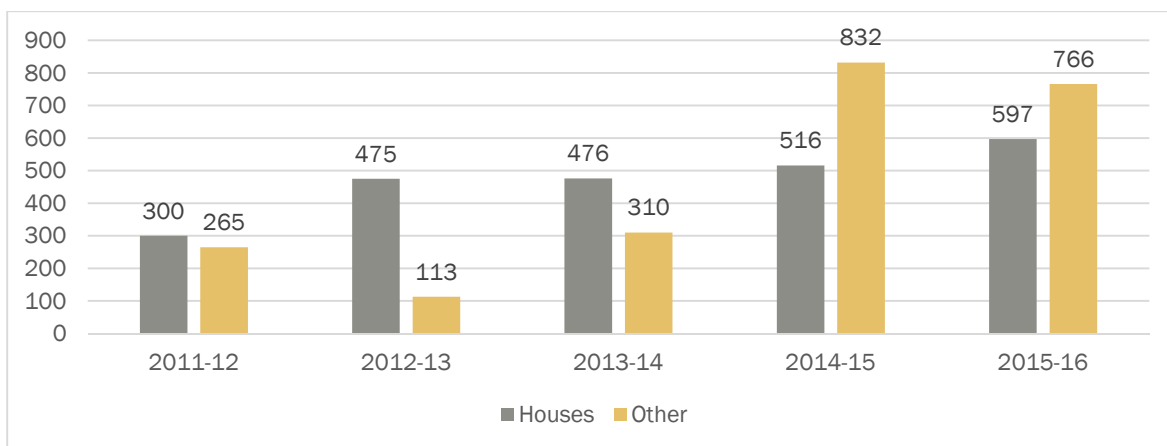
Source: Australian Bureau of Statistics 2016 Census of Population and Housing. Data derived from General Community Profiles for SSC, LGA and NSW STE.

**Figure A-6 Median mortgage payments 2016**



Source: ABS 2016 Census of Population and Housing Quick Stats. Median Mortgage Repayments

**Figure A-7: Residential building approvals, Wollongong LGA year ending 30 June 2016**



Source: Profile.id®. 2017. Based on Australian Bureau of Statistics, Building Approvals, Australia (8731.0), accessed 7 June 2017

**Table A-16: Select health and wellbeing indicators (modelled), Population Health Areas**

Indicators	Year	Port Kembla / Unanderra – Mount Kembla	Figtree - Keiraville	Wollongong LGA	NSW
<b>Community wellbeing indicators</b>					
People 15+ years providing unpaid child care (%)	2011	32.7	31.7	29.3	27.5
People 18+ years who did unpaid voluntary work in the last 12 months through an organisation (ASR per 100)	2014	29.8	34.2	28.3	29.3
People 18+ years who are able to get support in times of crisis from persons outside the household (ASR per 100)	2014	93.6	94.1	93.4	93.4
People 18+ years who felt very safe/safe walking alone in local area after dark (ASR per 100)	2014	43.7	51.7	53.9	53.4
People 18+ years who disagree/strongly disagree with acceptance other cultures (ASR per 100)	2014	1.1	0.8	4.1	4.1
People 18+ years who felt in the last 12 months, they felt that they had experienced discrimination or have been treated unfairly by others (ASR per 100)	2014	18.6	18.2	19.1	19.4
People 18+ who experienced a barrier to accessing healthcare when needed it in the last 12 months, with main reason being cost of service (ASR per 100)	2014	1.3	1.4	1.8	2.5
<b>Health indicators</b>					
People 15+ with fair or poor self-assessed health (ASR per 100 persons)	2014-15	14.8	13.3	16.1	14.3
Composite index of persons 18+ years with at least one of four risk factors (smokers, alcohol use, obese, no / low exercise) (ASR per 100)	2014-15	78.4	74.1	78.7	76.3
People 18+ with mental or behavioural problems (ASR per 100 persons)	2011-12	11.0	12.9	13.5	13.1
People 18+ with respiratory system diseases (ASR per 100,000 persons)	2011-12	27.4	30.3	29.3	27.4
Premature mortality deaths from road traffic injuries, 0 to 74 years (ASR per 100,000 persons)	2010-2014	8.1	..	3.6	4.3
Deaths from suicide and self-inflicted injuries, 0 to 74 years (ASR per 100,000 persons)	2010-2014	9.4	7.3	9.5	9.4
People admitted to hospital for mental health related conditions (ASR per 100,000 persons)	2012-13	1,221.4	1,277.7	1,322.3	1,755.8
People admitted to hospital for respiratory disease (ASR per 100,000 persons)	2012-13	2,253.6	1,984.0	1,906.9	1,762.6
People admitted to all hospital for circulatory system disease (ASR per 100,000 persons)	2012-13	2,924.3	2,296.5	2,293.0	2,224.6

Source: Torrens Institute. Public Health Information Development Unit. 2017. Social Health Atlas of Australia. Data Tables for Population Health Areas, and Local Government Areas.

**Table A-17: NSW and postcode crime statistics for Jan 2014 to Dec 2016: incidents of assault**

Area	3 Year Trend to Dec 2016	Year to Dec 2014 Count	Year to Dec 2014 Rate	Year to Dec 2015 Count	Year to Dec 2015 Rate	Year to Dec 2016 Count	Year to Dec 2016 Rate
NSW	stable	63487	844.4	62428	830.3	62886	836.4
2500	stable	598	1466	519	1272.3	578	1416.9
2525	stable	47	406.9	39	337.7	35	303
2526	stable	102	613.3	119	715.5	105	631.3

Source: NSW Crime Tool. 2017. BOSCAR <http://crimetool.bocsar.nsw.gov.au/bocsar/>

**Table A-18: NSW and postcode crime statistics for Jan 2014 to Dec 2016: incidents of sexual offence**

Area	3 Year Trend to Dec 2016	Year to Dec 2014 Count	Year to Dec 2014 Rate	Year to Dec 2015 Count	Year to Dec 2015 Rate	Year to Dec 2016 Count	Year to Dec 2016 Rate
NSW	stable	11,546	154	11,745	156	11,904	158
2500	down 19.6% per year	113	277	77	189	73	179
2526	n.c.	34	204	17	102	12	72
2525	n.c.	10	87	13	113	8	69

Source: NSW Crime Tool. 2017. BOSCAR <http://crimetool.bocsar.nsw.gov.au/bocsar/>

**Table A-19: NSW and postcode crime statistics for Jan 2014 to Dec 2016: incidents of malicious damage to property**

Postcode	3 Year Trend to Dec 2016	Year to Dec 2014 Count	Year to Dec 2014 Rate	Year to Dec 2015 Count	Year to Dec 2015 Rate	Year to Dec 2016 Count	Year to Dec 2016 Rate
NSW	down 4.1% per year	68,212.0	907.3	64,041.0	851.8	62,703.0	834.0
2500	stable	540.0	1,323.8	513.0	1,257.6	538.0	1,318.9
2526	stable	124.0	745.6	117.0	703.5	99.0	595.2
2525	down 27% per year	62.0	536.8	51.0	441.6	33.0	285.7

Source: NSW Crime Tool. 2017. BOSCAR <http://crimetool.bocsar.nsw.gov.au/bocsar/>

**Table A-20: NSW and postcode crime statistics for Jan 2014 to Dec 2016: incidents of robbery**

Area	3 Year Trend to Dec 2016	Year to Dec 2014 Count	Year to Dec 2014 Rate	Year to Dec 2015 Count	Year to Dec 2015 Rate	Year to Dec 2016 Count	Year to Dec 2016 Rate
NSW	down 17.4% per year	3,432	46	2,700	36	2,344	31
2500	n.c.	41	101	25	61	16	39
2526	n.c.	6	36	4	24	3	18
2525	n.c.	2	17	1	9	1	9

Source: NSW Crime Tool. 2017. BOSCAR <http://crimetool.bocsar.nsw.gov.au/bocsar/>

**Table A-21: NSW and postcode crime statistics for Jan 2014 to Dec 2016: incidents of theft**

Postcode	3 Year Trend to Dec 2016	Year to Dec 2014 Count	Year to Dec 2014 Rate	Year to Dec 2015 Count	Year to Dec 2015 Rate	Year to Dec 2016 Count	Year to Dec 2016 Rate
New South Wales	down 2.1% per year	243,096.0	3,233.3	237,335.0	3,156.7	232,977.0	3,098.7
2500	stable	2,106.0	5,162.8	2,161.0	5,297.6	2,186.0	5,358.9
2526	stable	413.0	2,483.2	428.0	2,573.4	445.0	2,675.6
2525	stable	237.0	2,051.9	238.0	2,060.6	264.0	2,285.7

Source: NSW Crime Tool. 2017. BOSCAR <http://crimetool.bocsar.nsw.gov.au/bocsar/>

**Table A-22: Childcare services and vacancies by postcode**

Postcode	Suburb	Facilities / Services	Average cost
2525	Figtree	8 (4 of 8 with vacancies)	\$90 per day
2526	Cordeaux, Cordeaux Heights, Farmborough Heights, Kembla Grange, Kembla Heights, Mount Kembla, Unanderra	11 (4 of 11 with vacancies)	\$88.50 per day
2500	Wollongong, Wollongong North, Wollongong West, Mangerton, Mount Keira, Mount Saint Thomas, Coniston, Gwynneville, Keiraville	36 (12 of 36 with vacancies)	\$97.05 per day

Source: Care for Kids Internet Services Pty Ltd. 2017

**Table A-23: State primary school February enrolment figures 2012-16**

	2012	2013	2014	2015	2016	2012-2016 % change	% Ann. av. change
Unanderra Public School	483	473	452	433	409	-15.3%	-3.1%
Mount Kembla Public School	151	143	162	164	144	-4.6%	-0.9%
Farmborough Road Public School	223	202	196	187	181	-18.8%	-3.8%
Figtree Heights Public School	223	215	238	250	248	11.2%	2.2%
Figtree Public School	319	307	299	296	305	-4.4%	-0.9%

Source: NSW Department of Education and Communities. 2016

**Table A-24: Hospital services in the study area**

Hospital	Beds	Public / Private	Services
Figtree Private Hospital	100-199	Private	Coronary, Intensive, Obstetrics, Paediatric
Wollongong Hospital	200-500	Public	Medical surgical, clinical and allied services
Wollongong Private Hospital	100-199	Private	Medical surgical and clinical services
Wollongong Day Surgery	<50	Private	NA
Port Kembla Hospital	50-99	Public	Medical surgical, clinical and allied services
Kiama Hospital	<50	Public	Domiciliary care, geriatric assessment
Illawarra Mental Health	<50	Public	Mental health services

Source: Australian Institute of Health and Welfare, 2017. MyHospitals. 2017

**Table A-25: Police and emergency services, local and district Level**

Service type	Local services
Police	Wollongong Local Area Command
Ambulance	NSW Ambulance Service for Illawarra Zone
Rural Fire Service	Illawarra District Rural Fire Service Mount Kembla Rural Fire Brigade and Unanderra Fire and Rescue
Local study area (5)	District / regional catchment (20+)
Unanderra Community Centre	20+ community service listings in Wollongong and immediate surrounds. Services range from youth and family services, aged care, multicultural, crisis accommodation, women's support, disability services and general community support groups.
Villa Maria Centre (Unanderra)	
Estia Health Figtree	
Warrigal Care Lake, Figtree	
Amanda Wood Community Services, Figtree	

Source: Desktop research 25 May 2017.



## Appendix B: Social Impact Assessment Engagement

### B1 Introduction

This document summarises the process and outcomes of stakeholder engagement for the Social Impact Assessment (SIA). Engagement results are incorporated throughout the impact assessment and were considered in developing the mitigation, engagement and monitoring strategies.

The objectives of SIA engagement were to:

- involve key stakeholders in reviewing and defining the scope of assessment;
- collect quantitative and qualitative data for the social baseline;
- ensure stakeholders in the Dendrobium Mine Zone of Influence were informed about the SIA and had opportunities to provide input to the assessment and mitigation strategies;
- understand the interests and perspectives of people who may be directly affected by Project impacts; and
- ensure that the assessment and evaluation of impacts was informed by the knowledge and experience of local stakeholders.

### B2 SIA Engagement Process

Key stakeholders, issues and engagement mechanisms for each group are shown in Table B-1.

**Table B-1 Stakeholder groups, engagement methods, key issues**

Stakeholder groups	Engagement methods	Key issues
<p>Mount Kembla and Kembla Heights communities</p> <p>Figtree, Unanderra and Cordeaux Heights residents within Dendrobium Mine's Zone of Influence</p>	<p>Letter and Community Survey distributed to 900 local households and community facilities (113 participants)</p> <p>Four meetings with the Dendrobium Community Consultative Committee (DCCC)</p> <p>Interviews with DCCC and Dendrobium's Community Enhancement Program (DCEP) members (10 people)</p>	<ul style="list-style-type: none"> <li>• Impacts on environmental values</li> <li>• Traffic volumes and safety including Cordeaux Road and Picton Road</li> <li>• Rail noise</li> <li>• Effects on local amenity and enjoyment of private properties (principally through rail noise)</li> <li>• Potential for negative impacts on water catchment with potential to affect drinking water supply</li> <li>• Potential effects on housing affordability</li> <li>• Positive effects on employment availability at Local Government Area (LGA) level</li> <li>• Positive effects on local business opportunities</li> </ul>

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Stakeholder groups	Engagement methods	Key issues
Traditional owners	Meeting with Cubbitch Barta Elder Consideration of the results of consultation on Aboriginal cultural heritage issues	<ul style="list-style-type: none"> <li>Indigenous participation in environmental and cultural management</li> <li>Employment opportunity</li> <li>Potential Project impacts on cultural heritage</li> </ul>
Residents impacted by rail noise	Community Survey Interviews and meeting with six residents (five households) affected by rail noise (2017) Follow up interviews with five residents affected by rail noise (2018)	<ul style="list-style-type: none"> <li>Effects of rail noise amenity and way of life</li> <li>Engagement process</li> <li>Mitigation strategies</li> </ul>
Local businesses	Interviews with six representative local and regional businesses	<ul style="list-style-type: none"> <li>Supply opportunities</li> <li>Business vitality</li> </ul>
Employees	Employee survey (278 participants)	<ul style="list-style-type: none"> <li>Employment continuation</li> <li>Social impacts of closure</li> </ul>
Mount Kembla Public School	Interviews with School Principal	<ul style="list-style-type: none"> <li>Road safety</li> <li>School amenity and learning environment</li> <li>School enrolment levels</li> </ul>
NSW Police	Interview with Wollongong Local Area Command (LAC) Operations Duty Officer	<ul style="list-style-type: none"> <li>Traffic safety</li> <li>Demands on police resources</li> </ul>
Wollongong LGA community members	Meeting with Wollongong City Council General Manager and five department/division heads	<ul style="list-style-type: none"> <li>Employment opportunities</li> <li>Road safety</li> <li>Social infrastructure access</li> <li>Potential for negative impacts on water catchment</li> </ul>
Wollondilly community and other regional road users	Phone interviews with Wollondilly Community Development Officer and a member of Illawarra Coal's Bulli Seam Operations Community Consultative Committee (CCC) Wollondilly Council representation on DCCC	<ul style="list-style-type: none"> <li>Visual amenity of coal wash emplacement area</li> <li>Traffic safety on Appin Road</li> <li>Potential for negative impacts on water catchment and its recreational values</li> </ul>

### B3 Dendrobium Community Consultative Committee

Consultation with the DCCC included:

- attendance at the May 2017 DCCC meeting to seek input to the scope of the SIA;
- interviews with each DCCC member to seek their informed input on social values, impacts and opportunities/benefits during June 2018;
- attendance at the July 2017 DCCC meeting to present baseline findings and preliminary assessment findings; and
- providing a summary of preliminary SIA findings for discussion via video conference with the DCCC at the September 2017 meeting; and
- providing an update on the SIA's key findings and seeking input from DCCC members on 20 September 2018.

#### Baseline inputs

Findings with relevance to the social baseline included:

- the strong community value placed on the unique character of Mount Kembla village, its mining history, and the natural surrounds;
- encroachment of urban development on Mount Kembla village is a concern for many residents wanting to preserve the village identity;
- new families have come to the area, with many sending their children to private schools, not appreciating local assets including the school and Mount Kembla's village life;
- rail noise and dust are existing issues in relation to local amenity;
- strong environmental and conservation values associated with the Illawarra Escarpment and WaterNSW catchment areas;
- personal and broader community anxiety regarding perceived or potential impacts on catchment values, water supply and water quality; and
- heavy traffic on Cordeaux Road and Picton Road is currently a concern for safety and amenity, with reference to heavy vehicle haulage and the mine's workforce traffic.

A member of Illawarra Coal's Bulli Seam Operations CCC was also consulted with respect to any known issues with respect to the coal wash emplacement area. The key baseline values identified as relevant to the Project in the Wollondilly Shire include traffic safety, water quality in Georges River and Brennan Creek, and the Georges River catchment's bush land and biodiversity. The increasing diversification of the regional economy and the drift of former Sydney residents to Wollongong and Wollondilly LGAs were also noted. With respect to traffic safety, the current high level of traffic, including heavy vehicles, is a matter of community concern, particularly on Appin Road.

#### Impacts and opportunities

The scope of potential social impacts and benefits identified by DCCC members included:

- concern for potential to affect landforms and biodiversity within the water catchment;
- concern that, if the Project lessens the catchment's potential to supply water for human use, this

would be a significant social impact at regional and broader scale, with long term implications including inter-generational equity;

- perceived limited local benefit from employment and/or increased business as Mount Kembla community is largely independent of the mine's operation, however employment and economic benefits are anticipated for the region;
- increased traffic during construction, exacerbating road and traffic safety issues on Cordeaux Road and Picton Road in particular;
- local amenity impacts associated with traffic on Cordeaux Road, ongoing rail noise, and dust issues for some local residents; and
- potential for impact on local Indigenous cultural heritage values and artefacts not yet identified on the other side of the escarpment.

The Bulli Seam Operations CCC member was concerned that the coal wash emplacement area is inappropriate in its location, due to any potential for its operation to affect the Georges River catchment. The catchment's recreational values were also noted, in context with the potential for any change in water quality or flow to affect public amenity. As such, the continued use of the coal wash emplacement area and in particular any increase in emplacement volumes as part of the Project were issues of concern.

#### **B4 Community survey**

A community survey was undertaken during June 2017. Hard copies were distributed to 900 households within the Dendrobium Mine's Zone of Influence (see SIA Section 2.3.1) and an additional 500 surveys were distributed to schools and childcare centres in Mount Kembla, Cordeaux Heights, Figtree and Unanderra.

A total of 113 surveys were received, with addresses indicating that the majority came from within the Zone of Influence. This was not a statistically valid sample of the Zone of Influence but provides a solid indication of interested residents' views.

Respondents from Mount Kembla/Kembla Heights represented 52% of the sample, and Cordeaux Heights represented a further 33%, indicating that these communities (which are closest to the mine and/or Kemira Valley Rail Line) have the highest level of interest in the Project. Respondents from Figtree represented 8% of the total and respondents from Unanderra represented 5%. Long-term residents (living in the area for more than 10 years) represented 66% of respondents.

#### **Baseline inputs**

Key survey findings relevant to the social baseline include:

- the most commonly cited community values included access to a beautiful natural environment, wildlife appreciation, access to walking tracks, and the rural lifestyle where family, neighbours and community are important to daily life;
- Mount Kembla village, bush land, walking tracks and the escarpment were most commonly identified as special places, however Cordeaux Heights' diverse amenity (including semi-rural areas) was also valued;
- there were positive indicators of social capital and cohesion (85% of people agreed that their community works together on local issues), with some potential for improvement in the availability of local opportunities for community participation (53% agreed there were opportunities available,

while 31% didn't know, 14% disagreed and 2% didn't answer);

- there were strong positive perceptions of community safety with 88% of respondents agreeing they felt safe walking around their community at night, whilst 10% didn't know or didn't answer, and only 2% of respondents disagreed; and
- there is limited local access to community and health services, with nearly half of the survey's respondents disagreeing that they had adequate access in their local area, whilst 27% thought access to services was adequate, and 23% didn't know. This may reflect the lack of local services in the Mount Kembla/Cordeaux Heights area, and the large proportion of older respondents (48% were aged over 60 years) who are more likely to need services.

### Impacts and opportunities

Survey respondents' views on the Project's potential social impacts and benefits are presented in Table B-2, with further detail following on their views about potential impacts and benefits.

**Table B-2 Community survey respondents' views on social impacts**

Social Factor	Finding
Access to Affordable Housing	<ul style="list-style-type: none"> <li>• Approximately half the respondents (49%) thought that the Project would have no effect on access to affordable housing in their area.</li> <li>• 10% thought the Project would have a positive effect on access to affordable housing, and 27% thought it would have a negative effect.</li> </ul>
Quality of Life	<ul style="list-style-type: none"> <li>• 45% thought the Project would have a negative effect on local quality of life, including 11% who anticipated a strong negative effect.</li> <li>• In contrast, 19% of respondents thought there would be a positive effect, and 30% thought there would be no effect on quality of life.</li> </ul>
Local Business	<ul style="list-style-type: none"> <li>• A combined 54% of respondents felt the Project would have a positive effect on local businesses.</li> <li>• 26% thought there would be no effect on local businesses, and 5% thought there would be a negative effect.</li> </ul>
Enjoyment of Private Property	<ul style="list-style-type: none"> <li>• 43% of respondents anticipated no effect on enjoyment of their property while 42% of respondents anticipated a negative effect, including 10% anticipating a strong negative effect, whilst 11% thought there would be a positive effect.</li> </ul>
Local Employment	<ul style="list-style-type: none"> <li>• A combined 64% of respondents felt the Project would have a positive effect on local employment whilst 21% thought there would be no effect on local employment.</li> </ul>
Enjoyment of Public Spaces	<ul style="list-style-type: none"> <li>• Almost half of the respondents (49%) thought the Project would have no effect on their use and enjoyment of public spaces, whilst 26% thought it would have a positive effect, and 16% thought it would have a negative effect.</li> </ul>
Community wellbeing	<ul style="list-style-type: none"> <li>• More than one third (37%) felt the Project would have no effect on community well-being in their area, whilst 28% thought it would have a positive effect on wellbeing, and 24% thought there would be a negative effect on well-being.</li> </ul>

Social Factor	Finding
Community safety	<ul style="list-style-type: none"> <li>44% felt community safety would not change if the Project proceeds, however 27% perceived a negative effect, and 16% perceived a positive effect on community safety.</li> </ul>
Environmental qualities	<ul style="list-style-type: none"> <li>60% indicated a negative effect on environmental qualities, with 20% perceiving a strong negative effect.</li> <li>One fifth of respondents thought there would be no effect, and 10% thought there would be a positive effect.</li> </ul>

The number of residents who provided comments about potential Project effects is provided in Table B-3.

**Table B-3 Survey respondents' comments**

Comment by Issue	No. of comments	% of total comments	% of total respondents	Examples
Rail noise	27	23.1%	23.9%	<ul style="list-style-type: none"> <li>Rail line currently very noisy.</li> <li>Please stop brake squeal.</li> </ul>
Traffic	32	27.4%	28.3%	<ul style="list-style-type: none"> <li>Workers' cars are very noisy through the village.</li> <li>Oversized trucks have to come through Mount Kembla.</li> <li>Traffic and traffic noise have increased over the years.</li> </ul>
Dust	12	10.3%	10.6%	<ul style="list-style-type: none"> <li>We have black dust outside and on our windows.</li> <li>Concerned about my family breathing coal dust.</li> </ul>
Water catchment	13	11.1%	11.5%	<ul style="list-style-type: none"> <li>It's too risky to mine under our water supply.</li> <li>No mines should be allowed in the catchment.</li> </ul>
Jobs	23	19.7%	20.4%	<ul style="list-style-type: none"> <li>The continuation would be positive for jobs in our region.</li> <li>Jobs and flow-on economic benefits are good for our community.</li> </ul>
Community benefit	10	8.6%	8.9%	<ul style="list-style-type: none"> <li>Community projects – school and events.</li> <li>Continuation of Pathway Project.</li> </ul>
Total	117	100.00%	100.00% (n=113)	

### **Rail noise and dust**

Rail noise was a concern with respect to quality of life and enjoyment of private properties. Respondents' key issue was the noise from the brakes and wheels. Some mentioned that this has been an ongoing issue which has not been resolved and that the noise was currently disturbing them at unreasonable times of the day.

Black dust (believed to be from transportation of coal by trains or the rail load-out facility) was also reported to be settling in and around homes by those living near the rail line.

These issues are discussed in SIA Section 4.2.2.

### **Traffic**

The potential for the Project to increase traffic on local roads was a key concern for respondents, particularly with respect to Cordeaux Road and Picton Road. People see that the vehicles associated with the Project's operations would continue to contribute to existing traffic volumes in their area. Survey respondents stated that traffic congestion was particularly bad at the change of Dendrobium Mine shifts.

Some people also stated that they felt uneasy when walking on footpaths around Mount Kembla due to the number of vehicles, some of which appear to exceed the speed limit. The Mount Kembla Mine Memorial Pathway was seen as partially mitigating these impacts.

Along with the traffic congestion, people were concerned that the Project would increase traffic noise which could impact on their lifestyle. These issues are discussed in SIA Section 4.1.3.

### **Water Catchment**

Concern about the Project's impact on the water catchments was raised by 12 respondents to the survey. Respondents thought that mining under the water catchment would damage groundwater structures and contaminate or reduce the water supply with potential for effects on human health. Others commented on the health of creeks. These issues are discussed in SIA Section 4.1.2.

### **Economic and social benefits**

The Project's economic benefits were the most frequently mentioned benefit described by survey respondents. Respondents recognised the mine's contributions to the community, in terms of local employment, sustaining economic diversity and financial contributions to community projects. Several respondents noted that the Project would contribute to local jobs which in turn would create wealth within the community. These issues are discussed in SIA Section 4.4.

With respect to well-being, perceived positive impacts included contributions to local household incomes and businesses, and the Mine's continuation of the area's mining heritage. The most common response was in regard to the Dendrobium Community Enhancement Committee's (DCEC) investment in community projects which were recognised as supporting local well-being.

### **B5 Residents affected by rail noise**

Five interviews and one meeting were conducted with six Mount Kembla residents regarding rail noise. The residents interviewed had resided in the local area for periods ranging from four to 40 years. Four had lived there before Dendrobium Mine commenced, and two had moved there since.

### **Baseline inputs**

Residents identified local values as including:

- pride in the village's identity, and social capital seen in voluntary work and working together;
- catchment values and the catchment's role in drinking water supplies;
- the bush, nature, views to the escarpment and the semi-rural outlook on the edge of the city; and
- privacy and freedom to move.

Observed changes to the area as a result of Dendrobium Mine's operations included:

- rail noise on most days and into the evenings;
- the Mount Kembla Memorial Mine Pathway project to which the DCEC has contributed, which is heavily used by locals and others; and
- the number of commuting vehicles which speed along Cordeaux Drive, and concerns about traffic and pedestrian safety.

### **Impacts and opportunities**

Residents consulted during 2017 described hearing the rail noise frequently, other than during rail maintenance periods, e.g. 'up and down several times a day, we hear squeal every day, and it can start at 6 a.m.'. They described the noise as including 'flange noise on the way up, braking noise on the way down', wheels squealing, screeching, clunking noises, hissing sounds and engine noise. Of these, the brake squeal noise was identified as the most intrusive, as it is high pitched and unpredictable, and can go on for 'up to a minute'.

They described impacts on daily life as very intrusive 'affecting the quiet enjoyment of our house', including interrupting conversations and television watching, and feeling embarrassed when social occasions at home are affected by train noise, particularly during summer when people are outside. They also described sleep disturbance 'if you or the kids turn in before 11 p.m. or want to sleep past 6 a.m.'

Residents consulted in 2018 said that the brake shoe trail completed in July 2017 had made significant improvements to the frequency and intensity of brake squeal noise. Occasional flange noise' or wheel squeal was still being experienced and was more noticeable in the summer months when windows and doors are open, and people are spending more time outside.

With respect to other impacts from Dendrobium Mine, four residents described black dust problems, e.g. accumulation of dust on outside furniture, pools and play areas. This was attributed to the coal loader and/or the rail line.

## **B6 Indigenous stakeholders**

SIA engagement was sought with the Tharawal Local Aboriginal Land Council and Cubbitch Barta Native Title Claimants to seek input on social impacts and opportunities. One meeting was held with a Cubbitch Barta Elder during the SIA consultation process. The SIA has also relied on the results of consultation undertaken as part of the EIS's cultural heritage assessment.

### **Baseline inputs**

Key baseline inputs included:

- Aboriginal community values are strongly based on the enduring connection between Aboriginal people and their traditional lands, the historic significance of the Illawarra / Campbelltown area for Aboriginal people both pre- and post- European settlement, and the recognition of traditional



knowledge and practices in contemporary life;

- traditional access and cultural use of the Illawarra Escarpment with WaterNSW's Special Areas has been restricted 'dating back more than 100 years';
- before this time, Tharawal people traversed a wide area including the escarpment and out to Campbelltown, where there continues to be a strong representation of the Tharawal community; and
- there has been no potential to practice traditional land management e.g. bushfire management techniques in the Metropolitan Special Area, and impenetrable undergrowth has taken over in some areas where open forest had stood.

### **Impacts and opportunities**

With respect to the Project's potential impacts and opportunities, key findings included:

- frustration that the New South Wales (NSW) cultural heritage assessment process provides no specific consideration of Traditional Owners' knowledge as part of the cultural heritage process, and includes a wide range of Aboriginal people resulting in no continuity in site survey processes;
- uncertainty regarding Dendrobium Mine's current Indigenous employment rates or how many would be employed by the Project; and
- local indigenous employment and/or apprenticeship opportunities would be viewed positively by the Aboriginal community.

### **B7 Local Government**

A meeting was held with Wollongong City Council (WCC) senior staff including the General Manager and Managers and Principal Officers for Planning and Environment, Economic Development, and Community and Cultural Development.

A Wollondilly Shire Council representative was also consulted with respect to potential issues in the Wollondilly LGA in relation to the coal wash emplacement area. This identified no social issues, however the potential for traffic or environmental issues was referred to the EIS team.

### **Baseline inputs**

Consultation with WCC identified the following issues for consideration:

- Council is working to broaden the LGA's economic base, while continuing to recognise the substantial economic and employment contributions of the mining and manufacturing sectors;
- community attitudes to mining are shifting and new projects can be divisive, although many community members acknowledge the economic benefit of mining; and
- there are existing road safety risks on Picton Road.

### **Impacts and opportunities**

The scope of potential impacts and benefits identified by WCC management included:

- known issues identified in community consultation and media reports, including concerns about road and rail capacity and safety, traffic and rail noise, and Indigenous cultural heritage values;
- community members are likely to be concerned about environmental impacts and particularly any

impacts on water quality or supply;

- projects offering more than 100 new construction jobs were viewed as a substantial benefit in the context of current unemployment levels, given potential for direct and indirect employment;
- use of short term accommodation during the week was viewed positively, however heavier existing usage was noted at weekends, which should be considered in planning for short term accommodation use;
- the Mine's local procurement and social procurement opportunities are valued;
- there is potential for apprenticeship opportunities including for Indigenous people through the Project; and
- there is potential for Illawarra Coal to support local partnerships and investment aligned to technology, innovation and development of economic diversity.

### **B8 Social infrastructure providers**

Consultation was invited with community facility and service providers in the study area, including the Mount Kembla Public School, Mount Kembla Rural Fire Brigade, Wollongong Police LAC, and the NSW Illawarra Health Department. Subsequent interviews were held with the Principal of Mount Kembla Public School and the Operations Duty Officer for Wollongong Local Area Command.

#### **Baseline inputs**

Social infrastructure providers in the study area describe it as safe and well settled. Local school enrolments are declining, which is attributed to community maturation, in addition to large numbers of new families enrolling their children in private schools. There are no known enrolments at Mount Kembla Public School from families employed at Dendrobium Mine (verified by employee survey results).

For the NSW Police, interactions with the mine are on an as-needs basis, including participation in joint emergency response exercises and very infrequent incidents requiring police responses.

#### **Impacts and opportunities**

Potential impacts and benefits identified by the School Principal and the Local Area Command were similar:

- the construction period is expected to increase traffic on Cordeaux Road raising concern for road and pedestrian safety, with concerns for flow on effects for road users on Picton Road and Mount Ousely Road;
- both the School and Police Service have capacity to respond to any increased demand for services during the Project, however no significant increase is anticipated;
- wide load escort arrangements are based on a standard paid contractual arrangement that the Project would be required to use;
- the school currently benefits from the DCEC, and it is anticipated that similar benefits would continue as part of the Project; and
- if the Project didn't proceed, social infrastructure providers thought that:
  - there is potential for mining or related business owners' families to move away from the local area, resulting in a loss of school enrolments, however this equally creates opportunities for new families to move to the area to fill the lost enrolments; and

- anticipating redundancies, a loss of employment affects all aspects of life and family and community wellbeing, including potential for mental health issues, alcohol or drug related incidents and domestic violence

## B9 Local businesses

Interviews were conducted with six business operators with existing supply arrangements to the Dendrobium Mine. Interviewees were selected to ensure input from locally based businesses or business branches regarding the Project's potential impacts and benefits. Five of the six interviewees lived in the Wollongong LGA. All interviewees described their business as a local employer, with specific reference made to local employees based in Unanderra and Cordeaux Heights, and further south to Albion Park.

### Baseline inputs

Table B-4 shows the distribution of businesses and their general profile. Of note:

- businesses represented several goods and service categories identified as part of Dendrobium Mine's primary business and supply network (see SIA Section 4.4.7);
- each business supports a small to medium workforce, employing between 15 and 150 employees in the Wollongong area;
- all businesses interviewed had well established long-term supply arrangements with Dendrobium Mine, with the majority servicing the mine for more than ten years; and
- some businesses had a diversified national or state-wide business profile, but each local business or local branch had a strong focus on servicing the Illawarra region.

Businesses attributed anywhere from 5% to 100% of their business to the Dendrobium Mine operation, with four attributing around 40%.

**Table B-4: Business and supplier profiles**

Business / Local branch location	Business description	Business catchment	Workforce estimates	Length of time supplying mine
Unanderra	Heavy engineering	Wollongong LGA / Illawarra region National (from office locations in NSW / QLD)	Branch - 15 National - 250	13 years
Port Kembla	Construction	Primarily Illawarra region and Sydney Basin	Plant Hire Division (Port Kembla) - 100 Company - 350	9 years
Wollongong	Rail haulage	National with regional branch at Wollongong	Regional branch - 100 National - 250	13 years
Wollongong	Labouring services	Illawarra region	140+	More than 12 months

Business / Local branch location	Business description	Business catchment	Workforce estimates	Length of time supplying mine
Branch in Port Kembla Head Office in Tomago	Equipment hire, labour support, maintenance	Illawarra catchment for Port Kembla branch NSW catchment for Tomago Head Office	30 employees at Port Business employs another 80+ but limited interaction with Dendrobium	More than six years
Port Kembla	Heavy industry metal, construction trade and plant maintenance	NSW-wide, with strong focus on Sydney and Illawarra catchments	60-100 workers (50 direct employees + casual labour)	15 years (life of mine), but 30+ year supply arrangement with BHP / South32

### Impacts and opportunities

All interviewees said that the Project would have a positive effect on local and regional businesses, at a scale ranging from moderate to major. Benefits cited included the opportunity to extend existing supply arrangements to the Project, the continuation of employment for their employees, and the opportunity to tender for new work associated with the Project's construction phase.

Some interviewees said that prioritising local supply from the Wollongong region would help the Project to maximise local community benefits.

When considering the potential impacts and benefits of the Project not gaining approval to proceed:

- all interviewees said that there would be a negative effect on their business to varying degrees. For two business operators where the operation was of a large scale with a diverse client base, the anticipated effect of the Project not proceeding was a loss of revenue. For smaller operators, the anticipated effects included the potential for redundancies and a major effect on the businesses' viability. This was particularly an issue for operators where more than 40% of their business was attributed to the Mine's operation;
- all interviewees said there would be a negative effect on other local and regional businesses in the region to varying degrees, as the level of reliance each business might have on Dendrobium Mine at the time of its closure was unknown. However, four interviewees noted a predominance of small, family-run businesses in the LGA, and more specifically around Unanderra; and
- additional impacts identified from the Mine's closure, should the Project not proceed, included increased competition among businesses for remaining contracts, and an oversupply of mining equipment and other items relinquished by the Mine which would be available to other local operators, reducing market demand.

Most interviewees noted limitations in what South32 could do to mitigate the impacts of closure should the Project not proceed, however their suggestions included ensuring ample advanced notice of the cessation of operations, the ramp down and any opportunities to transition business to other South32 operations.

Two interviewees shared knowledge of unresolved community issues and concerns in Mount Kembla with respect to rail noise and traffic, and noted that the Project team would need to work hard to resolve these to garner the community support needed for the Project.

Others commented on Illawarra Coal's existing mitigation measures including rail and traffic curfews, noting that these requirements were well understood by contractors and embedded as part of standard practice.

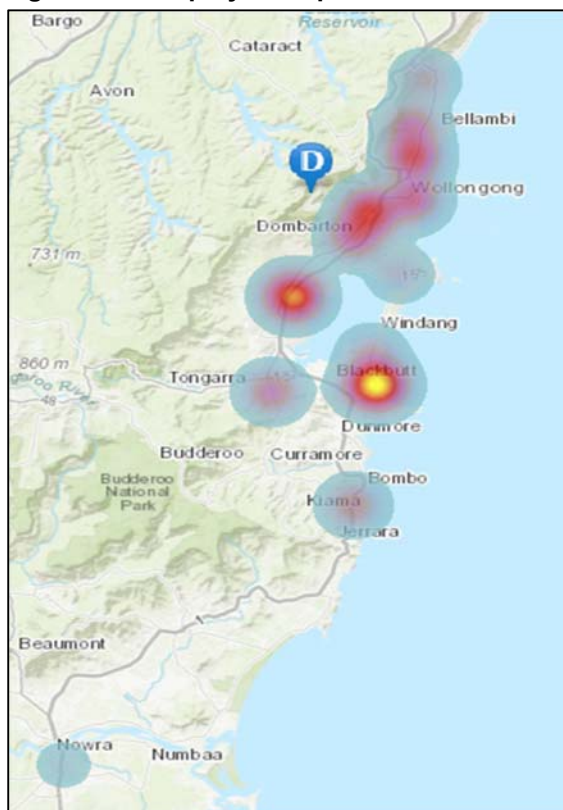
### B10 Dendrobium Mine employees

A survey of current Dendrobium Mine employees was conducted to identify personnel's interactions with local communities, and obtain their views on the Project's potential impacts and benefits. The employee survey was conducted in June 2017 and received 278 responses, including 218 surveys as hard copies and 60 surveys via an email link to the survey on line. Of respondents:

- 72% were direct employees, and 28% were contracted to the mine on a full time (17%) or part time/casual basis (11%); and
- two thirds of respondents identified as long-term employees, with 36% of those employed for 6-10 years and 34% employed for more than 10 years.

The residential locations of respondents extended north to Bulli and south to Kiama, with one employee located as far south as Nowra. The survey identified small concentrations of employees living in Dapto (13% of respondents), Wollongong (13%) and Albion Park (8%) but they were otherwise well distributed across the LGA as shown in Figure B-1.

**Figure B-1: Employee respondents' residential locations**



With respect to household composition, 74% of respondents defined their household as a family household with children, 17% defined their household as a couple household, 4% defined their household as a sole person household, and 2% identified share house arrangement (with 3% of the sample providing no

response). The majority (83%) owned or partly owned their home (which was similar to the tenure profile of the local study area as described in SIA Section 3), while 13% rented, and 4% had a different housing arrangement or did not answer. Almost two thirds of respondents (65%) were members or regular participants of a group within their community.

With respect to children, 77% of respondents identified having at least one child living with them. In line with their residential locations, respondents' children attended schools across the Wollongong LGA, including:

- 25 students at schools in Figtree;
- six students at Unanderra;
- two students at Cordeaux Heights; and
- 174 students enrolled elsewhere in the LGA.

No employees identified children attending school in Mount Kembla. Two respondents' children attended school in the Wollondilly LGA and one respondents' children attended school in the Wingecarribee LGA.

Weekly shopping by employees most commonly occurred at Shellharbour (21%), Dapto (16%), Figtree (12%) and Fairy Meadow (10%). Other locations included Wollongong (8%), Unanderra (7%), Albion Park, Corrimall and Kiama.

### **Impacts and opportunities**

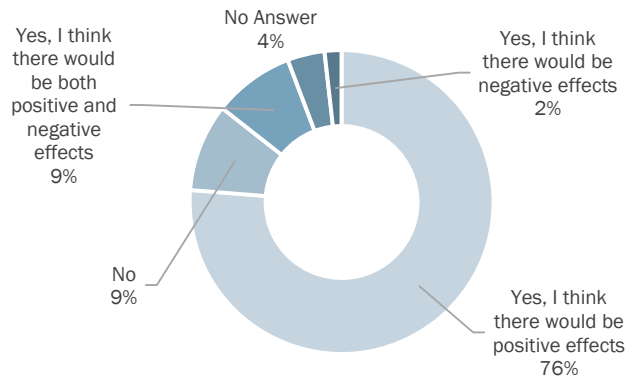
The majority of respondents (76%) anticipated that the Project would have positive social impacts (see Figure B-2) with most referring to the number of direct jobs and contracting opportunities it would support, but also recognised the Mine's support for local suppliers and contractors. Employees noted that the end of coal production would affect the upstream production and downstream processes that the Mine supports.

Respondents felt that with the long-term employment provided by Dendrobium Mine, the community would benefit financially, through the local economic contribution of employees. They also felt that associated employment opportunities and employment continuity at the mine would provide financial stability for families and enable them to stay settled in the region. Respondents also recognised the important place the mine plays in the commercial/industrial sector within the community.

Respondents acknowledged the DCEC's financial contributions to the community and how this would continue to support various community projects should the Project be approved.

At the other end of the spectrum, 2% of respondents felt the mine would affect the community negatively, and 9% saw potential for both positive and negative effects. Respondents identified negative effects as including the potential for environmental harm, including potential negative impacts on water quality and supply, degradation or 'general wear and tear' on environmental conditions, air and noise pollution, and ongoing traffic in Mount Kembla.

**Figure B-2: Employee views on continued operations**



The majority of employee survey respondents expected that cessation of Dendrobium Mine's operations would cause hardship for them and their families, as further discussed in SIA Section 4.9.

When asked about the cessation of mining if the Project is not approved, 82% of respondents felt the closure would negatively affect the community, while 3% of employees felt it would have a positive effect and 8% saw potential for both positive and negative effects if the Mine was to close. An increase in unemployment was also expected, with potential for negative effects on family harmony and mental health for affected employees, contractors and suppliers.

### **B11 Stakeholder inputs on mitigations**

SIA engagement stakeholders were invited to identify actions which could avoid or reduce negative impacts, as well as actions that could enhance Project benefits.

Table B-5 summarises the actions suggested by stakeholders to help mitigate potential impacts. It should be noted that:

- some of the suggested actions (e.g. train driver education and monitoring, adjustment of track speed, monitoring of particulates, management of driver behaviour) have already been implemented by Illawarra Coal or Pacific National for the existing operation, and that these actions would continue for the Project;
- some actions regarding the rail line and transport infrastructure are the responsibility of parties other than Illawarra Coal; and
- actions which would address environmental issues (such as noise, air quality and groundwater) are addressed in the relevant EIS chapters, and are not the focus of this SIA, however, mention is made of key actions where relevant to the SIA findings.



**Table B-5: Mitigations suggested by stakeholders**

Impact area	Suggested mitigations
<b>Amenity - rail noise</b>	<ul style="list-style-type: none"> <li>• Driver education and speed monitoring.</li> <li>• Assess whether different speeds would make a difference.</li> <li>• Enable the driver to monitor the noise.</li> <li>• Remove railway line and replace with conveyer.</li> <li>• Submerge railway line below road.</li> <li>• Review train operational hours - e.g. curfew trains between 8 p.m.-8 a.m.</li> <li>• Update the trains and maintain the wagons.</li> <li>• Double glaze affected residents' windows.</li> <li>• More regular updates (e.g. quarterly) on noise issues and solutions.</li> <li>• Clear and transparent communication about rail noise.</li> </ul>
<b>Amenity – Traffic</b>	<ul style="list-style-type: none"> <li>• Develop / refine the Project's traffic management strategy.</li> <li>• Limit vehicle movements to and from the mine to within business hours (9-5).</li> <li>• Implement planned transport times (not within peak hours).</li> <li>• Limit heavy vehicle movement and make better use of trains.</li> <li>• Keep traffic movements to a minimum.</li> <li>• Improve public transport options.</li> </ul>
<b>Amenity – Air Quality</b>	<ul style="list-style-type: none"> <li>• Better control and maintenance of coal particulates entering the atmosphere.</li> <li>• Reduce coal particulates from stockpiles. Cover trains' rolling stock to reduce dust.</li> <li>• Close monitoring of particulates.</li> <li>• Better locomotive maintenance to reduce rich-running diesel engines which produces fumes along the train line.</li> </ul>
<b>Amenity – Visual</b>	<ul style="list-style-type: none"> <li>• Maintain overgrown vegetation along rail line.</li> <li>• Landscape along rail line and bridge to improve amenity for adjacent private properties.</li> </ul>
<b>Safety - Traffic</b>	<ul style="list-style-type: none"> <li>• Increase lighting and safety signs/features.</li> <li>• Reduce heavy vehicles through the (Mount Kembla) village.</li> <li>• Inform truck drivers to slow down when driving in the area.</li> <li>• Request all mine employees be mindful of their speed when driving to work.</li> <li>• Prevent drivers littering.</li> <li>• Build a bike pathway from Sheringa Grove to Cordeaux Heights School and shops</li> <li>• Cameras on Harry Graham Drive to encourage safe driving at the bends and monitor truck movements.</li> </ul>
<b>Environmental Values - Water Catchment Quality and Supply</b>	<ul style="list-style-type: none"> <li>• Don't mine under the water catchment, rivers or dams.</li> <li>• Ensure no damage to waterways.</li> <li>• Assess the risk of inter-generational effects on environment and water quality.</li> <li>• Undertake careful, balanced environmental impact research and adhere to EIS.</li> <li>• Independent audits and testing of water catchment areas.</li> <li>• The mining entry needs to be sealed on completion to prevent water loss.</li> <li>• Clean the creeks of mine debris.</li> </ul>



**Table B-6: Enhancement measures suggested by stakeholders**

Impact area - key issue	Suggested enhancement measures
<b>Local businesses</b>	<ul style="list-style-type: none"> <li>Contract locally and avoid outsourcing Project opportunities to operators beyond the Illawarra region.</li> </ul>
<b>Employment</b>	<ul style="list-style-type: none"> <li>Support apprenticeship opportunities and career pathways, particularly for young people and Indigenous community members.</li> </ul>
<b>Community investment</b>	<ul style="list-style-type: none"> <li>Maintain Illawarra Coal's community funding practices and continue the DCEP.</li> <li>Support the historical committee to maintain a permanent base and showcase local history.</li> <li>Fund community projects to compensate for loss of village lifestyle.</li> <li>Use some of the mine's community investment fund for managing weeds and bringing the area back to a more natural state</li> </ul>
<b>Partnerships</b>	<ul style="list-style-type: none"> <li>Target community investment and partnership on long term goals, business diversity and innovation.</li> <li>Support social procurement and social enterprise opportunities.</li> </ul>
<b>Communication and engagement</b>	<ul style="list-style-type: none"> <li>Continue consultation with community.</li> <li>More involvement with the local community such as open days at the mine, picnic days, discussions with local community on improvements/upgrades</li> <li>Simplify mine publications to assist community understanding.</li> </ul>

## Appendix C: Review Questions

SIA Review Questions	SIA Section
1. Has the applicant applied the principles in Section 1.3? How?	Action oriented – Sections 4.10 and 5. Adaptive – Section 5.3 Distributive equity – 6.1 Impartial –Section 1.4 Inclusive – Section 1.3 Integrated – Section 3.1 and 4.2 Lifecycle focus – Sections 2.5 and 4 Material – Sections 2.5 and 4.10 Precautionary – Section 4.1.2 Proportionate – Section 2.5 Rigorous – Section 1.4 Transparent – Section 1.3, 1.4 and Appendix B
2. Does the lead author of the Scoping report meet the qualification and skill requirements in Box 2?	Not applicable.
3. Does the lead author of the SIA component of the EIS meet the qualification and skill requirements in Box 4?	See Section 6.3.
4. Has the lead author of the SIA component of the EIS provided a signed declaration certifying that the assessment does not contain false or misleading information?	See Section 6.3.
5. Does the SIA include adequate explanations of how the engagement objectives have been applied? How?	See Section 1.3.
6. Does the SIA demonstrate that there has been a genuine attempt to identify and engage with a wide range of people, to inform them about the project, its implications and to invite their input? How?	See Section 1.3 and Appendix B.
7. Does the SIA demonstrate that an appropriate range of engagement techniques have been used to ensure inclusivity and to ensure the participation of vulnerable or marginalised groups? How?	See Section 1.3 - Pre-paid postal community survey was available to all residents in the Dendrobium Mine Zone of Influence, and through local schools and the Unanderra Library.  Consultation was conducted with social infrastructure providers representing community members who require support and with Traditional Owners.

SIA Review Questions	SIA Section
<p>8. Does the Scoping Report identify and describe all the different social groups that may be affected by the project?</p> <p>9. Does the Scoping Report identify and describe all the built or natural features located on or near the project site or in the surrounding region that have been identified as having social value or importance?</p> <p>10. Does the Scoping Report identify and describe current and expected social trends or social change processes being experienced by communities near the project site and within the surrounding region?</p> <p>11. Does the Scoping Report impartially describe the history of the proposed project, and how communities near the project site within the surrounding region have experienced the project to date and others like it?</p> <p>12. Does the Scoping Report adequately describe and categorise the social impacts (negative and positive), and explain the supporting rationale, assumptions and evidence for those categories?</p> <p>13. How has feedback from potentially affected people and other interested parties been considered in determining those categories? Does the Scoping Report outline how they will be engaged to inform the preparation of the SIA component of the EIS?</p> <p>14. Does the Scoping Report identify potential cumulative social impacts?</p>	<p>A Scoping Report was not required for the Project.</p> <p>Section 2 outlines:</p> <ul style="list-style-type: none"> <li>• stakeholder inputs to the scope of the SIA</li> <li>• key matters and impacts considered</li> <li>• the area of social influence</li> <li>• potential impacts (direct, indirect and cumulative)</li> <li>• potentially material impacts, including negative and positive impacts, including the supporting rationale, assumptions and evidence</li> <li>• links to EIS findings</li> <li>• focus for SIA investigation.</li> </ul> <p>Section 3 describes:</p> <ul style="list-style-type: none"> <li>• Built and natural features of social value (Section 3.1)</li> <li>• Current and expected social trends or social change processes (Sections 3.4 and 3.5).</li> </ul>
15. Does the SIA component of the EIS discuss the local and regional context in sufficient detail to demonstrate a reasonable understanding of current social trends, concerns and aspirations?	See Sections 3.4, 3.5 and 3.6.
16. Does the SIA component of the EIS include appropriate justification for each element in the social baseline study, and provide evidence that the elements reflect the full diversity of views and potential experiences in the affected community?	Section 2.5 identifies potentially material impacts and therefore baseline values to be assessed. Section 1.3 describes SIA stakeholder engagement, and Appendix B provides a detailed record of SIA engagement.
17. Does the social baseline study include an appropriate mix of quantitative and qualitative analysis, and explain data gaps and limitations?	See Section 1.4.
18. Does the SIA component of the EIS include an appropriate description of the potential impacts in terms of the nature and severity of the change and the location, number, sensitivity and vulnerability of the affected stakeholders?	See Section 4.
19. Does the SIA component of the EIS identify potential impacts at all stages of the project life cycle?	See Section 4.
20. Does the SIA component of the EIS appropriately identify and justify any assumptions that have been made in relation to its predictions?	See Section 4.

SIA Review Questions	SIA Section
21. Does the SIA component of the EIS include appropriate sensitivity analysis and multiple scenarios to allow for uncertainty and unforeseen consequences? If relevant, does it include comparisons with studies of similar projects elsewhere?	Stakeholders' experience with the existing mine (along with EIS technical reports assessing impacts on noise, air quality, traffic and transport, and cultural heritage) provide a reliable reference point for assessing the Project's potential impacts.
22. Does the SIA component of the EIS explain how impacts were evaluated and prioritised in terms of significance?	See Sections 2.5 and 4.10.
23. Does the evaluation of significance consider cumulative aspects where relevant?	See Sections 4.8 and 4.10.
24. Does the evaluation of significance consider the potentially uneven experience of impacts by different people and groups, especially vulnerable groups?	See Section 4.10.
25. Does the SIA identify appropriate measures to avoid, reduce, or otherwise mitigate any significant negative impacts of the project, and justify these measures?	See Section 4.10 and Section 5.
26. Does the SIA explain and justify measures to secure and/or enhance positive social impacts?	See Section 5.
27. Does the SIA component of the EIS impartially assess the acceptability, likelihood and significance of residual social impacts?	See Section 4.10.
28. Does the SIA component of the EIS propose an effective monitoring and management framework?	See Section 5.

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