APPENDIX F REVISED SOCIAL IMPACT ASSESSMENT

ANGUS PLACE MINE EXTENSION PROJECT

SOCIAL IMPACT ASSESSMENT

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November 2019

For:

CENTENNIAL COAL COMPANY LIMITED
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DECLARATION

This report has been prepared by Hansen Bailey Environmental Consultants' Principal Social Planner Bronwyn Pressland. Bronwyn holds a Bachelor of the Built Environment (Urban and Regional Planning) and a Master of Environmental Management. Bronwyn has more than 20 years' professional experience, including 12 years with Hansen Bailey. Bronwyn has provided community engagement and Social Impact Assessment (SIA) and management services for a diverse range of major projects in New South Wales (NSW), Queensland and the Northern Territory. For the past 12 years Bronwyn has worked almost exclusively on resource development projects, including coal, bauxite and manganese. A copy of Bronwyn's curriculum vitae is provided in Appendix A.

The SIA component of the Amended Project Report (APR) contains all information relevant to the SIA for the Angus Place Mine Extension Project (the project). The information provided is not of a false or misleading nature. The assessment was completed between June 2019 and November 2019. Hansen Bailey was engaged by Centennial Coal Company Limited as an independent assessor. Hansen Bailey has provided an impartial assessment of the anticipated social impacts of the Angus Place Mine Extension Project. There are no known conflicts of interest.

The consultation to inform the SIA was conducted in an ethical manner. Consultation included the full disclosure of the nature of the research and the participant's involvement. Participation in SIA discussion was verbally agreed to. Respect for participants throughout the consultation period was maintained, and interview and survey participation was voluntary. All participants had the right to withdraw from the interview process and the presumption and preservation of anonymity was upheld.

I, Bronwyn Pressland, confirm that the above statements and information given is true and correct to the best of my knowledge.

Signed:  Date: 21 November 2019

EXECUTIVE SUMMARY

Angus Place Mine is an existing underground coal mine within the Lithgow LGA. Angus Place Mine was placed on care and maintenance in 2015. Centennial Coal Company Limited (Centennial) is seeking consent to undertake the Angus Place Mine Extension Project (the project), to resume production and gain access to proposed future underground mining areas which are situated beneath the Newnes Plateau. If approved, the project would enable the continuity of coal supply to nearby Mount Piper Power Station (MPPS) and continuity in employment for existing workers at Springvale Mine.

Centennial owns three operating coal mines in the Lithgow Local Government Area (LGA): Springvale Mine, Airly Mine, and Clarence Mine, located approximately 6 km, 37 km, and 30 km respectively from the PAA. Centennial also operates the Springvale Coal Services site near MPPS and Lidsdale Siding Coal Loading Facility (Lidsdale Siding) in Wallerawang.

The Angus Place Mine pit top is located five kilometres north of the village of Lidsdale, and approximately seven kilometres northeast of the village of Wallerawang. Most of the land surface within the Project Application Area (PAA) and its' environs lies within the Newnes Plateau, which forms part of the Newnes State Forest. The existing Springvale Mine is located to the immediate south east of the PAA.

The Lithgow LGA has a long history of coal mining dating back to the 1800s. The town of Lithgow and nearby communities of Wallerawang, Lidsdale and Portland were established on the foundations of coal mining, cement and power generation. There are strong social and economic linkages between these communities due primarily to their strong industrial heritage. These linkages continue today in part due to a concentration of Centennial employees in each community.

The Social Impact Assessment (SIA) for the project was undertaken between June 2019 and November 2019. The SIA forms part of the State Significant Development (SSD) application for the project. The preparation of an SIA is a requirement of the New South Wales (NSW) *Social Impact Assessment Guideline for State significant mining, petroleum production and extractive industry development* (the SIA Guideline). The SIA is focused on the project, however it considers the extent to which the social impacts and benefits derived from Centennial operations in Lithgow LGA would continue or change as a result of the project. Potential social and economic effects relating to refusal of development consent for the project are also discussed.

Project benefits for the Lithgow LGA are significant and include:

- Continuity of employment, with 450 full-time equivalent (FTE) roles secured in the long-term;
- Positive health and wellbeing outcomes for nearby communities;
- Long-term sustainability of social infrastructure and services in nearby communities;
- Continuity in economic benefits to the LCC which in turn supports service and infrastructure delivery across Lithgow LGA;
- Continued local procurement ensures security for commercial operations, including local businesses, and facility and service providers;
- Investment in community infrastructure and services, made possible through Centennial voluntary contributions and those of the workforce; and
- The provision of additional time to enable the planned and coordinated implementation of strategies that support economic transition towards a more diversified economy.

The predicted social impacts of the project proceeding for the project's social area of influence would include:

- Continued reliance on coal mining to secure employment and economic benefits to the Lithgow LGA;
- Temporary and minor adverse changes in the use and enjoyment (recreational amenity) of small isolated areas of the Newnes Plateau for passive and active recreational user groups during project construction;
- Impacts to sense of place, community and cultural values due to adverse changes in valued natural attributes i.e. cliffs, swamps and rock pagodas;
- Potential reduction in road safety due to increased traffic on Wolgan Road during project operations; and
- Cumulative impacts on road safety due to an increase in light and heavy vehicle movements on the Newnes Plateau if the project coincides with the Clarence pipeline project.

The SIA describes Centennial's mitigation commitments, many of which relate directly to the management of the project's potential environmental and cultural impacts.

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ABBREVIATIONS LIST

ABS	Australian Bureau of Statistics
ASR	Age-Standardised Rate
ATSI	Aboriginal and Torres Strait Islander
AQIA	Air Quality Impact Assessment
B	Billion
BIA	Biodiversity Impact Analysis
BC Act	NSW Biodiversity Conservation Act 2016 (NSW)
Centennial	Centennial Coal Company Limited
CCC	Community Consultative Committee
CFMEU	Construction, Forestry, Maritime, Mining and Energy Union
CSP	Community Strategic Plan
CTMP	Construction Traffic Management Plan
CW Region	Central West Region
CW&O Region	Central West and Orana Region
DA	Development Application
dB	Decibel
DE	Department of Education
DESSFB	Department of Employment, Skills, Small and Family Business
DJSM	Department of Jobs and Small Business
DPE	Department of Planning and Environment
DPIE	Department of Planning, Industry and Environment
DPII	Department of Planning, Industry and Investment
EA	Energy Australia
ECD	Environment and Community Database
EcIA	Economic Impact Assessment
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	Environment Planning and Assessment Act 1979
EPA	Environmental Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
ERP	Estimated Resident Population
FTE	Full-time Equivalent
GDP	Gross Domestic Product
GRP	Gross Regional Product
GSNP	Gardens of Stone National Park

GWIA	Groundwater Impact Assessment
ha	Hectare
HV	Heavy Vehicle
KV	Kerosene Vale Ash Repository
km	kilometre
LCC	Lithgow City Council
LEP	Local Environmental Plan
LGA	Local Government Area
LH	Local Hire
LHD	Local Health District
Lithgow LGA	Lithgow City Local Government Area
Lithgow REDS	Lithgow Regional Economic Development Strategy
m	metres
M	Million
MPPS	Mt Piper Power Station
Mtpa	Million tonnes per annum
NGO	Non-Government Organisation
NLH	Non-Local Hire
NPSS	Newnes Plateau Shrub Swamps
NMP	Noise Management Plan
NSF	Newnes State Forest
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
PA	Project Approval
PAA	Project Application Area
PHIDU	Public Health Information Development Unit
RAPs	Registered Aboriginal Parties
Regional Plan	Central West and Orana Regional Plan 2036
RFB	Rural Fire Brigade
RFS	Rural Fire Service
RTS	Response To Submissions
RMS	Roads and Maritime Services
ROM	Run-Of-Mine
SA2	Statistical Area 2
SCA	State Conservation Area
SCSO	Springvale Coal Services Operations
SEIFA	Socio-Economic Indices for Areas

SEP	Stakeholder Engagement Plan
SF	State Forest
SIA	Social Impact Assessment
SIMP	Social Impact Management Plan
SS	State Suburb
SSD	State Significant Development
SWTP	Springvale Water Treatment Project
SDWTS	Springvale Delta Water Transfer Scheme
SPIA	Subsidence Predications and Impact Assessment
SWIA	Surface Water Impact Assessment
TIA	Traffic Impact Assessment
The project	Angus Place Mine Extension Project
THPSS	Temperate Highland Peat Swamps on Sandstone
µm	Micrometres
WPS	Wallerawang Power Station

ANGUS PLACE MINE EXTENSION PROJECT
SOCIAL IMPACT ASSESSMENT

for
Centennial Coal Company Limited

1 INTRODUCTION

1.1 OVERVIEW

Angus Place Mine[1] (the mine) is an existing underground coal mine located within the Western Coalfields of New South Wales (NSW) approximately 15 kilometres (km) north of the regional city of Lithgow, and 120 km north-west of Sydney (Figure 1). Angus Place Mine has been on care and maintenance since 2015. The mine is owned by Centennial Coal Company Limited (Centennial) as a joint venture with SK Kores Australia Pty Ltd (50%-50% joint venture) and is operated by Centennial Angus Place Pty Limited (Centennial Angus Place).

Centennial also operates the nearby Springvale Mine, Springvale Coal Services, Clarence Mine, Airly Mine and Lidsdale Siding Coal Loading Facility (Lidsdale Siding) within the Lithgow Local Government Area (LGA). Springvale, Clarence and Airly Mines all provide coal to the nearby Mount Piper Power Station (MPPS). Prior to care and maintenance, Angus Place Mine produced high quality thermal coal for the now decommissioned Wallerawang Power Station (WPS). Once mining recommences at Angus Place Mine, the principal customer will be MPPS.

The existing development consent (Project Approval PA_06_0021) for Angus Place Mine will expire in August 2024 and a new consent is required to ensure the mine is operational beyond this date. A new State Significant Development (SSD) application and supporting Environmental Impact Statement (EIS) was submitted to the NSW Department of Planning and Environment (DPE) (now the Department of Planning, Industry and Environment (DPIE)) in April 2014 for the Angus Place Mine Extension Project (the project) (SSD 5602).

In response to a prolonged downturn in international coal markets, a decision was made by Centennial in March 2015 to place the mine into care and maintenance. At this time, the assessment of the project was placed on hold. Centennial now propose to prepare and submit an Amended Project Report (APR) to DPIE to highlight the proposed changes to the project since the submission of the EIS and to enable DPIE to recommence their assessment and determination of the project.

This Social Impact Assessment (SIA) has been prepared in support of the APR.

[1] Angus Place Mine is also known as Angus Place Colliery.

1.2 PROJECT SETTING

The Angus Place Mine is an underground mining operation. The pit top is located 5 km north of the village of Lidsdale, and approximately 7 km north-east of the township of Wallerawang (Figure 2) within the Lithgow City Local Government Area (Lithgow LGA). Existing land uses in the vicinity of Angus Place Mine include pastoral farming, underground coal mining (Springvale Mine), coal infrastructure (Springvale Coal Services and Lidsdale Siding), power generation (MPPS), state forest (Newnes State Forest (NSF) and residential.

Lithgow LGA has a strong history of power generation and coal mining activity (Section 5.4.1). Within the Lithgow LGA the mining industry is:

- The largest single industrial contributor to the economy by a significant margin (AIGIS Group, 2019); and
- The second largest industry by employment, with an employment share of 11.1% in 2016 (AIGIS Group, 2019).

1.3 THE PROJECT

1.3.1 Project Background

PA_06_0021 was granted in respect of Angus Place Mine in September 2006 under the now repealed Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). PA 06_0021 and its subsequent modifications remain current and authorise the extraction of up to 4 Million tonnes per annum (Mtpa) of Run-of-Mine (ROM) coal at Angus Place Mine. The current approval will expire in August 2024 and a new SSD consent is required to ensure Angus Place Mine is operational beyond this date.

The new SSD application (SSD 5602) and supporting EIS, submitted to the NSW DPIE (formerly DPE) sought approval for continued operations for 25 years from the date the SSD development consent was granted, with rehabilitation activities to be completed following this period. The project as proposed in the 2014 EIS included all existing and approved operations, facilities and infrastructure of Angus Place Mine authorised by PA 06_0021 (as modified) in addition to:

- An extension and continuation of longwall panel mining for 25 years from the date of consent for the project, with rehabilitation to be undertaken following this period;
- Ongoing exploration activities within the Project Application Area (PAA); and
- Modifications to existing facilities and infrastructure, and construction and operation of new facilities and infrastructure, within the PAA that are required to support the project.

The APR provides a description of the project as presented in the 2014 EIS.

The exhibition period for the EIS commenced on 12 April 2014 and ended on 26 May 2014. A Response to Submissions (RTS) report was lodged with the DPIE on 1 October 2014 to respond to submissions received during the public exhibition period. A Supplementary RTS was lodged with the DPIE December 2014.

In response to a prolonged downturn in international coal markets, including the suspension of operations at the WPS, a decision was made by Centennial in March 2015 to place the Angus Place Mine into care and maintenance following the completion of secondary extraction within longwall panel 900W. At this time, the assessment of SSD 5602 was placed on hold. Angus Place Mine has been in care and maintenance since this time.

Since the submission of the project EIS in 2014, and subsequent RTS documents, a review of the project has been completed to take into consideration up to date information obtained from the adjacent Centennial owned Springvale Mine, as well as recent changes in operational requirements. This review has resulted in a number of changes to the project description presented in the 2014 EIS.

To enable Centennial to progress the project, Centennial sought written agreement from DPIE to modify the SSD 5602 development application to incorporate the proposed project changes within the current application. An APR has therefore been prepared for the project. The Project Application Area (PAA) to which the development application (SSD 5602) relates is illustrated in Figure 3.

This SIA forms a component of the APR and assesses the social impacts of the revised project as described in full in the APR and summarised in the SIA Section 2.2.

1.3.2 Proponent

Angus Place Mine is owned by Centennial as a joint venture with SK Kores Australia Pty Ltd (50%-50% joint venture). Angus Place Mine has been operated by Centennial Angus Place on behalf of the joint venture participants since 2002.

Centennial Angus Place is the proponent for the project.

1.3.3 Project Description

The project, as amended, is proposed to include all currently approved operations, facilities and infrastructure of Angus Place Mine, and the following changes:

- Extension of the life of the mine to 31 December 2053;
- Increase in full time equivalent (FTE) personnel from 300 to 450;
- Increase in the extraction rate to up to 4.5 Mtpa of ROM coal;

- Increase in Project Application Area from 10,460 hectares (ha) to 10,551 ha;
- Continued development of new roadways to enable access to the proposed longwall panel 1000 mining area;
- Extraction of existing approved longwall panel 910;
- Development and extraction of 15 longwall panels (1001-1015) with void widths of 360 metres (m);
- Development of underground roadway connections between the Angus Place Mine underground mine workings and the Springvale Mine underground mine workings;
- Transfer up to 4 Mtpa of ROM coal to the Angus Place Mine pit top for processing and handling before being transferred off-site in accordance with the Western Coal Services Project development consent (SSD 5579);
- Transfer up to 4.5 Mtpa of ROM coal by underground conveyor to the Springvale Mine pit top via proposed new underground connection roadways for handling and processing in accordance with the Western Coal Services Project development consent (SSD 5579);
- Enlargement of the ROM coal stockpile at the Angus Place Mine pit top from 90,000 tonnes to 110,000 tonnes capacity;
- Installation and operation of the ventilation fan at the Angus Place Mine Ventilation Facility on the Newnes Plateau;
- Construction and operation of one additional downcast shaft and six mine services boreholes (borehole infrastructure areas) within the proposed Angus Place Ventilation Facility on the Newnes Plateau to support longwall mining in the 1000 panel area;
- Construction and operation of additional dewatering facilities and associated infrastructure on the Newnes Plateau to support longwall mining in the 1000 panel area and to facilitate the transfer of mine water into the Springvale Delta Water Transfer Scheme (SDWTS); and
- Transfer of mine inflows from the existing and proposed workings at Angus Place Mine to the Springvale Water Treatment Project (SWTP) (SSD 7972) for treatment and beneficial reuse at the MPPS;
- Operation of the Angus Place Mine 930 bore and associated infrastructure for raw mine water transfer from the SDWTS to the underground mining area; and
- Connection to the Lithgow City Council (LCC) main sewer line prior to the commencement of longwall panel extraction (subject to a separate development application through the LCC).

1.4 ASSESSMENT REQUIREMENTS

This section describes the key regulatory requirements relevant to the identification and management of social impacts arising from the project. The project is subject to the following NSW regulatory requirements and guidelines relating to the conduct of the SIA:

- NSW Department of Planning and Environment's (DPE) Director General's Environmental Assessment Requirements (DGRs) for the project; and
- Transitional arrangements as outlined in the *Social Impact Assessment Guidelines for State Significant mining, petroleum and industry development* (NSW SIA Guideline) (Department of Planning and Environment, 2017).

The DPE regulatory requirements are outlined in Section 1.4.1. The requirements of the NSW SIA Guideline and compliance with these requirements is discussed in Section 1.4.2.

1.4.1 Director General Requirements

The 2014 EIS for the project was prepared in accordance with the:

- DGRs issued on 6 November 2012 by the NSW DPE; and
- Supplementary DGRs issued on 30 August 2013 in relation to the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) referral (EPBC 2013/6889).

The DGRs identify matters which must be addressed in the EIS. The DGRs for the project remain valid. Where relevant, contemporary standards, policies and/or guidelines released since the issuing of the DGRs have been referenced and assessed.

Table 1 lists individual DGRs relevant to the assessment of social impacts and where each requirement is addressed in this report.

Table 1
SIA Related DGRs

Requirement	Section Addressed
Project DGRs (2012)	
Social and economic – including an assessment of: • Potential direct and indirect economic benefits of the development for local and regional communities and the State.	Economic Impact Assessment (EcIA) – APR.
• Potential impacts on local and regional communities, including:	SIA Section 6.

Requirement	Section Addressed
– Any increased demand for local and regional infrastructure and services (such as housing, childcare, health, education and emergency services); and – Impacts on social amenity, particularly impacts on local residents of and other nearby landowners and residents.	
• A detailed description of the measures that would be implemented to minimise the adverse social and economic impacts of the development, including any infrastructure improvements or contributions and/or voluntary planning agreement or similar mechanism.	SIA Section 7. (EcIA) – APR.
During the preparation of the EIS, you must consult with relevant local, State and Commonwealth Government authorities, service providers, community groups and affected landowners. In particular, you must consult with the: • Commonwealth Department of Sustainability, Environment, Water, Population and Communities; • Office of Environment and Heritage (including the Heritage Branch); • Environment Protection Authority; • Division of Resources and Energy within the Department of Trade and Investment, Regional Infrastructure and Services; • Department of Primary Industries (including the NSW Office of Water, Forestry NSW, NSW Agriculture, Fisheries NSW, and Catchments and Lands (Crown Lands Division)); • Transport for NSW (including the Centre for Transport Planning, and Roads and Maritime Services); • NSW Health; • Sydney Catchment Authority; • Hawkesbury-Nepean Catchment Management Authority; • Lithgow City Council; • Delta Electricity; and • Relevant Aboriginal stakeholders. The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, justification should be provided.	APR Consultation Section. SIA Section 1.3.2, SIA Section 3.3 and SIA Section 4.
Supplementary DGRs (2013)	
• A description of the short-term and long-term social and economic implications and/or impacts of the project.	SIA Section 6. (EcIA) – APR.
Any consultation about the action, including: • Any consultation that has already taken place; • Proposed consultation about relevant impacts of the action; and • If there has been consultation about the proposed action - any documented response to, or result of, the consultation.	SIA Section 3.3. APR Consultation Section.
• Identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.	SIA Section 3.3. APR Consultation Section.

Source: (Department of Planning and Environment, 2013).

1.4.2 SIA Assessment Requirements

The NSW SIA Guideline documents the approach to the conduct of SIA for State Significant resource projects in NSW. The project development application (SSD 5062) pre-dates the introduction of the NSW SIA Guideline, however, the scope of the SIA and the methodology generally aligns with the intent of the NSW SIA Guideline.

The SIA addresses key requirements of the NSW SIA Guideline, including:

- Consideration of all potential social impacts including cumulative impacts through a scoping exercise;
- Preparation of a social baseline, documenting conditions and trends in the social area of influence;
- Assessment of social impacts and opportunities with potential for a material effect on social values, including integration of technical study results with a bearing on the social environment;
- Development of adaptive management and monitoring strategies; and
- Significance assessment of identified social impacts and opportunities and determination of the mitigated social impact significance.

1.5 PURPOSE

This SIA forms a component of the APR in support of the SSD 5602 development application for consent under the EP&A Act.

The SIA considers:

- The potential social impacts and benefits of the project, across the project life, including decommissioning; and
- Identifies appropriate strategies to avoid, mitigate or manage the negative impacts and to enhance the positive opportunities presented by the project.

1.6 DOCUMENT STRUCTURE

The SIA is structured as follows:

- Section 1 – Introduction: provides an overview of the project and describes the purpose and scope of the SIA.
- Section 2 – Project Description: describes the socio-economic characteristics of the project.

- Section 3 – SIA Methodology: describes the SIA objectives, and provides an explanation of the SIA methodology.
- Section 4 – SIA Scope: describes the geographic setting of the project, defines the project's social area of influence, and presents the scoped impacts and opportunities that require further consideration in the SIA.
- Section 5 – Social Baseline: presents a summary of the key socio-economic characteristics of the project's social area of influence.
- Section 6 – Impact Assessment: describes the predicted social impacts and opportunities of the project.
- Section 7 – Management, Monitoring and Reporting: outlines the approach to management, monitoring and reporting for the project and documents the outcomes of the impact significance assessment.
- Section 8 – Conclusion.
- Section 9 – References.
- Appendix A – Curriculum Vitae of SIA Specialists.
- Appendix B – Preliminary Scoping Outcomes – Presents the outcomes of the initial social impact and opportunities scoping exercise.

2 PROJECT DESCRIPTION

This section describes the specific characteristics of the project relevant to the assessment of socio-economic impacts. A full project description is provided in the APR.

2.1 EXISTING APPROVED OPERATIONS

Newcom Colliery (now Angus Place Mine) commenced operations in 1949, producing coal for domestic supply using bord and pillar mining techniques. Angus Place Mine commenced longwall panel mining in 1979, after being developed as an extension of the Newcom Mine. The mine was established at its current locality after development consent was granted by the then Blaxland Shire Council (Centennial Coal Angus Place, 2013).

Prior to care and maintenance in 2015 Angus Place Mine operated 7 days a week, 24 hours per day. Coal was extracted from the Lithgow seam using longwall panel mining techniques. Key components of the operation prior to care and maintenance included:

- An underground longwall mine and development panels;
- Supporting surface infrastructure located within the Angus Place Mine pit top area and in the NSF;
- A coal stockpile area;
- Workforce of up to 300 full-time equivalent (FTE) persons; and
- Production rate of 4 Mtpa of ROM coal.

As authorised by PA 06_0021 coal extracted by the Angus Place Mine underground mining operations was transported to the surface at the Angus Place Mine pit top via the drift conveyor and stockpiled within the ROM coal stockpile. The ROM coal stockpile has a current capacity of 90,000 tonnes.

From the ROM coal stockpile, coal was conveyed to the coal processing plant for crushing and sizing. After sizing, coal was fed onto the product coal conveyor and sent to the product coal bin to be loaded into road trucks. Coal was then transported from the Angus Place Mine pit top by trucks on private haul roads. At the time of operations Angus Place Mine held coal supply contracts with Delta Electricity. Loaded trucks therefore transported coal to MPPS and WPS.

2.2 THE PROJECT

This section provides a summary of the relevant components of the amended project.

2.2.1 Project Schedule

The following section describes the approach to construction and operation of the project. Construction activities for the project will overlap with the recommencement of operations at Angus Place Mine.

Construction

New dewatering facilities (borehole infrastructure) will be required to be constructed on the Newnes Plateau for the project. Additional infrastructure, such as associated trenched pipelines and booster pump stations and power kiosks, will also be required. Pipelines will follow existing access tracks wherever possible, albeit widened for installation of the pipeline and power cables. The pipelines from the Angus Place dewatering facilities will connect to the existing Springvale Delta Water Transfer Scheme (DWTS). No infrastructure will be sited in the vicinity of any waterway and pipelines will not be trenched through any waterway.

The construction for the project will also include the construction of a downcast shaft for the additional ventilation facility required.

Construction activity will be sequentially staged to align with mine development. The downcast shaft will be constructed over 21 months (this timeframe includes site preparation, drilling and commissioning). The downcast ventilation shaft will be constructed when development in the mains is in the vicinity of longwall panel 1011.

Bore hole infrastructure will be constructed prior to the commencement of longwall extraction in specific panels as detailed below. It will take an estimated 13 months to complete the construction of each bore facility. A total of six borehole infrastructure areas are currently proposed to be constructed over the life of the project. Based on current project planning:

- Bore 1 will be the first dewatering bore to be constructed. This is required to be completed prior to the commencement of longwall extraction in longwall panel 1002 (i.e. longwall panel 1002 is the first longwall that will be extracted).
- Bore 2 will need to be constructed prior to the commencement of longwall extraction in longwall panel 1001 which is the second longwall to be extracted (based on current schedule).
- Bore 3 is required to be constructed prior to the commencement of extraction in longwall panel 005.
- Bore 4 is required to be constructed prior to the commencement of longwall extraction in longwall panel 1006.
- Bore 5 is required to be constructed prior to the commencement of longwall extraction in longwall panel 1010.
- Bore 6 is required to be constructed prior to the commencement of longwall extraction in longwall panel 1014.

Construction activities will predominantly be undertaken 24 hours per day, seven days a week.

Operations

Mining operations will commence immediately following the granting of approval and with the extraction of development coal. Mining operations will cease 31 December 2053, with mine closure and rehabilitation activities to continue beyond this date. The operations phase aligns with the life of MPPS.

Mining operations are proposed seven days a week, 24 hours per day.

2.2.2 Project Workforce

The workforce numbers presented within this section are based on initial project workforce planning and are subject to change. Any changes to workforce numbers will be managed through ongoing review and monitoring.

Construction Workforce

Table 2 summarises the construction timeframes and workforce demand for the project. Approximately 56 FTE workers will be required on site at any one time for the construction of borehole infrastructure. However, as the construction of borehole infrastructure involves sequential activities it is unlikely that all 56 FTE workers will be on the Newnes Plateau at any one time. Up to 20 FTE workers will be required for the construction of the downcast shaft.

Table 2
Construction Timing and Workforce Requirements

Surface Infrastructure	Estimated Construction Timeframe	Workforce and Vehicle Requirements
Six borehole infrastructure areas.	13 months for each borehole infrastructure.	Up to 56 people per day, in 37 light vehicles.
Downcast shaft for the additional ventshaft facility.	21 months.	20 FTE drilling crew, with additional technical support staff when required, in up to 20 light vehicles.

Operations

The project will require an annual operations workforce of up to 450 FTE persons. The workforce of 450 FTE persons is associated with the peak production rate of 4.5 Mtpa of ROM coal. This represents an increase of 150 FTE persons from the current approved workforce of 300 FTE (PA_06_0021).

Table 3 presents the anticipated operations workforce by shift and occupation. The projected operations workforce may fluctuate over time, reflecting the changes in the mining activities described in the APR. The operations workforce will be sourced in part from the existing

skilled and capable workforce in Lithgow LGA. The operations phase workforce will consist of a combination of employees and contractors (Table 3).

Table 3
Operations Workforce and Shift Arrangements

Position	Weekday Shifts (Mon –Thur)			Weekend Shifts (Fri – Sun)	
	Day 6am to 4pm	Afternoon 2pm to 12am	Night 10pm to 8am	Day 6am to 6pm	Night 6pm to 6am
Employees	82	70	70	80	80
Apprentices / trainees	2	0	0	0	0
Staff	30	2	2	2	2
Contractors	5	8	8	4	3
Total Workforce	119	80	80	86	85

Source: Centennial Coal, 2019.

2.2.3 Workforce Recruitment

The construction workforce will largely consist of contractors recruited from both within and outside the Lithgow LGA.

An estimated 70% (315 persons) of the operations workforce is anticipated to be recruited from within the Lithgow LGA. Lithgow LGA boasts an existing skilled and capable workforce, with a community that is experienced in mining. It is anticipated that the reactivation of operations at Angus Place Mine will occur in parallel with the gradual cessation of operations at Springvale Mine (anticipated in 2024 or earlier). As operations ramp down at Springvale Mine there will a gradual release of skilled labour from Springvale Mine (up to 450 persons) into the local labour market. Centennial will draw on the existing labour pool in the Lithgow LGA and the additional labour pool generated by the cessation of operations at Springvale Mine to help meet the operational workforce demands as production ramps up at Angus Place Mine.

The required project workforce will be sourced through a range of recruitment processes, including internal transfer i.e. from existing Centennial operations (e.g. Springvale Mine), local and national recruitment, as well as apprentice and contract labour sourced through advertisements.

A definitive strategy for recruitment of the workforce will be developed following project determination and in line with detailed construction and operations planning. Centennial's experience and assessment of local contractor and business capabilities in Lithgow LGA will be utilised in sourcing local labour wherever possible.

2.2.4 Home Base Locations

The project construction workforce is likely to consist of a combination of local hires (LHs) i.e. residents of Lithgow LGA, and non-local hires (NLHs). All NLHs will be accommodated in a combination of short-term accommodation, including hotels and motels, as well as private rental accommodation. Given the staged approach to construction and the relatively short construction timeframe, it is anticipated that the NLHs will not be accompanied by family.

The residential location of the incoming operations workforce is anticipated to be similar to the current Centennial workforce at Springvale Mine. Of the 308 workers currently employed at Springvale Mine, approximately:

- 70% (238 workers) reside inside the Lithgow LGA; and
- 30% (70 workers) reside outside the Lithgow LGA.

Of the 238 workers who reside inside the Lithgow LGA:

- 32% (100 workers) reside in Lithgow City;
- 11% (33 workers) reside in Wallerawang;
- 5% (16 workers) reside in Lidsdale;
- 11% (33 workers) reside in Portland; and
- The remaining workers (approximately 60%) all reside in the suburbs nearby Lithgow City including South Bowenfels and Marrangaroo.

Of the 70 workers who reside outside the Lithgow LGA the majority reside in suburbs of Bathurst City and villages in the Blue Mountains, within an approximate 60 km of Angus Place Mine.

2.2.5 Workforce Accommodation

All NLHs associated with construction activities will be accommodated in a combination of short-term accommodation, including hotels and motels, as well as private rental accommodation within the Lithgow LGA.

All LHs will be accommodated in private housing within the Lithgow LGA. It is anticipated that the majority of workers will remain in their existing homes. There is likely to be minimal additional demand generated by the operations workforce for housing in Lithgow City or the nearby local communities of Wallerawang, Lidsdale and Portland (Figure 3).

Given the characteristics of the existing Springvale Mine workforce (Section 2.2.4) it is likely that some labour may be drawn from Bathurst City or the Blue Mountains (approximately

30%). It is anticipated that these workers will remain at their permanent residences and commute on a daily basis to Angus Place Mine.

2.2.6 Workforce Transport and Logistics

For the project construction phase, all workers will commute on a daily basis to the PAA i.e. portion of Newnes Plateau where construction activities are required.

For operations, the majority of the workforce will be employed at the Angus Place Mine pit top, with a small number located on Newnes Plateau and at the existing Springvale Mine pit top. The operations phase workforce will commute in private vehicles on a shift roster basis from their place of residence to the PAA. Based on current experiences at Springvale Mine, Centennial estimates 10% of the operations phase workforce will car pool.

As currently approved by PA 06_0021, the Angus Place Mine pit top is, and will continue to be accessed via Wolgan Road. Access to Wolgan Road from the sub-regional road network is provided primarily via the intersection of Castlereagh Highway and Wolgan Road (Figure 4).

PA06_0021 approves access to existing infrastructure in the Newnes State Forest via a designated access route at the intersection of Chifley Road and Old Bells Line of Road (for heavy or light vehicles) or via the State Mine Gully Road (light vehicles only) (Figure 4). This existing access arrangement is proposed for the construction of project related surface infrastructure on Newnes Plateau. No changes are proposed to the existing site access arrangements for Angus Place Mine pit top or to the existing and proposed infrastructure on the Newnes Plateau.

2.2.7 Suppliers and Customers

Centennial has established supplier and customer relationships within the Lithgow LGA. A review of the current supplier network for Springvale Mine is provided in the *Economic Impact Assessment* (EcIA) (AIGIS Group, 2019). Capital and non-capital spend by Centennial in the Lithgow LGA for the 2017 and 2018 calendar years was reviewed for the SIA. In the 2018 calendar year Centennial Angus Place spent approximately $21.7 million (M) in supply, including $14.3 M in non-capital spend. Of this $21.7 M, $3.7 M was spent in the postcodes of 2790 and 2845 which includes the city of Lithgow and the settlements of Wallerawang and Lidsdale in proximity to Angus Place Mine. In 2018 Centennial Springvale spent $210.9 M in supply, including $185.7 M in non-capital spend. Of this $210.9 M, $41.5 M was spent in postcodes 2790 (Lidsdale) and 2845 (Wallerawang). These supply arrangements will cease with the cessation of care and maintenance at Angus Place Mine and the cessation of operations at Springvale Mine. The project enables the continuation of these existing supplier relationships.

Springvale Mine currently supplies the majority of the MPPS coal requirements. Centennial also has the option to send coal from the Springvale Mine to other domestic or export markets via the Lidsdale Siding at Wallerawang. The project would enable continuation of these existing supplier and customer relationships.

2.3 EXISTING COMMUNITY CONSULTATIVE ARRANGEMENTS

This section describes the existing community consultative committee (CCC) arrangements in place for Centennial operations in the Lithgow LGA.

2.3.1 Western Region Combined Community Consultative Committee

Up until 2012, a CCC operated for the Angus Place Mine. The CCC was established to monitor the operations and provide a forum whereby the community could communicate with the mine operators and be kept up to date with the progress of the mine. In 2012, the CCC was combined to also include the Springvale Mine operation. In October 2014 the CCC was expanded again to include Western Coal Services. The combined Angus Place Mine, Springvale and Western Coal Services CCC is referred to as the *Western Region Combined CCC*. This CCC aims to facilitate a single channel of communication regarding current Centennial operations and projects in the Lithgow LGA and adjoining Mid-Western Regional LGA (in which the Centennial Charbon Mine is located).

The Western Region Combined CCC is composed of:

- An independent chairperson;
- Four representatives from Centennial, including the Environment and Community Officer;
- One representative from LCC; and
- At least three representatives from the local community.

The Western Region Combined CCC meets on a regular basis (generally quarterly) to find the best solution(s) to the following challenges:

- Respecting the local and regional environment;
- Minimising adverse impacts of mine operations on people, homes, and businesses;
- Supporting the economic, social and cultural life of the area; and
- Maintaining profitable and efficient mine operations that meet regulatory requirements.

Minutes from the CCC meetings are made available on the Centennial website.

2.3.2 Centennial Western Aboriginal Heritage Committee

Centennial co-ordinates the Western Aboriginal Heritage Committee. This committee meets twice a year for all Centennial western operations, which includes Angus Place Mine. Centennial uses the forum to keep Indigenous stakeholders informed of upcoming Centennial activities or major projects in the Western Region.

2.4 COMPLAINTS MANAGEMENT

Since 2014 Centennial has maintained a comprehensive complaints management system for all Centennial operations in the Lithgow LGA, including Angus Place Mine. All complaints received by Centennial are recorded in a monthly complaints report, called a *Community Complaints Register.* This monthly register is produced for each operating Centennial site.

A copy of the Community Complaints register for Angus Place Mine is available on the Centennial website. Prior to 2014, any complaints received in relation to Angus Place Mine were not required to be listed in a separate complaint register. Since 2014, only one formal complaint has been lodged in relation to Angus Place Mine. This complaint (registered in 2014) related to low frequency noise.

Angus Place Mine has continued to meet safety and environmental regulations during the care and maintenance period to enable the site to be appropriately maintained to facilitate future reopening.

2.5 EXISTING VOLUNTARY CONTRIBUTION ARRANGEMENTS

Centennial, through Angus Place Mine has more than 15 years of continued support to the Lithgow area and surrounding communities through the sponsorship of local organisations, schools, and events, as well as providing local employment opportunities.

Annual Voluntary Contributions
Centennial makes an annual voluntary financial contribution to LCC of three cents per saleable tonne of coal produced from the Springvale, Angus Place and Airly Mines, up to a maximum of $200,000 per annum.

In 2016, LCC resolved to allocate Centennial funds as follows:

- Construction of an adventure playground ($120,000). This was completed in March 2019;
- Scholarships for young people and children ($10,000); and
- Lithgow Library Homework Zone ($10,000).

From 2019, Centennial contribution funds received by LCC will be applied to offsetting loan funds raised to undertake a range of projects.

Sponsorship and Donations

In the Lithgow LGA Centennial contributes financially to community events. Centennial also makes financial contributions to the value of the amount of money raised through worker driven fundraising campaigns. Many SIA consultation participants who reside in Wallerawang and Lidsdale commented on the important contributions Centennial makes to the local area. These contributions include:

- Significant fundraising initiatives to support areas of need in the proximate communities. One example given during SIA consultation was the provision of funds by Centennial to a local family who required extensive medical treatment in Sydney; and
- Fundraising initiatives to support key events.

Workforce Voluntary Contributions

Centennial workforces across the Lithgow LGA also make significant financial and in-kind voluntary contributions to their proximate communities. As one Centennial employee noted '*we work and live together, we support each other*'. During SIA consultation a number of Wallerawang residents commented on the extent to which the Springvale employees and prior to 2015 the Angus Pace employees, contributed to the community citing:

- Voluntary hours at community organisations and events. During focus groups undertaken to inform a research report into the impact of the Springvale Mine stand down in 2016 (AIGIS Group, 2017) 161 respondents (approximately 62% of respondents) reported a total of 288 involvements with various service, community, sports, social and cultural organisations in the areas in which they reside;
- Assistance to other employees and their families. One example given during SIA consultation was the provision of funds towards medical and mental health support; and
- Provision of funds to broader community upon application.

3 SIA METHODOLOGY

This section presents a detailed description of the SIA methodology including SIA consultation. A description of the EIS consultation undertaken by Centennial is provided in the APR.

3.1 OBJECTIVES

The objectives for this SIA were to:

- Identify the social area of influence of the project;
- Implement an inclusive stakeholder engagement process that informs the social baseline, the impact and opportunities assessment and the development of mitigation measures;
- Develop a comprehensive baseline of social conditions in the project's social area of influence based on research, analysis and stakeholder engagement;
- Undertake preliminary assessment (scoping) of the project's social impacts and opportunities for the social area of influence, in order to ensure the assessment is focused on material effects on the social environment;
- Identify potential direct, indirect and cumulative social impacts and opportunities of the project for the social area of influence;
- Provide a detailed assessment of the 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; and
- Develop strategies to avoid and/or mitigate social impacts, and actions which would enhance social benefits.

3.2 SIA METHODOLOGY

A best practice approach has been adopted for the SIA, that integrates international and NSW social guideline requirements. Table 4 provides a summary of the SIA methodology against key phases in the SIA process.

Table 4
SIA Approach and Methodology

Phase	Methodology
Phase 1 – Preparation	
Development of stakeholder engagement strategy	• Initial stakeholder identification and analysis. • Preparation of Stakeholder Engagement Plan (SEP).

Phase	Methodology
Define social area of influence	Review of project components, corporate policies and guidelines, and analysis of background material to define the project's social area of influence.
Phase 2 – Community Profiling	
Socio-demographic analysis	Analysis of Australian Bureau of Statistics (ABS) Census data and other relevant social and community indicators and data sets to develop a detailed social profile of the communities of interest (Wallerawang-Lidsdale, Portland and Lithgow). Areas of community vulnerability have been identified through demographic analysis of particular indicators. Review of socio-economic statistics relevant to the Indigenous community.
Analysis of historic and contemporary issues and opportunities	Literature review (including review of local media) and analysis of historical accounts of the region to understand previous and emerging issues and opportunities within the community, as well as Angus Place Mine. Engagement (Section 3.3) with select stakeholders from nearby communities to inform historic analysis and validate historic issues and opportunities.
Guidelines analysis	Review corporate and operational standards, policies and programs relevant to the SIA.
Phase 3 – Scoping of Impacts and Opportunities	
Scoping of impacts and opportunities	Stakeholder engagement (Section 3.3) including: • Face-to-face and telephone interviews with residents of Wallerawang-Lidsdale and broader Lithgow LGA; and • Community information sessions to allow input from landholders in proximity to the PAA and wider community on the impacts and opportunities of the project. Review of Centennial complaints register for various mining operations in the Lithgow LGA including Angus Place Mine and Springvale Mine. Review of submissions received in response to the public exhibition of the original Angus Place Mine Extension EIS and other proposed projects in the local area including Springvale Coal Project and modifications, and Springvale Water Treatment Project and modifications. Analysis of relevant media including coverage of the cessation of mining at Angus Place in 2014, the closure of WPS, and the 2016 Springvale stand down event. Review and analysis of the findings of broader Centennial EIS engagement data.
Phase 4 – Assessment of Impacts and Opportunities	
Analysis of impacts and opportunities	Review and analysis of historical responses by nearby communities (Wallerawang-Lidsdale and Portland) to mining. Review of relevant case studies e.g. the cessation of mining at Angus Place in 2014, the closure of WPS, and the 2016 Springvale stand down event. Prediction of social impacts associated with the project.

Phase	Methodology
Phase 5 – Identification of Management and Enhancement Strategies	
Social impact management	Identification and development of strategies to address predicted project impacts and enhance opportunities.
Phase 6 – Significance Assessment	
Social risk matrix	Analysis of social impact significance.

3.3 STAKEHOLDER ENGAGEMENT

This section provides a description of the stakeholder engagement undertaken to inform the SIA.

3.3.1 Engagement Objectives

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

- Collect and validate quantitative and qualitative data for the social baseline;
- Ensure key stakeholders 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 opportunities; and
- Ensure that the assessment and evaluation of impacts were informed by the knowledge and experience of local stakeholders.

3.3.2 Participants/Key Stakeholders in the SIA

Key stakeholders for SIA consultation were identified during Phase 1 (Table 5). Additional stakeholders were identified and engaged with as the SIA progressed.

Table 5
Key Stakeholders for SIA Consultation

Stakeholder Categories	Stakeholder Groups
Proximal landholders and residents	• Landholders and residents residing within and in proximity to the PAA in the State Suburb (SSC)[2] of Lidsdale.
Nearby communities	• Community stakeholders and residents (elected representatives, community groups, service providers, business) in the nearby communities of Wallerawang and Portland including: – Wallerawang/Lidsdale Progress Association; and – Wallerawang Public School.
Broader LGA	• Community stakeholders and residents in the wider Lithgow LGA (local government, elected representatives, business, community groups and residents) including: – LCC representatives; – Lithgow Chamber of Commerce; – Lithgow sport and recreation groups e.g. Central Tablelands Mountain Bike Club, 4WD Newnes Plateau user groups etc; and – Non-government organisations (NGOs) including environmental groups.
Indigenous stakeholders	• Registered Aboriginal Parties (RAPs), Wiradjuri People and indigenous service and groups including the Mingaan Wiradjuri Aboriginal Corporation[3].

3.3.3 SIA Consultation Scope

This section describes the scope of stakeholder consultation undertaken by Hansen Bailey between August and October 2019 to inform the SIA. The findings of SIA engagement were supplemented by engagement undertaken by Centennial. Table 6 describes the scope of SIA consultation.

The purpose of SIA consultation was to validate social baseline data, understand community values and aspirations, and inform an understanding of the different stakeholder perceptions of the project. A diverse range of engagement methods (i.e. interviews, face-to-face meetings, telephone discussions and community information sessions) were utilised to gain an understanding of the communities of interest.

SIA consultation included 14 face-to-face interviews with a total of 23 participants.

[2] State Suburbs (SSC) are an ABS approximation of Gazetted Localities, created by allocating one or more Mesh Blocks. State Suburbs are created to enable the release of ABS data on areas that, as closely as possible, approximate Gazetted Localities.
[3] Note that this refers to those Indigenous stakeholders consulted as part of the SIA regarding social issues, not those consulted as part of the Aboriginal Cultural Heritage Assessment program.

Table 6
SIA Consultation

Engagement Method	Description
Face-to-face interviews	• Four interviews conducted with proximal landowners and 2 interviews conducted with residents of nearby communities. • One interview each with: – Local environment Non-Government Organisation (NGO); – President of the Wallerawang-Lidsdale Progress Association; – Principal of Wallerawang Public School; – Central Tablelands Mountain Bike Club; and – Representatives of the Mingaan Wiradjuri Aboriginal Corporation. • Three interviews with local business representatives (who are also residents of nearby communities).
Telephone interviews	• One interview with proximal landowner. • One interview each with: – Lithgow Chamber of Commerce; and – LCC Councillor.
Community information sessions	• Centennial facilitated three community information sessions at the Wallerawang Public School between 17-19 October. The purpose of these sessions was to share information about the project and other Centennial projects in the western region and to provide a forum for feedback. • The SIA project team attended the community information session held on Thursday 17 October. SIA interviews were conducted with a number of attendees.
Letterbox drop	• An invitation seeking resident participation in SIA interviews was letter box dropped by Centennial to proximal neighbours located on Wolgan Road and in Lidsdale village area. The letter of invitation included details of the SIA and the name and contact details for Hansen Bailey SIA specialists.

3.3.4 Centennial Stakeholder Engagement

Table 7 provides a summary of the consultation undertaken by Centennial in parallel with the preparation of the SIA. The findings of this consultation have informed the SIA.

Table 7
Centennial Stakeholder Consultation

Stakeholder	Meeting Date	Description
Department of Planning, Industry and Investment (DPII)	23 October 2018	Presentation to the Department of Planning on proposed changes to the project.
	5 December 2018	Presentation to DPE regarding mine plan options for the project.
	5 February 2019	Presentation to the Department of Planning on outcomes of mine plan options investigations

Stakeholder	Meeting Date	Description
		for the project and preferred mine plan to progress.
	18 April 2019	Submission of request to DPIE to progress the project through an APR.
	23 October 2010	Formal response from DPIE regarding acceptance of an APR approach.
Department of Environment and Energy	24 July 2019	Presentation on background to Springvale and Angus Place Mine projects and proposed pathway forward with the project.
	6 September 2019	Submission of a referral variation request in accordance with the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).
Western Region Combined CCC	17 November 2017 10 April 2018 13 November 2018 9 April 2019 21 August 2019[1]	General updates on Centennial operations. Extra-ordinary meeting held 21 August to discuss project in detail.
Western Aboriginal Cultural Heritage Committee	7 November 2018 15 May 2019	General updates about the project and survey methodology.
Lithgow Environment Group (LEG)	14 March 2018	Meeting to update on Centennial projects.
Colong Foundation	23 March 2018 2 May 2019	Specific meeting to discuss the project.
LEG and Blue Mountains Conservation Society (BMCS)	5 June 2018 18 July 2018	NGO meeting with LEG and BMCS to discuss Centennial projects including the project.
Garden of Stone Alliance (GSA), Colong Foundation, BMCS, LEG	27 June 2019	Briefing to discuss the project.
LCC and Colong Foundation Briefing	11 June 2019	Facilitated meeting for Colong Foundation to meet with LCC to discuss Destinations Pagoda and project.
Wallerawang/Lidsdale Progress Association	6 August 2019	Discuss the project and Swamp Offset Strategy.
Western CCC Chairs	2 September 2019	Meeting with the Chairs of the Clarence Mine CCC and the Western Region Combined CCC to discuss the project and Swamp Offset Strategy.
MPPS Community Representative	2 September 2019	Discuss the project and Swamp Offset Strategy.
Lithgow/Oberon Landcare	3 September	Discuss the project and Swamp Offset Strategy.
LCC	Multiple dates	
Construction Forestry Maritime Mining Energy	3 September	

Stakeholder	Meeting Date	Description
Union (CFMEU) and Lodge Officials		
Lithgow National Trust	18 September	
Community Information Sessions	17-19 October	General information about Centennial with a focus on the project.

Notes:

1. Extra-ordinary meeting specific to the revised mine design for the project.

4 SIA SCOPING

This section describes the geographic setting of the project, defines the social area of influence, and presents the outcomes of the preliminary scoping of the project's social impacts and opportunities. Scoping has ensured that the SIA is focused on the material effects of the project on the social environment.

4.1 GEOGRAPHIC SETTING

4.1.1 Regional Setting

Central West Region

The project is located within the Central West Region (CW Region) of NSW. The CW Region consists of the LGAs of Bathurst Region (Bathurst), Blayney, Cabonne, Cowra, Forbes, Lachlan, Lithgow, Oberon, Orange City (Orange), Parkes and Weddin.

In 2016, the CW Region had a population of 285,500 people with forecast growth to 308,950 people by 2036 (Department of Planning and Environment, 2017a). Dubbo, Orange and Bathurst are the largest regional cities within the CW Region. The CW Region also includes the strategic centres of Lithgow, Mudgee and Parkes.

The CW Region has a diverse economy based on agriculture, viticulture, tourism, coal and mineral resource activity and manufacturing. Resource exploration and mining exploration and operations (gold, silver and coal) are existing activities within the CW Region. Coal exploration and mining activity is focussed predominantly in the eastern and north-eastern portions of the CW Region within Lithgow LGA and the Orana Region within the Mid-Western LGA.

Lithgow LGA

The project is located within the Lithgow LGA. The Lithgow LGA covers an area of approximately 4,567 km^2 and adjoins the LGAs of Oberon Shire, Bathurst, Blue Mountains, Mid-Western Regional, Singleton and Hawkesbury. Settlement is focussed in the urban centre of Lithgow and the smaller townships of Wallerawang and Portland. There are also numerous mining and farming villages including Capertee and Ben Bullen scattered across the Lithgow LGA (Figure 1 and Figure 3). An estimated two thirds of the LGA is National Park or State Forest (Lithgow City Council, 2018b).

In 2018, Lithgow LGA had a population of 21,638 people (Profile ID, 2018). Lithgow LGA is widely recognised as a 'mining town', with economic outputs largely stemming from both mining and power generation. The link between the two key regional industries of mining and power generation is discussed in detail in the *Lithgow Regional Economic Development Strategy 2018-2022* (Lithgow City Council, 2018).

The area is also developing as a tourist destination due to its strong industrial heritage and environmental attributes e.g. Newnes Plateau, Wolgan Valley and Gardens of Stone National Park (GSNP). Lithgow is also growing in popularity as a residential location due to desirable residential values i.e. housing affordability (Lithgow City Council, 2018a).

Table 8 lists the approximate distances and commuting times from the PAA to the proximal townships and surrounding larger settlements in the Lithgow LGA and adjoining LGAs. The townships of Wallerawang and Portland, and the city of Lithgow are located in close proximity to the PAA (Figure 3). Wallerawang and Portland comprise small resident populations (<2000) in comparison to Lithgow[4], the regional centre for the Lithgow LGA, with a resident population of 11,530 people.

Table 8
Distance and Commuting Time from the Angus Place Mine Pit Top

Township	Distance	Commute Time	Route
Wallerawang	7 km	8 mins	Castlereagh Highway.
Portland	13 km	15 mins	Castlereagh Highway and Boulder Road.
Lithgow City	18 km	17 mins	Castlereagh Highway and Great Western Highway.
Bathurst	60 km	47 mins	Range Rd and Great Western Highway.
Katoomba	55 km	49 min	Great Western Highway.
Mudgee	110 km	1 hour 20 mins	Castlereagh Highway.

Source: (Google.com, 2019)

4.1.2 Local Setting

This section describes the setting of the PAA with reference to key land use, sensitive receptors and proximate communities.

Landuse within the Project Application Area

The PAA is located in the catchments of the Coxs River and Wolgan River. The Angus Place Mine pit top, coal handling and transport infrastructure, and the underground mined areas from the previous workings of Angus Place Mine are all located within the PAA (Figure 4). Most of the land surface within the PAA and its environs lies within the Newnes Plateau, which forms part of the NSF. Topography within the Newnes Plateau comprises narrow gorges with high undulating ridgelines and sandstone cliffs. Further description of Newnes Plateau and the NSF is provided in Section 5.2.3.

[4] Defined by the boundary of the ABS geographic area Lithgow Urban Centre Locality (UCL)

Surrounding Land Use

The PAA is bordered by NSF to the east, Springvale Mine to the south-west, Lidsdale village to the south, the GSNP to the north and pastoral land to the west (Figure 4). Land to the east and south of the PAA has been subject to extensive mining operations in the past, with a number of active or completed mines in the vicinity, including Centennial's existing operations (Section 5.2.4).

The Lidsdale Siding (Figure 3) is located at Wallerawang and has been used as a coal storage and rail loading facility since 1974 to distribute coal by rail from Centennial's western region mines to ports on the NSW coast. The decommissioned WPS is also located at Wallerawang adjacent to the Castlereagh Highway (Figure 3). MPPS and Centennial's Springvale Coal Services site is located approximately 7.5 km to the north of the intersection of Wolgan Road and the Castlereagh Highway at Lidsdale (Figure 3).

The residential area of Lidsdale is located to the immediate south and west of the southern boundary of the PAA on Wolgan Road, and approximately 4 km to the south of the Angus Place Mine pit top (Figure 3 and Figure 4). The nearest significant urban centre is Lithgow City, the seat of the LCC and administrative centre for the Lithgow LGA (Figure 3).

Nearest Sensitive Receptors

There are a number of sensitive rural residential and recreational receptors located within and nearby the PAA. The following sensitive receptors are within the PAA:

- A small number of rural residential properties are located along Wolgan Road to the north and south of the Angus Place Mine pit top, and in the Upper Wolgan Valley; and
- A number of recreational receptors located on the Newnes Plateau, such as areas used for sightseeing and camping.

The locations of the nearest sensitive areas have been identified with reference to *Places to Visit on the Newnes Plateau* (Blue Mountains Conservation Society and Colong Foundation for Wilderness, 2009). It should also be noted that any of the roads or tracks within or surrounding the PAA could potentially be utilised for recreational purposes.

The location of sensitive residential and recreational receptors proximate to the PAA are described and illustrated in Section 2.2 of the *Noise and Vibration Impact Assessment* (NVIA) (EMM, 2019a).

4.1.3 Nearby Mining and Energy Operations

There are a number of historical and existing mining and power operations in close proximity to the PAA, most of which are owned by Energy Australia (EA) or Centennial.

Energy Australia

EA operates a number of coal-fired and gas-fired power plants across Australia, as well as an increasing number of renewable energy plants such as wind, solar and batteries (Energy Australia, 2019). Within the Lithgow LGA, EA owns and operates the MPPS, and owns the decommissioned WPS.

MPPS is a coal-fired power station which uses black coal typically sourced from the nearby Centennial mines, of which Springvale Mine is the primary provider. MPPS is responsible for supplying a considerable portion of NSW's electricity e.g. 15% ultimately powering over 1 million homes per year (Energy Australia, 2019). MPPS is schedule to be decommissioned in 2053.

The decommissioned WPS commenced operations in 1957 and closed in 2014. WPS also sourced coal from nearby operating coal mines, with a large proportion sourced from the then operational Angus Place Mine. The WPS is currently being dismantled and EA is investigating alternative uses for the site and infrastructure.

Centennial Mining Operations

Centennial owns five operating coal mines across NSW, three of which are located in the Lithgow LGA (Table 9). These mining operations include Springvale Mine, Airly Mine, and Clarence Colliery, located approximately 6 km, 37 km, and 30 km respectively from the PAA. Centennial is responsible for supplying approximately 40% of NSW's coal-fired electricity generation. Within the Lithgow LGA Centennial also own and operate Lidsdale Siding and Springvale Coal Services. Springvale Coal Services is the coal handling and processing facility for Springvale Mine. Springvale Coal Services also receives coal from other Centennial mines across the Lithgow LGA. Approximately 1,600 people are employed by Centennial (Centennial Coal, 2019), with an estimated 1,198 workers employed across operations in the Lithgow LGA (Table 9).

Table 9
Centennial Mines and Infrastructure in Lithgow LGA

Mine Name	Status	Approved Staffing (including contractors)	Consent Expiry
Airly Mine	Operating	120	31/01/2037
Clarence Mine	Operating	300	31/12/2026
Springvale Mine	Operating	450	31/12/2028
Springvale Coal Services	Infrastructure	18	30/06/2039
Lidsdale Siding	Infrastructure	10	31/12/2042
Angus Place Mine	Care and Maintenance	300	18/08/2024
Charbon Mine[1]	Undergoing Rehabilitation	143	31/08/2025

Source: (Lithgow City Council, 2018), *Note: 1. Charbon Mine is located in the Mid-Western Regional LGA*

4.2 AREA OF SOCIAL INFLUENCE

The social area of influence of the project consists of the people that will potentially be impacted (adversely or positively) by project activities. The various components of the project's social area of influence are described in the following sections.

4.2.1 Primary Social Area of Influence

The project's primary social area of influence is the area within and adjoining the PAA. The PAA covers an area of approximately 10,551 ha. For the purpose of the SIA, the primary social area of influence has been defined by the combined boundary of the ABS SSC of Lidsdale and Newnes Plateau (Figure 3). This area includes land within and adjoining the PAA. ABS 2016 Census records indicate the presence of a resident population in the Lidsdale SSC only. This is because the Newnes Plateau SSC consists entirely of the NSF and portions of the GSNP and the Wollemi National Park. The GSNP adjoins the northern boundary of the PAA.

The inclusion of Lidsdale and Newnes Plateau SSC's in the project's primary social area of influence reflects the potential for:

- Residences along Wolgan Road to experience amenity changes due to increased vehicle traffic on Wolgan Road;
- Near neighbours and residents of the broader Lidsdale SSC to experience amenity impacts due to the recommencement of coal handling and processing at Angus Place; and
- The construction and operation of surface infrastructure on Newnes Plateau to impact the passive and active use of small isolated areas of the Newnes Plateau.

4.2.2 Secondary Social Area of Influence

A secondary social area of influence extends south west of the PAA to include the community of Wallerawang (Wallerawang SSC), west to include the community of Portland (Portland SSC) and north into the rural area of the Wolgan Valley along Wolgan Road.

The inclusion of the Wallerawang SSC and Portland SSC in the secondary social area of influence reflects the:

- Strong social and economic linkages that exist between Lidsdale, Wallerawang and Portland are attributable to the long-term presence of mining and power generation industries in the local area; and
- Popularity of the communities as residential locations for employees of the surrounding mining industry.

Lidsdale, Wallerawang and Portland have also regularly benefited from financial and in-kind support from Centennial and the workforces associated with their mining operations. Wallerawang also has a business and industry sector with strong supply linkages to the mining industry. Lidsdale, Wallerawang and Portland are also likely to be a source of labour for the project, with an estimated 20% of the workforce anticipated to be drawn from these communities and more than 70% of the workforce anticipated to be drawn from within the Lithgow LGA (Section 2.2.3).

The inclusion of Wolgan Valley recognises the project's potential to impact environmental features outside the PAA (Wolgan River and Carne Creek (Figure 4)) that are valued by business operations (Wolgan Valley One & Only) and residents in the Wolgan Valley.

Wallerawang, Lidsdale and Portland are the primary communities of interest for the consideration of social impacts. The location of these communities, as represented by their SSC boundaries are illustrated in Figure 3, with social baseline information presented in Section 5. Wallerawang and Lidsdale (Wallerawang-Lidsdale) is treated as one community due to the proximity of the settlements to each other and their shared settlement history (Section 5.3.1).

4.2.3 Regional Social Area of Influence

The Angus Place Mine is located within the Lithgow LGA (Figure 1). The regional area of social influence is therefore defined as the Lithgow LGA with a focus on the regional centre of Lithgow. Initial scoping suggests a low risk of social impacts accruing to Lithgow and the broader Lithgow LGA due to the presence of:

- A skilled labour pool in the Lithgow LGA and a resulting low likelihood that the project will draw new residents to the LGA; and
- Existing supply arrangements with the Springvale Mine, the loss of which will be offset by new supply arrangements associated with the project.

However, should the project not proceed, the cessation of mining at Springvale Mine is likely to have significant and long-term social and economic impacts on Lithgow and the broader LGA. The impact of the project not proceeding is discussed in the EcIA (AIGIS Group, 2019) and in Section 6.3.

The Lithgow LGA is a component LGA of the CW Region. The project's regional social area of influence also extends to the CW Region. Impacts and benefits such as State revenue and Gross Domestic Product (GDP) are captured within the EcIA (AIGIS Group, 2019).

The social impacts and benefits of large projects may extend across NSW. The SIA acknowledges the potential for economic opportunities and development, as well as

community wellbeing benefits for NSW. The EcIA (AIGIS Group, 2019) provides a detailed description of the economic benefits to the local and regional areas.

Detailed analysis of broader and State wide economic benefits is not a key focus for the SIA, however, recognition of these benefits and impacts is a key consideration when discussing the distributive social equity of the project and the impact of the project not proceeding and the cessation of mining at Springvale Mine.

4.2.4 Indigenous Areas

As noted in Section 5.4, the project is located in the traditional country of the Wiradjuri People. Wiradjuri People reside across the Lithgow LGA and neighbouring LGAs. The project has the potential to result in social impacts and opportunities for the Wiradjuri People.

4.3 STATISTICAL GEOGRAPHY

Table 10 summarises the statistical geography used within the SIA. ABS and Profile ID statistical geography which corresponds to the local and regional communities in the project's social area of influence are referenced in the SIA. Data are provided for Urban Centre Localities (UCL), SSC,'s districts, LGAs and the Statistical Area 4 (SA4) Region.

Table 10
Study Area Statistical Geographies 2016 and Report Terminology

Local Communities		LGA and Regions	
ABS Terminology	**Report Terminology**	**ABS Terminology**	**Report Terminology**
Lithgow City UCL (UCL 113011)	Lithgow City	Lithgow LGA (LGA14870)	Lithgow LGA
Lidsdale SSC (SSC12318)	Lidsdale	Central West SA4 (SA4 103)	CW Region or CW SA4
Wallerawang SSC (SSC14114)	Wallerawang SSC or Wallerawang		
Portland SSC (SSC13250)	Portland SSC or Portland		
Wallerawang – Lidsdale District[1]	Wallerawang – Lidsdale[1]		

Notes:
1. This is the combined area of the Wallerawang SSC and the Lidsdale SSC.

The district boundary for Wallerawang-Lidsdale described in Table 10 aligns with the district area defined by profile.idcommunity[5].

[5] Profile.idcommunity is a suburb-based community profiling system that delivers profiles in public websites, branded profile.id for anyone to access. LCC has subscribed to the service and therefore a range of demographic and socio-economic data is available for defined districts within the Lithgow LGA.

ABS statistical geography data is also supplemented where necessary with available postcode data from RESIDEX. Postcode data is provided for the postcode areas of Lithgow (2790), Portland (2847) and Wallerawang (2845).

4.4 STAKEHOLDER INPUTS TO SIA SCOPE

A range of stakeholder information informed the scope of the SIA. Information included:

- The findings of SIA consultation;
- Minutes of the Western Regional Combined CCC;
- Analysis of complaints and grievances data for Centennial operations in the Lithgow LGA; and
- Submissions received in response to the public exhibition of the 2014 EIS for the project.

4.4.1 SIA Consultation

The potential social impacts and opportunities identified through SIA consultation included:

- Concern in relation to the potential loss of local and regional social and economic benefits currently derived from Springvale Mine due to any cessation of mining activity in the absence of approved operations at Angus Place;
- Continuation in the flow of direct and indirect employment and economic benefits derived from Centennial Mining activities to the nearby communities of Wallerawang-Lidsdale, Portland and the broader Lithgow LGA;
- Continuation of Centennial and workforce voluntary contributions to the community through sponsorship and donations;
- Concern that the project may lead to subsidence and fracturing of the bedrock of Wolgan River, Carne Creek, minor cliffs and the draining of Tri Star Swamp and Twin Gully Swamp resulting in the permanent loss of some valued environmental assets;
- Concern that subsidence may result in damage to the valued cliffs and pagodas on Newnes Plateau, reducing visual amenity for passive and active recreational user groups;
- Concern that project related surface water discharge may impact the quality of water in waterways within and adjoining the PAA;
- Increased vehicle traffic on State Mine Gully Road and connecting roads on the Newnes Plateau during construction;
- Impacts to recreational amenity in the Newnes Plateau within the PAA due to construction traffic, noise, dust and temporary access restrictions in discrete and isolated areas, for user groups of Newnes Plateau;

- Amenity benefits associated with the removal of coal haulage trucks from a decrease in truck movements; and
- Potential for impact on local Indigenous cultural heritage values and artefacts identified in the PAA.

Several participants in SIA consultation also discussed economic transition across the Lithgow LGA in the context of the project. These participants acknowledged that:

- The Lithgow LGA is slowly transitioning away from mining to a more diversified economy; and
- While the mining industry in the Lithgow LGA has a limited life, it remains a key industry in the LGA economy.

Some participants suggested that the timeframe of the project presents an opportunity to assist the LCC to plan for economic transition.

4.4.2 Western Region Combined Community Consultative Committee

The Western Region Combined CCC meeting minutes were reviewed for references to Angus Place Mine. Issues and concerns raised regarding Springvale Mine were considered in this assessment due to the planned interactions between the mine and Angus Place Mine. To date, a wide range of information and project updates has been presented through the CCC platform. Key concerns raised in CCC meetings from 2014 onwards include public safety impacts from increased traffic movements on the local road network, water quality impacts from discharged water into nearby waterways including the Wolgan River (Figure 3), and environmental concerns in relation to subsidence (Centennial Coal, 2018).

4.4.3 Complaints Analysis

Complaints registered to Centennial between 2013 and 2014 for operations in the Lithgow LGA were analysed to identify potential project related impacts. As previously discussed, complaints received in relation to the Springvale Mine operation where also reviewed.

4.4.4 EIS Submissions

Social impact scoping was also informed through a review of the issues raised in submissions received in response to the public exhibition of the 2014 EIS for the project. 400 public submissions and 14 submissions from organisations were received in response to the 2014 EIS. Submissions were both in support of and objection to the project.

The majority of the submissions objecting to the project raised concerns in relation to the potential subsidence impacts of the project on local swamp and creek systems within the Newnes Plateau.

Subsidence impacts were raised in the context of the existing subsidence impacts at the adjoining Springvale Mine operation. Submissions also raised concern in relation to potential impacts to the adjoining GSNP (NSW Government, 2019).

Following the preparation and distribution of the RTS Document for the 2014 EIS, nine submissions were received from government agencies in relation to the 2014 project. Agency submissions commented on the proposal for Centennial's connection to LCC services i.e. sewerage services, and expressed traffic concerns, and concern in relation to the potential for increased salinity in Sydney catchments due to mine discharge i.e. within Coxs river.

4.5 MATTERS CONSIDERED

The SIA has considered the impacts and opportunities of the project against the relevant impact categories identified in the NSW SIA Guideline (Table 11).

Impacts have been considered for two scenarios:

- Base case – the project is not approved and Springvale Mine ceases operations by 2024; and
- Preferred case – the project is approved enabling the recommencement of operations at Angus Place Mine in parallel with the cessation of mining at Springvale Mine.

Table 11
SIA Potential Matters Considered

SIA Impact Categories	Potential Impacts and Opportunities Considered
Way of life	• In the absence of project approval, the impact of a cessation in the flow of economic and social benefits from Springvale Mine to nearby communities e.g. Wallerawang. • Housing market impacts.
	• Continuity of employment and supply chain arrangements. • Interruptions to the passive and active use of natural areas e.g. Newnes Plateau. • Reduction in residential amenity due to traffic noise associated with operations. • Livelihood impacts resulting from project induced changes in environmental quality e.g. water quality and quantity in Wolgan River.
Community	• Changes to the character and cohesion of nearby communities' if the project is not approved and Springvale Mine closes.
	• Potential interaction with long term economic development plan for Lithgow LGA.
Access to and use of infrastructure, services and facilities	• The withdrawal of benefits in the event that the project is not approved and mining ceases at Springvale Mine. Donations to and use of services and facilities will decrease.
	• Continuation of corporate and workforce facilitated financial and in-kind support of nearby communities through sponsorship and donations.
Culture	• Changes in the identity of nearby communities e.g. Wallerawang due to cessation of mining activity at Springvale Mine and Angus Pace Colliery.
	• Effects on community values such as sense of place and appreciation of environmental qualities. • Impacts and benefits relevant to Indigenous community values including connection to country. • Reduction or loss of intrinsic environmental values present on Newnes Plateau. • Potential impacts to culturally significant land and/or artefacts.
Health and wellbeing	• Changes in health and wellbeing (i.e. physical and mental health) for direct Springvale Mine employees and family, suppliers and business and services in nearby communities due to closure of Springvale and uncertainty around operation of Angus Place Mine.
Surroundings	• Impact on access to, and use of, ecosystem services[6], public safety and security, the natural and built environment, and its aesthetic value and/or amenity. • Increased traffic in the local and regional area of influence. • Impacts to valued environmental attributes (e.g. creek systems, cliffs and swamps) due to subsidence and surface water discharge.

[6] Ecosystem services are the direct and indirect benefits provided to humans through ecosystems.

SIA Impact Categories	Potential Impacts and Opportunities Considered
Personal and property rights	• Potential for noise, dust and/or traffic to impact on local amenity values. • Disruption to the existing access and use of the local area and surrounds i.e. Newnes Plateau and GSNP.
Decision-making systems	• Potential for development to conflict with community priorities.
Fears and aspirations	• Community concern that the development will not proceed.
	• Community concern for valued environmental assets and the future of assets. • Concern for reliance upon the development.

4.6 LINKS TO TECHNICAL REPORT FINDINGS

The SIA draws on the outcomes of the APR technical assessments including air quality, noise, traffic, cultural heritage (Indigenous and historic), groundwater and surface water, subsidence and economic impacts, as summarised in Table 12 and detailed in Section 6.2.

Table 12
EIS Findings

Study	Consideration in SIA
Aboriginal and Cultural Heritage	Cultural Heritage assessment including archaeological surveys and Aboriginal community consultation has been undertaken as part of the APR. The SIA acknowledges the Aboriginal cultural values as identified in *Cultural Heritage Impact Assessment* (CHIA) (Niche Environment and Heritage, 2019), 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. There were no Historical Heritage sites located within the PAA.
Economic Values	The SIA considers the social benefits that attach to economic benefits, e.g. the continuation of existing relationships with local and regional businesses, and households' wellbeing as a result of ongoing employment. With respect to economic benefits (including taxes, royalties, GRP and indirect employment) at local, regional or broader levels, the SIA defers to the EcIA (AIGIS Group, 2019).
Environmental Values	Environmental conditions such as subsidence, surface water, groundwater, noise levels, traffic volumes and air quality have the potential to affect the social environment with respect to livelihood, health, amenity, social character, lifestyle and safety. The SIA draws on the outputs of the *Air Quality Impact Assessment* (AQIA) (EMM, 2019b), *Noise and Vibration Impact Assessment* (NVIA) (EMM, 2019a), *Traffic Impact Assessment* (TIA) (EMM, 2019), *Subsidence Predications and Impact Assessment Report* (SPIA) (Mine Subsidence Engineering Consultants, 2019), *Surface Water Impact Assessment* (SWIA) (Jacobs, 2019), *Groundwater Impact Assessment* (GWIA) (Jacobs, 2019a) and the *Swamp Offset Strategy* (Centennial Coal, 2019a).

4.7 IMPACTS AND OPPORTUNITIES SCOPING

Preliminary scoping of social impacts and opportunities was undertaken in order to identify the matters material to the consideration of impacts and opportunities i.e. the focus of the investigation.

4.7.1 Preliminary Scoping Outcomes

The outcomes of the social impact and opportunities scoping exercise are presented in Appendix B. Appendix B details the preliminary impacts and opportunities of the project, and includes:

- Project components which may affect or change the social environment;
- Assumptions about project components;
- Potential direct social impacts and opportunities considered; and
- Preliminary assessment of the likely impacts, considering duration, likelihood, impact and impact type.

4.7.2 Focus for Investigation

Table 13 summarises the focus areas for the SIA including potential impacts that were considered, investigations that were conducted and the corresponding SIA section where each impact is addressed. These focus areas reflect the outcomes of the preliminary scoping assessment. For example, the SIA does not include a detailed assessment of the impacts of the project on housing market dynamics in the nearby communities or the broader Lithgow LGA. This is because housing impacts were not considered material to the assessment of social impacts given the key workforce sourcing assumptions for the project i.e. the majority of operations workforce will be sourced from the existing pool of labour within the Lithgow LGA.

Section 6 provides a detailed assessment of the potential project impacts and opportunities.

Table 13
Focus Impact Areas for Investigation

Potential Key Impact Areas	Summary of Investigations Conducted	SIA Section Reference
Way of life • Employment and local procurement opportunities.	• Analysis of employment and labour force participation, as well as various economic strength indicators of the Lithgow LGA. • Identification of greater opportunities for local supply and local business involvement.	Section 5 and Section 6

Potential Key Impact Areas	Summary of Investigations Conducted	SIA Section Reference
• Potential for impact on public space access.	• Analysis of likely workforce and resident locations, housing indicators and the housing market.	
Way of life/Fears and aspirations • Impact of project not proceeding and cessation of mining at Springvale Mine.	• Identification and consultation in relation to potential loss of sense of place/culture and generational experience with mining. • Identification of historical impacts associated with Angus Place mine closure, closure of WPS and the temporary Springvale Mine stand down. • Employees' residential locations and labour force structure. • Job stress and uncertainty. • Regional economic industry dependency and resilience. • Consideration of potential impacts to the operation of MPPS.	Section 4, Section 5 and Section 6
Community/ Decision-making • Project interaction with nearby community. • Impacts to identity and sense of place.	• Identify workforce interaction with local community i.e. Springvale Mine, Angus Place Mine pre care and maintenance. • Confirm workforce contributions and any volunteering and/or contributions by workforce personnel. • Review historical accounts and literature in relation to Lithgow's history as a mining town. • Explore linkages between community identity and mining. • Explore linkages between nearby communities.	Section 4, Section 5 and Section 6
Access to and use of infrastructure, services and facilities • Impact of project not proceeding.	• Workforce residential locations assumptions. • Existing provision of health, education and emergency services. • Analysis of service stability. • Consultation with Wallerawang Public School and Portland School.	Section 2, Section 4 and Section 5
Culture/Surroundings • Impacts on intrinsic cultural and environmental values. • Impacts to land appreciation and use.	• Review of CHIA findings and cultural impacts. • Engagement with Registered Aboriginal Party (RAP) members. • Consider potential for impacts on connection to land, sense of place and environmental values. • Consider potential for impacts to user groups of the land i.e. Newnes Plateau.	Section 4, Section 5 and Section 6
Health and wellbeing • Impacts to physical and mental health.	• Reference to EIS technical report findings i.e. NVIA, AQIA, SPIA, SWIA, GWIA, *Biodiversity Impact Analysis* (BIA) (RPS, 2019). • Consideration of the health and wellbeing impacts associated with the project not proceeding in tandem with the cessation of mining at Springvale Mine.	Section 5 and Section 6

Potential Key Impact Areas	Summary of Investigations Conducted	SIA Section Reference
	• Analysis of historical responses to the closure of mines and power generation facilities within the Lithgow LGA in the context of health and wellbeing.	
Surroundings • Impact on access to the natural and built environment.	• Consider employees' residential locations and potential increased traffic and associated impacts. • Reference to TIA findings. • Scope passive and active recreational use of Newnes Plateau. • Community engagement with various stakeholders whom use Newnes Plateau i.e. 4WD, bushwalkers etc, to understand how the area is used and accessed.	Section 5 and Section 6
Surroundings • Changes to environmental qualities of creek systems, cliffs and swamps.	• Consideration of how changes to the biophysical environment may affect stakeholders. • Reference to EIS technical report findings i.e. groundwater, surface water and subsidence impacts. • Review the Swamp Offset Strategy (Centennial Coal, 2019a) and consider mitigation measures. • Through consultation, acknowledge community fears and aspirations of the project.	Section 5 and Section 6
Surroundings/Personal and property rights • Impacts to residential amenity.	• Reference to APR technical report findings i.e. noise, air quality and traffic impacts. • Analysis of community complaints and response to submissions. • Consultation with residents located within the PAA. • Identification of current and planned mitigation measures, as well as changes to mine design i.e. from 2014 EIS mine design.	Section 5 and Section 6

5 SOCIAL BASELINE

This section describes the project context including geographic setting, local and regional planning context and nearby communities. It presents a description of the communities of the social area of influence including relevant socio-economic baseline data.

5.1 PLANNING CONTEXT

5.1.1 Regional Planning Context

Central West and Orana Regional Plan 2036

The *Central West and Orana Regional Plan 2036* (the Regional Plan) (Department of Planning and Environment, 2017a) provides a framework to guide land use planning priorities and decisions over the next 20 years. The associated Implementation Plan includes priority actions as well as medium and longer-term actions to coincide with population and economic change.

The Regional Plan supports the following key goals for the CW Region:

- The most diverse regional economy in NSW;
- A stronger, healthier environment and diverse heritage;
- Quality freight, transport and infrastructure networks; and
- Dynamic, vibrant and healthy communities.

Table 14 presents the regional priorities and the top three economic opportunities for the Lithgow LGA, as described in the Regional Plan.

Table 14
CW Regional Plan – Lithgow LGA

Top Three Economic Opportunities	Regional Priorities
Transport and logistics	Maintain the primacy of Lithgow's main street and central business district.
Tourism	Develop transport and freight connections that capitalise on Lithgow's proximity to Sydney.
Mining	Leverage opportunities from the LGAs location and rural character to support diverse industries such as tourism.

Source: (Department of Planning and Environment, 2017a).

5.1.2 Regional Economic Development Context

Regional Economic Development Strategy

The *Lithgow Regional Economic Development Strategy 2018-2022* (REDS) (Lithgow City Council, 2018) sets out a long-term economic vision and associated strategy for the LGA of Lithgow. The economic vision articulated in the REDS is:

"A diverse robust economy, a skilled workforce and an attractive lifestyle creating opportunity for all and a community sharing its outstanding natural environment and heritage with the world" (Lithgow City Council, 2018).

The REDS articulates a framework for identifying actions crucial to achieving the regional vision. The aims of the REDS are to:

- Aim 1 – Drive local business capability and inward business investment;
- Aim 2 – Activate and cultivate a community of economic development leadership;
- Aim 3 – Create labour force capability in line with future business needs;
- Aim 4 – Prioritise liveability/lifestyle infrastructure and local place-making;
- Aim 5 – Foster a collaborative and vibrant community led by a diverse and inclusive culture; and
- Aim 6 – Develop tourism and marketing opportunities.

The REDS and supporting analysis identify that the Lithgow regional economy is currently heavily dependent on mining and needs to attract new investment in other industries. This is discussed further in the EcIA (AIGIS Group, 2019).

Key infrastructure priorities for the region to progress regional economic development include:

- Digital connectivity;
- Road upgrades locally and to Sydney;
- Water security; and
- Lithgow main street revitalisation.

5.1.3 Local Planning Context

Land Use Planning

Lithgow Local Environment Plan

Local Environmental Plans (LEPs) specify the planning and land use management aims for public and private land through zoning in accordance with the EP&A Act. The PAA is located within the Lithgow LGA and development is subject to the land use zoning provisions of the *Lithgow Local Environmental Plan 2014* (Lithgow LEP).

The PAA includes areas of RU3 Forestry, RU2 Rural, RU1 Primary Production and SP2 Infrastructure zones under the Lithgow LEP 2014. Land adjoining the project boundary to the north is predominantly zoned E1 National Parks and Nature Reserves. There is also a portion of land zoned R5 Large Lot Residential adjoining the southern boundary of the project boundary.

The land use zonings proximate to Angus Place Mine reflect the long-term use of the local area for industrial land uses (mining and power generation) and are designed to minimise the potential for land use conflict.

5.2 PRIMARY SOCIAL AREA OF INFLUENCE

The project's primary social area of influence is the area within and adjoining the PAA. This area is defined by the combined boundary of the ABS SSC's of Lidsdale and Newnes Plateau. The following sections provide a description of the primary social area of influence including:

- Indigenous history and cultural values;
- Land ownership;
- Natural heritage and valued natural attributes; and
- Lidsdale community.

5.2.1 Indigenous History and Cultural Values

The PAA lies within the Newnes Plateau region of the upper Blue Mountains and within the western-most boundary of the Sydney Basin, an area with a well-documented Aboriginal history. Traditionally the Blue Mountains were home to three large Aboriginal language groups; the Wiradjuri, the Darug and the Gundungurra (Tindale, 1974) (Niche Environment and Heritage, 2019).

According to Niche Environment and Heritage (2019), Aboriginal people of the region maintain a sense of community, traditional customs and practices, cultural knowledge and continue to care for significant sites and the land in general. Today there are many thousands of Aboriginal people living in and around the Blue Mountains. Aboriginal people continue to be custodians of the land, whilst traditional owners maintain cultural knowledge (DECCW, 2005).

SIA consultation with Mingaan Wiradjuri Aboriginal Corporation representatives identified that the land within the PAA was used by a few members of the Aboriginal community primarily for access to country, and the gathering of resources i.e. timber, berries, clays etc. It was indicated that one of the Aboriginal Corporation representatives collects rubbish and self-monitors the plant species on the plateau.

The creeks and swamps in the local area, as well as an area on Newnes Plateau known as *Maiyingu Marragu (*Blackfellows Hand) hold significant cultural value for the Wiradjuri people. During SIA consultation, one Wiradjuri representative stated that Newnes Plateau held artefacts and stories associated with their people. Wiradjuri representatives also noted the importance and long-term presence of mining, and its' role in sustaining the local economy.

The wider area of Newnes Plateau also holds cultural significance for the Wiradjuri people, mainly associated with the cliff formations and rivers. The Newnes Plateau was identified as a culturally important area for the senior Wiraduri 'men's business'. Specific parts of the Newnes Plateau are highly valued by the Wiradjuri people. These areas include the Deep Pass area, and the north-western precinct of the plateau (located outside the PAA).

The Indigenous use of Newnes Plateau extends beyond use by members of the Aboriginal Corporation and Native Title groups. According to Wiradjuri representatives, the bushland of the plateau supports Indigenous events such as NAIDOC and is widely used for recreation.

Twelve Aboriginal stakeholders involved in the CHIA (Niche Environment and Heritage, 2019) for the project, identified the PAA as a place that Aboriginal people had occupied in the past. Physical evidence of this past land use was provided by the presence of Aboriginal archaeological sites in the PAA. The CHIA identified 49 cultural heritage sites in the PAA. Nine Aboriginal cultural heritage sites are located within 600 m of the proposed longwall panel mining areas, one site has been assessed to have high cultural significance, one to have moderate cultural significance and all other remaining sites have been assessed to have low significance. Two shelter sites are within the angle of draw, with only one of those sites considered to be at risk of subsidence.

5.2.2 Land Ownership

Land ownership within and surrounding the PAA consists of Crown Land, privately owned land and land owned and managed by the Forestry Corporation of NSW. Parcels of freehold land are located within the western boundaries of the PAA and generally in the vicinity of Angus Place Mine pit top. The details of the land within and adjacent to the PAA are provided in the APR.

5.2.3 Natural Heritage and Valued Natural Attributes

The PAA is located partially within the NSF and adjoins the GSNP. The PAA contains significant natural landscape features formed by the combination of geology, topography and vegetation.

Newnes State Forest

The NSF is located within and outside of the PAA. NSF includes the Newnes Plateau, which is located within the PAA.

NSF comprises approximately 25,000 ha of pine plantation and native forest that is selectively logged under the Forestry Corporation of NSW tenure and management. In addition to the timber industry, the NSF also supports a number of recreational land uses. Public access is permitted in the NSF with common recreational activities consisting of motorcycle riding, four-wheel driving (4WD), dirt biking, bushwalking, camping, mountain bike riding, canyoning, photography, bird watching and other such recreational and adventure activities.

Newnes Plateau

Newnes Plateau is frequently used for bushwalking, canyoning, rock-climbing and mountain-biking. Canyoning and rock climbing activities are generally undertaken outside the PAA. Locals and domestic visitors to the region are attracted to the Newnes Plateau. The area is widely popular with tourists and there are several informal campgrounds scattered across the Newnes Plateau. One news article from June 2015 described the Newnes Plateau on Queens Birthday Weekend in 2015 as resembling *'something out of a Mad Max movie* (Ashworth L, Bellamy S, 2015) alluding to the heavy and 'lawless' use of the area by visitors.

The Newnes Plateau is characterised by environmental features such as rock pagodas, cliff lines, swamps, creeks, caves and deep valleys. The Newnes Plateau Shrub Swamps (NPSS) and Newnes Plateau Hanging Swamp (NPHS) are highly valued natural attributes of the News Plateau. NPSS is listed as an endangered ecological community (EEC) under the *NSW Biodiversity Conservation Act 2016* (BC Act). NPSS and NPHS are collectively listed as Temperate Highland Peat Swamps on Sandstone (THPSS) community which is listed as an EEC under the EPBC Act. A number of threatened flora and fauna species are also associated with the THPSS.

A review of background information (notably submissions on the 2014 EIS) and the findings of SIA consultation indicates that the natural features of Newnes Plateau are of intrinsic value to some residents and contribute to sense of place and way of life i.e. use and enjoyment of these features. SIA consultation findings demonstrated that some residents reside in the area for both its "natural beauty" and "tranquillity", and the passive and active recreation opportunities presented by the National Parks and State Forests.

The findings of SIA consultation suggest that both passive and active users of Newnes Plateau are seeking a balance between the region's reliance on coal mining activity, and the protection of natural values.

Mining is not the only activity that impacts the Newnes Plateau. The high volume of visitors during peak periods e.g. Queen's Birthday Weekend, also impacts the environmental values of the Newnes Plateau. Several sections of the main access roads across the Newnes Plateau are significantly eroded due to a combination of both use and environmental factors. Several swamp areas on the Newnes Plateau show evidence of damage from vehicle access across the swamps. There are also numerous major and minor motor bike and mountain biking tracks that have developed across the plateau.

Surrounding National Parks

The 15,100 ha GSNP adjoins the northern boundary of the PAA, while the 501,700 ha Wollemi National Park is located further north and east of the PAA. The 248,000 ha Blue Mountains National Park is located south-east of the PAA.

Together these and other reserves in the region (Nattai, Kanangra-Boyd and Thirlmere Lakes National Parks and Jenolan Caves Reserve) make up the 103,000 hectare Blue Mountains World Heritage Area, which was listed as a World Heritage Area in 2000 for significant biological evolutionary processes and the importance and diversity of habitats including wet and dry sclerophyll forest, mallee heathlands, swamps, wetlands and grasslands (Centennial Coal, 2014).

The GSNP features rock pagodas, sandstone cliffs, canyons, elevated swamps and scenic views. The area is widely used for outdoor recreation including, horse riding, mountain-biking, four-wheel driving, picnics, rock-climbing and hiking. The Gardens of Stone area totals over 55,000 ha. Approximately 18,700 ha of the total area is currently protected by GSNP and Mugii Murum-ban State Conservation Area (The Colong Foundation for Wilderness Ltd, 2019). During SIA consultation, several stakeholders, including NGOs, expressed concern that continued mining activities in the greater Lithgow region could threaten the preservation and amenity of the larger area of the Gardens of Stone.

Wolgan River and Carne Creek

The Wolgan River is approximately 64 km long and flows through the Blue Mountains, south, towards Newnes Plateau. Proposed longwall panels 1001 to 1015 are located beneath the catchment of the Wolgan River. The longwalls are bounded by the Wolgan River to the west and Carne Creek to the east. In the vicinity of the project, the Wolgan River flows generally to the north and then to the north east in the Wolgan Valley. Carne Creek also drains in a generally northwards direction, flowing to the Wolgan Valley. Numerous drainage lines on the plateau flow westward and contribute to the Wolgan River and Carne Creek, including the drainages of Tri Star Swamp and Twin Gully Swamp that are located above the proposed longwalls.

The Wolgan River is an important asset for the Emirates One & Only Wolgan Valley resort. Emirates has invested significant funds in the rehabilitation of a portion of the Wolgan River embankments to aid the sustainability of the river into the future.

Current water management practices in place at Springvale Mine and proposed for the project reflect the majority of community's aspirations in relation to the protection of environmental values of surrounding waterways e.g. Coxs River, Wolgan River and Carne Creek.

Lake Wallace

Lake Wallace was initially constructed to supply cooling water to WPS and has since developed into a water storage dam that is widely used by both locals and tourists. Lake

Wallace is fed by the Coxs River and previously acted as a discharge point for some of the neighbouring mining operations i.e. Springvale Mine, prior to the development of the SDWTS.

The lake is commonly used for sailing, canoeing, bird watching and fishing. The lake also has ample caravanning locations available to locals and visitors. It is a popular overnight camping place for tourists particularly *grey nomads*.

Lake Wallace is stocked naturally and supplemented with additional fish stock for key events. During consultation with a Wallerawang resident it was noted that "*Lake Wallace was the jewel, and crown of the community*". SIA consultation findings suggest that some residents are proud of Lake Wallace and the recreational activities that it affords to the community. Some residents indicated that Lake Wallace was the destination of several community events, such as New Year's Eve fireworks, fishing competitions, sailing events and annual markets.

Future Natural Heritage Aspirations

The Colong Foundation for Wilderness, BMCG, LEG and the Colo Committee have formed an alliance – The Gardens of Stone Alliance (GSA) to progress a 39,000 ha 'Stage 2 proposal' for the GSNP. This proposal is referred to as 'Destination Pagoda' and seeks to reserve all of the remaining parts of the Newnes Plateau and surrounding sandstone uplands that constitute the Gardens of Stone Area (The Colong Foundation for Wilderness Ltd, 2019).

Centennial's *Springvale Mine and Angus Place Colliery Swamp Offset Strategy* (Centennial Coal, 2019a) (the Swamp Offset Strategy) has been developed in consultation with the GSA to support, where possible, the realisation of the aspiration for a State Conservation Area. The Swamp Offset Strategy, specifically the offset fund, is critical to the facilitation of Destination Pagoda. The proposed reserve would require further investment through grants from government programs such as NSW Regional Growth and Destination, reductions in net government expenditures and additional funds from the Commonwealth and NSW Government (The Colong Foundation for Wilderness Ltd, 2019). As at November 2019, Destination Pagoda remains 'aspirational'.

Further, Centennial has taken a number of specific actions during the design of the project and the final site layout to support the Swamp Offset Strategy and the long term aspirations of the GSA. These actions include:

- Shortening longwall panels to provide a minimum setback from the GSNP of 1,000 m to reduce the risks of subsidence related impacts on the National Park; and
- Shortening longwall panels to avoid directly undermining the Trail 6 Newnes Plateau Shrub Swamp and minimise impacts on cliffs and rock pagodas.

5.2.4 Lidsdale Community

Lidsdale consists of a mix of residential and rural residential development, a rural fire service and park amenities and light industry land uses. Residential development is concentrated along Wolgan Road between Maddox Lane and Skelly Road. The southern and residential portion of Wolgan Road is located adjacent to the underground mining operations of Springvale Mine, the Kerosene Vale (KV) Ash Repository and the Sawyers Swamp Creek Ash Dam.

In 2016 Lidsdale had an estimated resident population (ERP) of 429 people with 148 occupied private dwellings (ABS, 2016). The following findings are evident from analysis of 2016 ABS Census data for Lidsdale:

- Lidsdale has an older population when compared with NSW (a medium age of 41 compared to 38).
- Residents of Lidsdale are generally long term, although participants in SIA consultation did highlight a recent influx of new residents. At 2016 more than half (62.8%) of the Lidsdale population had the same usual address five years ago (2011) as in 2016. Comparatively, only 57.7% of the Lithgow LGA population, and 53.8% of the NSW population had the same usual address five years ago as in 2016.
- There were 194 people in the labour force at the time of the 2016 ABS Census with 183 employed and the majority of these (55%) working full-time.
- Of employed people, 21.5% worked in coal mining, representing the largest industry sector of employment in Lidsdale.
- The most common household composition was family households (75.6% or 96 households). Couple families with children accounted for 72% of total families in Lidsdale.

Given the length of residency of the population, the majority of Lidsdale residents have experienced the effects of the Angus Place Mine closure in 2015, the Springvale Mine stand down in 2016 and the closure of the WPS in 2015. The majority of Lidsdale residents are familiar with the operations of Centennial and are aware of the presence of the Angus Place Mine and the nearby Springvale Mine operation.

5.3 SECONDARY SOCIAL AREA OF INFLUENCE

This section presents a description of the Wallerawang-Lidsdale and Portland communities. It provides a brief overview of the settlement of the two key communities in the secondary social area of influence of the project. The purpose of this section is to provide context to the assessment of potential project impacts and opportunities.

5.3.1 Settlement and History

Wallerawang-Lidsdale, and Portland have traditionally and continue to be, worker's towns. Mining, power generation and in the case of Portland, cement production, have had a strong influence on the economic and social character of each town. There are strong social and economic linkages between the three communities due primarily to their strong industrial heritage. These linkages continue today in part due to a concentration of Centennial employees in each community.

Wallerawang-Lidsdale

The Wallerawang-Lidsdale area was settled followed the property purchase of a large estate in the 1820s named 'Wallerowang' (sic), meaning 'place of plenty wood and water' to the Wiradjuri people (Jinks, Wallerawang: Story of the Town, 2018). Lidsdale became home to servants of the estate.

Wallerowang (sic) estate became a popular stopover for those travelling to Sydney or Mudgee. Similarly, the area of Lidsdale became a popular destination during the gold rushes of the 1850s and 1860s. To service the passing trade, three inns were constructed (Economic and Community Development Class University of Sydney, 1996). Wallerawang-Lidsdale progressively developed with a focus on industry. The activities of the local area were associated with the development of the shale-oil industry i.e. from KV, followed by the coal industry, and later power generation. A pine plantation was also established in the area in 1932 to supply a local box factory and sawmill (Economic and Community Development Class University of Sydney, 1996). During World War II, Wallerawang was a fuel depot site for the Royal Australian Air Force.

Coal exploration activities in Wallerawang-Lidsdale occurred alongside coal mining in the Lithgow Valley in the 1840s and 1850s. In 1850 the new town plan proposed a coal powered treatment centre that would assist the village of Wallerawang to harness the benefits of coal. The WPS was established in 1857 and as a result economic activity increased and the town thrived. A small school was established in Wallerawang in 1860. The WPS required skilled workers and provided higher wages, which encouraged a shift in the social fabric of the town from a low socio-economic area to one that was afforded opportunities i.e. employment opportunities, increased local spend, etc. At this time modern houses, stores and popular social clubs formed.

With the opening of the railway line to Wallerawang in 1871 the town began to develop adjacent to the station. St John the Evangelist Church, a heritage listed building in Wallerawang, was constructed in the 1880s. In 1920 Lidsdale House, located on the Castlereagh Highway 1.5 km north of the current village of Lidsdale was constructed. Lidsdale House was added to the Lithgow Heritage Register in 1997 (Integrated Design Associates, 2013) and is now owned by Centennial.

Key events that have shaped the development and social fabric of Wallerawang-Lidsdale from the mid-1950s include:

- The commencement of a massive expansion of WPS in 1969 with completion in 1980. The WPS expansion was in part a response to the opening of numerous new mines in the proximity to Wallerawang-Lidsdale (High Ground Consulting, 2014). The expansion of WPS involved a massive civil works program which attracted a significant workforce and in turn assured the profitability of the hotels and motels in the local area.
- Construction of Lidsdale Siding at Wallerawang and completion in 1974. Lidsdale Siding facilitated the storage and rail loading of coal to further support WPS.
- The construction of Lake Wallace in 1978 to supply cooling water to the WPS.
- Significant job losses from both WPS and local collieries during the mid-1980s (likely due to global economic recession and in part the cessation of major construction works at WPS).
- Further job losses in 1989 when the Wallerawang railway station was closed.
- Construction of MPPS at Mount Piper near Portland in the early 1990s. To counteract the economic downturn in Wallerawang-Lidsdale, and to meet the increasing demand for coal-fired power.
- Purchase of WPS and MPPS by EA in 2013 and subsequent closure of WPS in later 2015 triggering the loss of more than 600 jobs (Hair, 2019). The decline in employment in the energy sector in Lithgow LGA is directly linked to the closure of WPS. The REDS indicates the closure of WPS had "a substantial impact on Lithgow's economy". (Lithgow City Council, 2018b).
- Commencement of care and maintenance at Angus Place Mine in 2015. Many of the WPS and Angus Place employees resided locally in Lithgow City, Wallerawang-Lidsdale and Portland.
- Forced stand down of operations at the Springvale Mine in 2016 for a period of eight weeks.

During SIA consultation, local residents confirmed that in 2014-2015 people previously employed at WPS and Angus Place Mine moved out of the area to find work, and those that stayed found work outside of the local area and continue today to travel outside of Lithgow LGA for work. During this time, it was perceived that people were spending less i.e. in local businesses, and were experiencing job related anxiety. Business operators and suppliers in Wallerawang cited a significant reduction in local spend and supply opportunities with resulting impacts on staffing arrangements.

The 2016 forced stand down at Springvale Mine also had significant socio-economic impacts across the Lithgow LGA particularly the smaller communities of Wallerawang-Lidsdale and Portland where an estimated 20% of the workforce resided.

Today Wallerawang-Lidsdale has an ERP of 2,541 people and 900 occupied dwellings (Profile ID, 2018). The community is a mix of long-term residents and new incomers attracted by the affordable housing, semi-rural lifestyle and proximity to other regional centres. The area, particularly Lidsdale, has a semi-rural identity characterised by a peaceful lifestyle and long term local bonds between neighbour. Pockets of Wallerawang-Lidsdale are experiencing gentrification.

The centre of Wallerawang supports a small number of commercial enterprises including a motel, pubs, bakery, chemist, takeaway shop and grocers. In Wallerawang, the BlackGold Motel, Royal Hotel and Commercial Hotel service the workforces and contractors associated with the surrounding mining and power generation industries.

Lake Wallace has developed as a popular and favoured recreational asset for local people and the broader Lithgow community. The community has access to the Wallerawang Library, Wallerawang Public School and the Wallerawang Sports Club. The Wallerawang-Lidsdale Progress Association and the Wallerawang-Lidsdale Country Women's Association are key community based organisations within Wallerawang-Lidsdale.

During SIA consultation a number of stakeholders noted that Wallerawang-Lidsdale is made up of strong and resilient people. The community was described as supportive and '*willing to lend one another a hand*'. The majority of people involved in SIA consultation noted that it was the familial links and intergenerational ties that attracted people to stay within the local area.

The natural beauty of the surrounding area contributes to the identity of Wallerawang-Lidsdale. The plateau, cliffs, bushland and swamps were mentioned by several residents who participated in SIA consultation. These natural features were identified as major attractions for current and future tourism, user-groups and people relocating into the area.

The community and economy of Wallerawang-Lidsdale remains heavily reliant on the mining and power generation industries. Many businesses in the locality have strong supply chain links to both industry sectors. The residents of Wallerawang-Lidsdale and Portland are familiar with coal mining and the opportunities it presents to the community. SIA consultation found that the majority of residents have a connection and/or familial tie to the local mining industry, often intergenerational ties.

Portland

Limestone Flat, now known as Portland, was settled in the 1830s for farming and agricultural purposes. At this time the locality was sparsely populated. A small limestone business established in Portland in the late 1860s, and then extended its business to nearby Bathurst and Sydney (Portland NSW, 2014b).

The construction of the railway to Wallerawang was the catalyst for further growth in population at Limestone Flat. In 1885, the Cullen Bullen Company (i.e. Cullen Bullen Lime and Cement Company) purchased the local limestone business seeking to expand production. By 1891, Limestone Flat had a scattered population of around 200 people. In 1882, the railway line was extended from Wallerawang to Gwabegar (which skirted the edges of Limestone Flat) facilitating improvements in the transportation of lime and cement. In 1895 the Cullen Bullen Lime and Cement Company changed hands and could not produce the quality of cement that was now demanded. At this time, as nearby gold and silver mines also began to close, the population of Portland declined.

In 1902 Portland experienced a long period of revitalisation when the cement company was re-established and progress in Portland was rapid (High Ground Consulting, 2014).
The recognised 'Commonwealth Cement Plant' (Cement Plant) employed more than 600 people in the early 1900s. Portland was declared a town in 1906, with a population exceeding 2,000 people (Jinks, The Story of Portland, New South Wales, 2018).

The Commonwealth Cement Plant introduced improved employment conditions and provided funds for worker dormitories. Steady wages allowed for the development of taverns and grocery stores in Portland. Many services also improved following these stable working conditions. The town of Portland grew up around the Cement Plant and the company contributed greatly to the area including building a bath house, casino, an ice skating rink, and Olympic swimming pool (today it is one of the oldest community owned and operated pools in Australia). In the early twentieth century, Portland was the supplier of nearly 40% of the cement used in Australia. World War I increased the demand for cement even further.

The economic depression in the 1930s was disastrous for Portland as a community reliant on a single enterprise. World War II saw the demand for cement return, but as the post-war building boom declined, so did the demand for cement.

In the 1970s the industrial focus of the town shifted towards nearby coal mines and MPPS. The wave of construction activity continued through the 1980s as MPPS was developed, Baal Bone Colliery opened north of Cullen Bullen and numerous roadworks projects were undertaken. In preparation for the construction of MPPS and supporting infrastructure, a number of large workers' hostels were constructed in the Portland and Wallerawang. It was estimated that, during the originally 1984-1986 planned construction period, approximately 300 to 400 workers were required on the construction project. However, construction did not cease until after the opening of the MPPS and Springvale Mine in 1993.

The Cement Plant was mechanised in the 1980s and ceased production in 1991 (High Ground Consulting, 2014). The population of Portland decreased to around 2,200 people.

Today Portland has an ERP of 2,471 people (Profile ID, 2018) and 968 occupied private dwellings. It is often referred to in media as "*the town that built Sydney*". Portland is typically made up of 'workers cottages' built during the cement works era. These cottages are small and repetitive in nature i.e. two-bedroom homes that are aesthetically similar. The Portland town centre features a variety of shops including a modern cafe.

The town is once again experiencing a period of revitalisation leveraged off the Councils masterplan proposal to develop the heritage listed Portland Cement Works Precinct into a renewed community space known as 'The Foundations'. The site is owned by a private company which is seeking to make a significant investment into the redevelopment of the former cement works. Consent from LCC was granted for the demolition of certain buildings on site in 2015. Further land re-zoning is required for the full proposal to be realised. The Foundations envisage several precinct areas including a farming space, an eco-village, senior housing, an industrial arts complex, a heritage and lifestyle space, a hotel and spa, and a designated camping area (The Foundations of Portland, 2019).

The silos within the precinct were painted in 2018 with portraits of employees from the cement works. The Portland silos are listed on the Australia Silo Art Trail (Green, 2017) and in 2018 were featured (along with others) in the Sydney Morning Herald (Chenery, 2018). The existing silos have encouraged a new art space for community members and weekend markets (The Foundations of Portland, 2019). The Foundations are also being used for other key events such as weddings. The Foundations have initiated the push for Portland to progressively move away from an identity based on heavy industry and export, towards a diversified economy that is fuelled by modern coffee shops, a wider range of retail stores and AirBNB properties. During SIA consultation it was identified that Portland is now attracting people from Sydney for weekend stays, and is also providing 'city-goers' with affordable and sizeable residential land blocks that are being used for hobby farms i.e. goat farming, olive farming etc (Portland NSW - "History", 2014a).

5.3.2 Population and Demographic Characteristics

The following section provides a demographic summary, and comparison of the areas of Wallerawang–Lidsdale, and Portland. Population and demographic data for these areas was sourced through Profile.id.com.au[7].

The 2018 ERP for Wallerawang-Lidsdale was 2,541 people, and 2,471 people for Portland. Between 2012 and 2016, the population of Wallerawang-Lidsdale increased by approximately 6.9%, and the population of Portland increased by 7.1%. During SIA consultation several residents of Wallerawang-Lidsdale commented on the recent trend of new families settling into the area, as well as older retirees. A few stakeholders identified that people were also

[7] Profile ID compiles demographic data for district areas based on 2016 ABS census data.

choosing to reside in Wallerawang and Portland due to house and land prices, and the size of land available i.e. small acreage blocks.

All communities of interest had a greater proportion of Aboriginal and Torres Strait Islander (ATSI) people (6.3% in Wallerawang-Lidsdale and 7.1% in Portland) than the Lithgow LGA (5.7%). In consultation with representatives of the Wiradjuri people, it was confirmed that there was a large percentage of Indigenous people in the area. During SIA consultation it was mentioned that the proportion of Indigenous people in the local area was likely to be much greater, as many people do not identify as Aboriginal or Torres Strait Islander.

Analysis of 2016 statistical data for Wallerawang-Lidsdale and Portland indicates:

- Relatively high unemployment rates in both communities (7% in Wallerawang-Lidsdale and 9.8% in Portland), similar to Lithgow LGA (7.8%) but higher than NSW (6.3%).
- A high proportion of the labour force employed in coal mining (11.5% in Wallerawang-Lidsdale and 9.7% in Portland compared with 8.1% in Lithgow LGA and 0.6% in NSW).
- A higher median age than NSW. 40 years in Wallerawang-Lidsdale, 47 years in Portland and 45 years in Lithgow LGA, compared with 38 years for NSW.
- Wallerawang-Lidsdale has a higher proportion of people aged between 0 and 15 years (21.2%) compared to Portland and Lithgow LGA (16.8% and 17% respectively). Of note, in consultation with the Principal of Wallerawang Public School, it was identified that the school had over 300 students, including children from the Lidsdale area and was reaching capacity (ACARA, 2019).
- Wallerawang-Lidsdale have the smallest proportion of people aged 65 years and over (15.9%) in comparison to Portland and Lithgow LGA (23.2% and 22.0% respectively). Whereas, NSW have a similar proportion of people aged 65 years and over (16.3%).
- The majority of residents are long-term residents, however, several stakeholders indicated that people from Sydney were now frequently retiring in the local area.
- Relatively high rates of home ownership (36.9 % in Wallerawang-Lidsdale and 42.7% in Portland compared with 38.4% in Lithgow LGA and 30.7% in NSW).
- Low rates of home rental (23.6% in Wallerawang-Lidsdale and 12.3% in Portland compared with 22.7% for Lithgow LGA and 30.3% for NSW).
- A prevalence of low to lower-middle income households. Approximately 53.7% of households in Wallerawang-Lidsdale and 60% of households in Portland earn less than $1,500 a week. This is similar to Lithgow LGA (59.9%) but significantly higher than NSW (45.3% of households).

5.4 REGIONAL SOCIAL AREA OF INFLUENCE

The following sections provide a description of the European history and settlement patterns of the Lithgow LGA, selected population and demographic characteristics, services and infrastructure.

5.4.1 European History and Settlement Patterns

An analysis of the historical development of Lithgow LGA highlights the significant natural (climatic), economic (development) and social processes that have influenced land use and population change over time across the Lithgow LGA.

Key events that have shaped the development and social fabric of Lithgow City and the broader Lithgow LGA include:

- Commencement of industrial coal use in 1851.
- The arrival of the railway through the Blue Mountains in the 1860s and resulting economic diversification.
- From the late 1870s several coal mines were opened within the valley, together with a pottery estate, brickworks, an iron foundry, copper smelters, breweries and a refrigeration factory.
- Economic depression of the 1890s which reduced the demand for Lithgow's products and resulted in many workers being laid off.
- Development of the first modern blast furnace in Australia in 1907 leading to improvements in economic conditions. Steel was produced in Lithgow until 1928 (Regional Showcase Australia, 2019).
- Establishment of the Small Arms Factory in Lithgow in 1912 leveraged off the presence of steel.
- Economic depression of the 1930s with hundreds of workers in Lithgow laid off at this time.
- Economic growth in tandem with World War II. During World War II, Lithgow City's population almost doubled to around 26,000 people (Jinks, Lithgow: The Valley and the People, 2007).
- Construction of WPS and associated infrastructure from the late 1950s and the development of coal mines to support the power station.
- Construction of MPPS and opening in 1993 in tandem with the opening of Springvale Mine.

- Closure of the Small Arms factory in the mid-1990s. Despite a reduction in manufacturing, the Lithgow Valley remained the hub for workers on the coal fields and in the power stations.
- Establishment of the Ferrero Factory in 1976 and the Lithgow Correctional Centre in the 1990s.

Today, the LGAs endowments include "*topography, cool climate, natural resources, recreational amenity; proximity to Sydney and Central West NSW; energy, rail and education infrastructure; affordable lifestyle; industrial and cultural heritage; [and a] network for villages"* (Lithgow City Council, 2018b).

With reference to the three operating coal mines in the Lithgow LGA, the mining consent for the Airly Mine expires in 2037, Clarence Mine expires in 2026 and Springvale Mine expires in 2028. However, modifications to existing consents and new consents in the future, coupled with improved market conditions, may see Airly Mine and Clarence Mine lives extended. Collectively these mines employ more than 800 people (October 2019).

Lithgow LGA has specialisations in a range of industries including mining; niche manufacturing; electricity supply; health insurance; public administration and safety; agriculture; tourism; and rail transport. These specialisations are underpinned by the LGAs endowments, which also support the potential for the LGAs emerging specialisation in areas of education and training; logistics; aged care and construction (Lithgow City Council, 2018b).

Although mining and power generation are still significant sectors, Public Administration and Safety is now the region's major employing sector. The economy of Lithgow LGA is transitioning away from coal mining into a more diversified economy (Lithgow City Council, 2018b). There are now ten industry sectors each employing over 4% of the workforce. The REDS notes that as "*the economy transitions away from mining into a more diversified economic base, people are being impacted differently, as the community adapts to changing workforce needs and an evolving civic identity"* (Lithgow City Council, 2018b).

5.4.2 Community Values and Aspirations

Our Place Our Future Community Strategic Plan 2030 (Lithgow City Council, 2017a) (CSP) is the community strategic plan for the Lithgow LGA. The CSP takes into consideration the community's main priorities and aspirations for the future of the Lithgow region.

The CSP emphasises "*community growth and development"* across the LGA while '*encouraging the efficient and effective management of the environment, community and economy for present and future generations'* (Lithgow City Council, 2017).

The vision for the Lithgow LGA is articulated in the CSP and encompasses a range of themes including:

- Caring for the community;
- Strengthening the economy;
- Developing the built environment;
- Enhancing the natural environment; and
- Ensuring the continued responsibilities of governance and civic leadership.

Table 15 presents the values, strengths and challenges identified by residents of the Lithgow LGA during development of the CSP.

Table 15
Community Strategic Plan Consultation Outcomes

Key Aspects	Community Directions
Valued aspects of the Lithgow LGA	• The community, specifically its friendliness and spirit. • The location of Lithgow allowing for a rural lifestyle whilst still being relatively close to Sydney.
Strengths to be supported/sustained	• The local community. • Tourism and its potential to grow and increase revenue for the LGA.
Key challenges over the next 10 years	• Increasing employment opportunities. • Encouraging new businesses to the area. • Engaging youth, and supporting and retaining youth in Lithgow. • Managing change whilst retaining the natural heritage and rural community spirit of the area.

As part of the consultation process to inform the CSP, nine priority projects were identified by LCC Councillors for implementation. These projects included the likes of developing more education and employment opportunities to attract younger families to the area, attract larger retailers to the area, increase age care services, increase tourism efforts etc.

The Lithgow LGA has many opportunities for economic growth, including those building on agriculture, tourism, industry and mining activities. The CSP identifies that the community aspires to shift the perception of Lithgow being '*an inland mining and industrial centre*' and move towards '*an important tourism destination, heritage centre and a desirable residential area'*. SIA consultation confirmed that the majority of residents and stakeholders perceived the mining industry to be sustaining Lithgow LGA. Consultation with representatives of non-government organisations (NGO's) indicates that there are community members who perceive the industry as threatening the natural environment that Lithgow LGA has to offer.

The findings of consultation to inform the Lithgow REDS indicate that as the economy transitions away from mining into a more diversified economic base, people are being impacted differently, as the community adapts to changing workforce needs and an evolving civic identity (Lithgow City Council, 2018b). The Lithgow REDS points to a need for strong local leadership to bring the community together, to navigate a changing civic identity and maximise the economic benefits of this transition (Lithgow City Council, 2018b).
SIA consultation confirmed that the Newnes Plateau, including the cliffs, rock pagodas, and swamps are highly valued in the Lithgow region. These areas support the region's tourism opportunities and also provide recreational opportunities for local residents i.e. through a range of sporting clubs and organisations. The GSA value the Newnes Plateau and would like to see the area preserved into the future, but acknowledge the role of mining to support the achievement of this aspiration. During consultation, representatives of the Wiradjuri People also identified the aspiration to run a ranger program and education centre from Newnes Plateau.

The project is consistent with the vision for the future of Lithgow LGA and responds to the values, strengths and challenges identified in Table 15. Specifically, the project:

- Enables continuity of employment and supply opportunities for existing residents of the Lithgow LGA which in turn:
  - Sustains the viability of existing infrastructure and services; and
  - Protects community vitality and strengthens social connections.
- Supports the realisation of regional aspirations in relation to environmental protection and growth in tourism related sectors (Section 5.2.3) through the Swamp Offset Strategy (Centennial Coal, 2019a); and
- Presents a clear timeframe to the LCC to plan for economic transition from the current reliance on mining and power generation to alternative economic sectors.

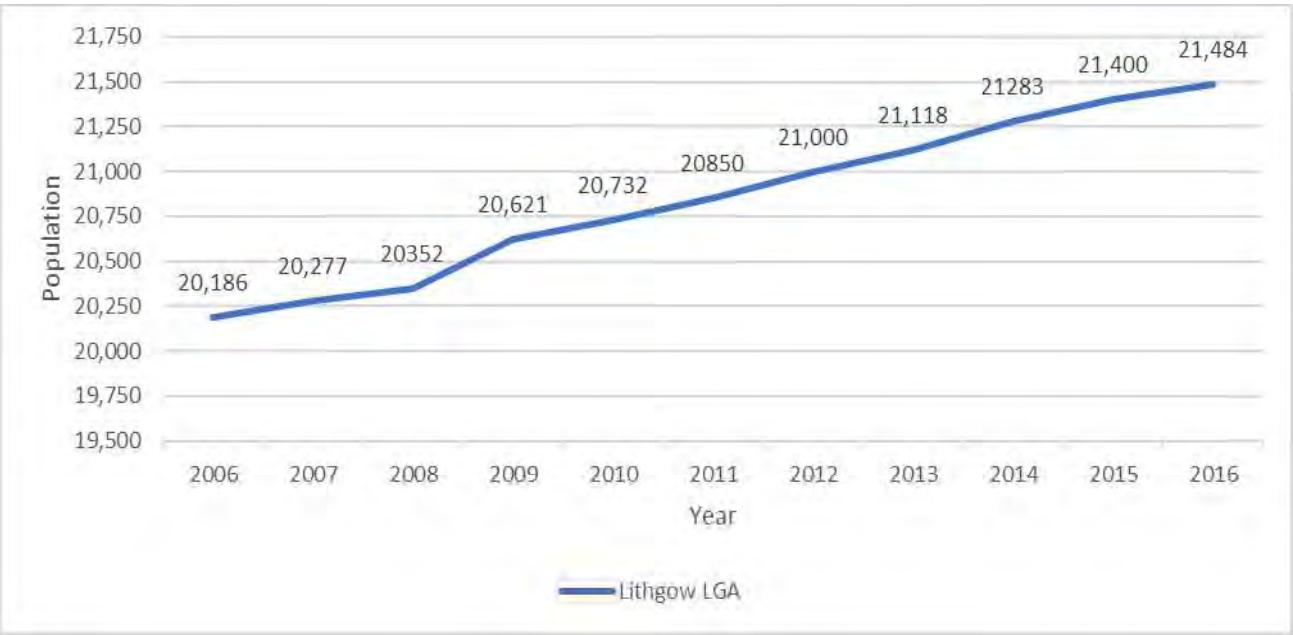
5.4.3 Population and Demography

Population and Population Growth
In 2018, the Lithgow LGA had an ERP of 21,636 people (Profile ID, 2018). The 2016 Census ERP for Lithgow LGA was 21,090 people, with 11,530 people residing within the city of Lithgow (Lithgow City Council, 2018).

Graph 1 presents the annual population growth from 2006 to 2016 for the Lithgow LGA. Table 16 presents population change between this period for Lithgow LGA and NSW also.

Between 2006 and 2016 the population of Lithgow LGA increased by 6.4% representing slow but steady growth. Lithgow LGA experienced a much smaller rate of population change compared to NSW.

Graph 1
Population Growth – Lithgow LGA



Source: (ABS, 2017).

Table 16
LGA Population Change 2006 - 2016

Geographical Area	Change 2006-2016	
	%	Number
Lithgow LGA	6.4	1,298
NSW	14.7	990,168

Source: (ABS, 2017a).

Future Population Trends

Table 17 presents the NSW DPE population projections to 2036 for the Lithgow LGA. Table 17 shows that the population of Lithgow LGA is expected to marginally decline, compared to the large proportional increases anticipated across regional NSW and NSW. Consultation findings indicate that the anticipated population decline in Lithgow LGA is likely attributable to a combination of the following:

- An aging population;
- The impending closure of several large employment hubs i.e. Springvale Mine;
- A perceived lack of services by prospective residents;
- A dominant public perception of the area as a mining and industrial town with a lower socio-economic profile which limits its attractiveness to new residents; and
- Competition from other regional centres such as Bathurst, which provides a greater range of services and diversity in employment opportunities for new residents.

Table 17
Population Projections for the Lithgow LGA and Region

Geographic Area	2016	2026	2036	Change 2016-2036 (%)
Lithgow LGA	21,100	21,100	20,450	-3.1
Regional NSW[8]	3,066,050	3,306,850	3,503,700	14.3
NSW	7,748,000	8,844,700	9,925,550	28.1

Source: (Department of Planning and Environment, 2016a).

The Lithgow REDS acknowledges the low rate of projected population growth over the coming two decades and the implications this has for the desired economic transition. It notes that businesses are struggling to attract skilled people to the Lithgow LGA, and higher qualified people, earning higher incomes, are choosing to live outside the region and commute into Lithgow for work (Lithgow City Council, 2017a).

Strategies in the Lithgow REDS seek to grow the population mass in the villages of the LGA and ensure Lithgow grows into a thriving city by promoting and developing Lithgow as a 'great place to live'. The Lithgow REDs notes that for

> "*businesses to attract and retain skilled staff, or to attract new investment, they need to be able to offer people a great place to live. Successful place-making develops connected public spaces that are accessible, project a good image, attract people to participate in activities, and create a sociable environment that people want to visit* again and again" (Lithgow City Council, 2017a).

Given the intent and strategies identified in the Lithgow REDS it is likely that the population of the Lithgow LGA will grow between now and 2036, in contrast to the DPIE forecast population decline.

Age and Gender

Table 18 shows key age and gender indicators for Lithgow LGA and comparative regions.

[8] Regional NSW in this instance is different to 'the Region' (i.e. Central West Region SA4). Due to data availabilities, Regional NSW data has been used for comparison purposes. Regional NSW is a larger region when compared to the CW Region.

Table 18
Age and Gender Indicators, 2016

Location	% Males	Median Age (persons) (#)	<15 years (persons) (%)	>65 years (persons) (%)
Lithgow LGA	50.7	45	17	22
Central West SA4	49.8	41	20	19.4
NSW	49.3	38	18.5	16.3

Source: (ABS, 2016).

Lithgow LGA has a lower proportion of persons under 15 years of age, and a higher proportion of persons over 65 years of age compared to NSW. The proportion of older residents within the Lithgow LGA is likely to increase, which is consistent with the regional and national trend of an ageing population (Lithgow City Council, 2017). The ageing population will likely increase demand for aged care, residential facilities, nursing homes and extensive health and community services as well as have implications for local labour supply. In consultation with the Chair of the Lithgow Chamber of Commerce, it was noted that there is a strong desire to progress the development of an aged care facility, accompanied with a childcare service in the Lithgow Pottery Estate.

5.4.4 Education and Qualifications

Post School Qualifications

Post school qualification levels for Lithgow LGA and the CW Region are shown in Table 19. The proportion of people who completed certificate level qualifications. The LGA and SA4 is significantly higher than NSW.

The LGA has an over-supply of unskilled labour contributing to an unemployment rate that is higher than the CW Region and the State (Lithgow City Council, 2018b) (Section 5.4.5). At the same time there is an undersupply of skilled labour. The REDS indicates that "*business growth across the LGA is being constrained by a shortage of skilled workers, and businesses are importing qualified staff from outside the region"* (Lithgow City Council, 2018b).

Table 19
Post School Qualifications, 2016

Location	Certificate	Graduate Diploma/ Certificate	Advanced Diploma and Diploma	Bachelor Degree and Above	Inadequately Described/ Not Stated
Lithgow LGA	43.3%	1.9%	11.6%	13.5%	29.8%
Central West SA4	40.8%	2.5%	12.7%	19.8%	24.2%
NSW	29.7%	2.8%	14.6%	35.6%	17.3%

Source: (ABS, 2017).

Enrolments

Table 20 shows the primary and secondary schools located in the Lithgow LGA.

Table 20
Lithgow LGA School Enrolments, 2018

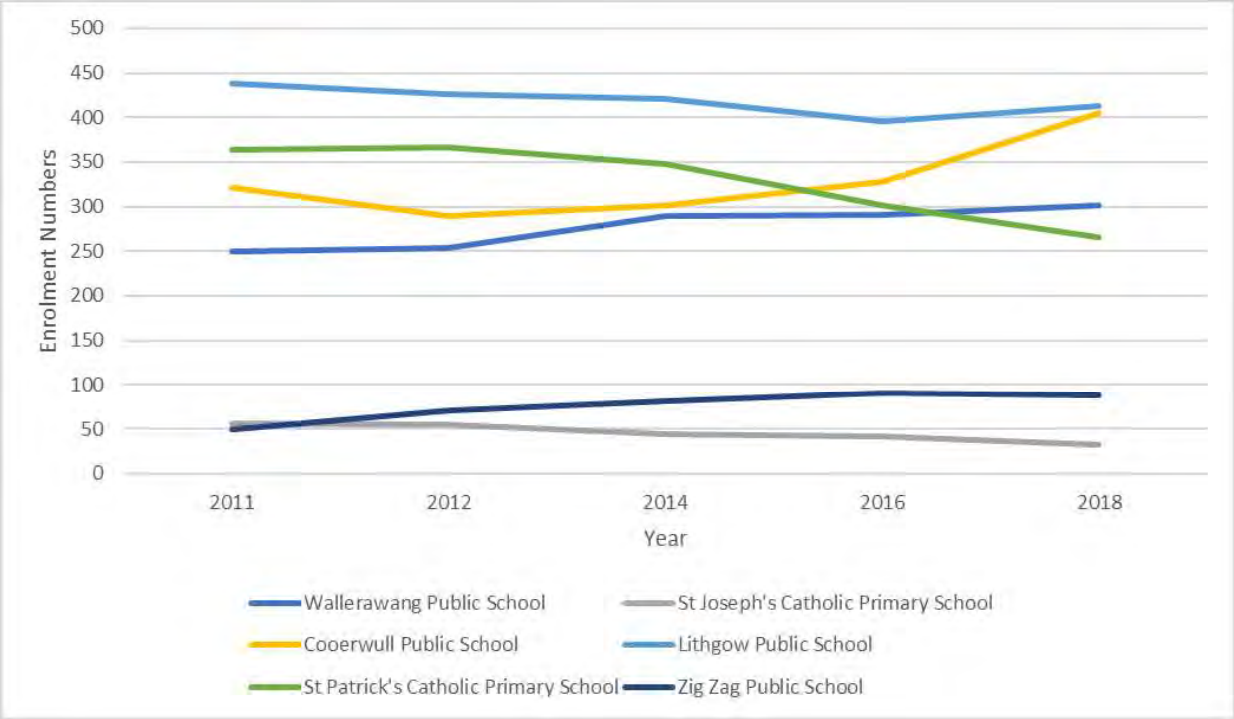
School	Education Level	Enrolment (No.)
Wallerawang Public School	Primary	302
St Joseph's Catholic Primary School	Primary	32
Cooerwull Public School	Primary	405
Lithgow Public School	Primary	413
St Patrick's Catholic Primary School	Primary	266
Zig Zag Public School	Primary	88
Portland Central School	Combined kindergarten to Year 12	127
La Salle Academy	Secondary	228
Lithgow High School	Secondary	799

Source: (ACARA, 2019).

Graph 2 shows enrolment data trends for all primary schools in the Lithgow LGA for select dates. Graph 3 illustrates enrolment data for Lithgow LGA's two high schools and the school catering for kindergarten to Year 12.

The growth in primary school enrolments, as illustrated in Graph 2, could be attributed to an influx of new families (evidenced by mobility data (ABS, 2017)) and a transition of people from the private school to the public school in Lithgow. This also corresponded with the stand down of WPS and the care and maintenance of Angus Place Mine, highlighting the interlinkages between community and services. SIA Consultation findings indicate that Wallerawang Public School is well regarded within the nearby communities and is currently at capacity. During SIA consultation education providers in the area acknowledged the support of Centennial i.e. funds and donations, and Centennial employees. It was mentioned that majority of Centennial employees, and MPPS employees, were heavily involved in school clubs and groups i.e. sport and Parents & Citizens (P&C) groups.

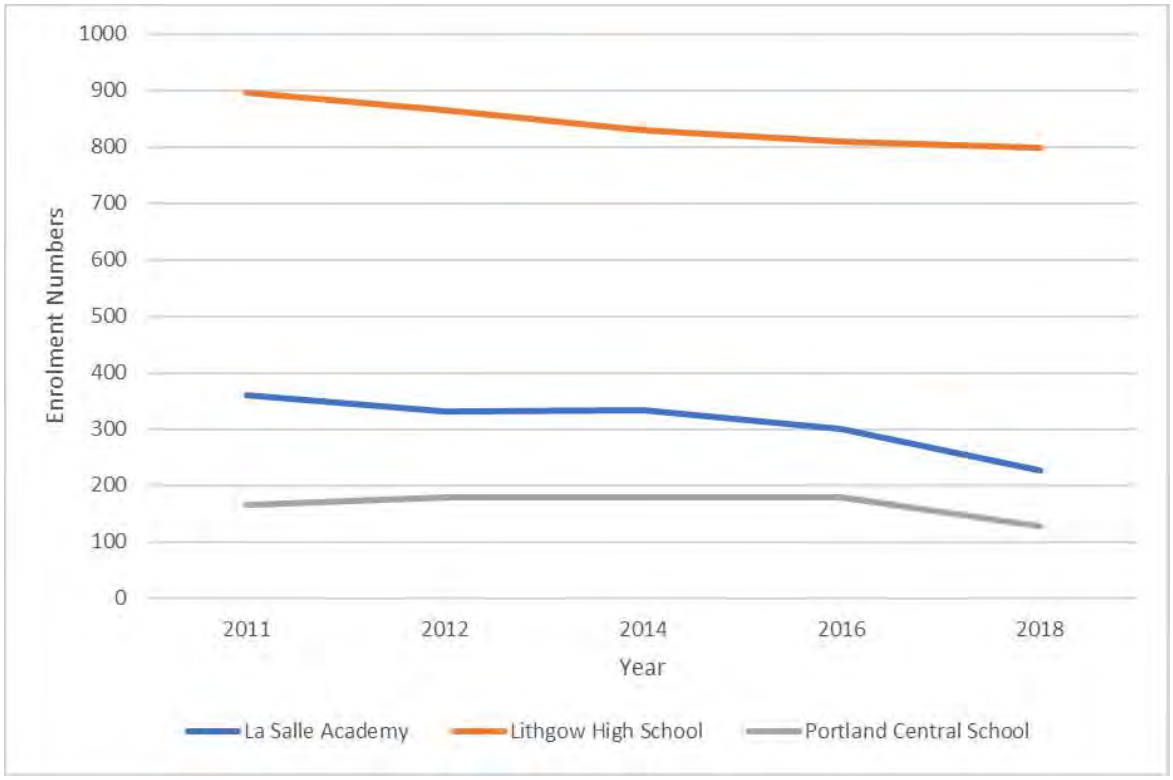
Graph 2
Lithgow LGA Primary School Enrolments 2008-2018



Source: (ACARA, 2019).

High school trend data indicates that enrolment numbers are declining in the Lithgow LGA. SIA consultation with education providers indicates that enrolments in secondary schools are declining due to lower numbers of children in certain age brackets, as well as children going to other schools due to schooling performance. This is consistent with the aging population and the reduction in the number of family households with children. The provision of school bus services on key routes, and the limited number of secondary institutions, means many families in the Lithgow LGA send their children to the secondary schools located in Lithgow centre. Wallerawang Public School is also considered to be a feeder school to Lithgow High School.

Graph 3
Lithgow LGA High School Enrolments 2008-2018



Source: (ACARA, 2019).

Within Lithgow LGA, there are currently two tertiary education providers: TAFE NSW, and University of Notre Dame.

5.4.5 Employment and Economic Strengths

This section describes the labour and employment characteristics of the Lithgow LGA, in context with the CW Region and NSW. Further information on labour market conditions is provided in the EcIA.

Labour Force

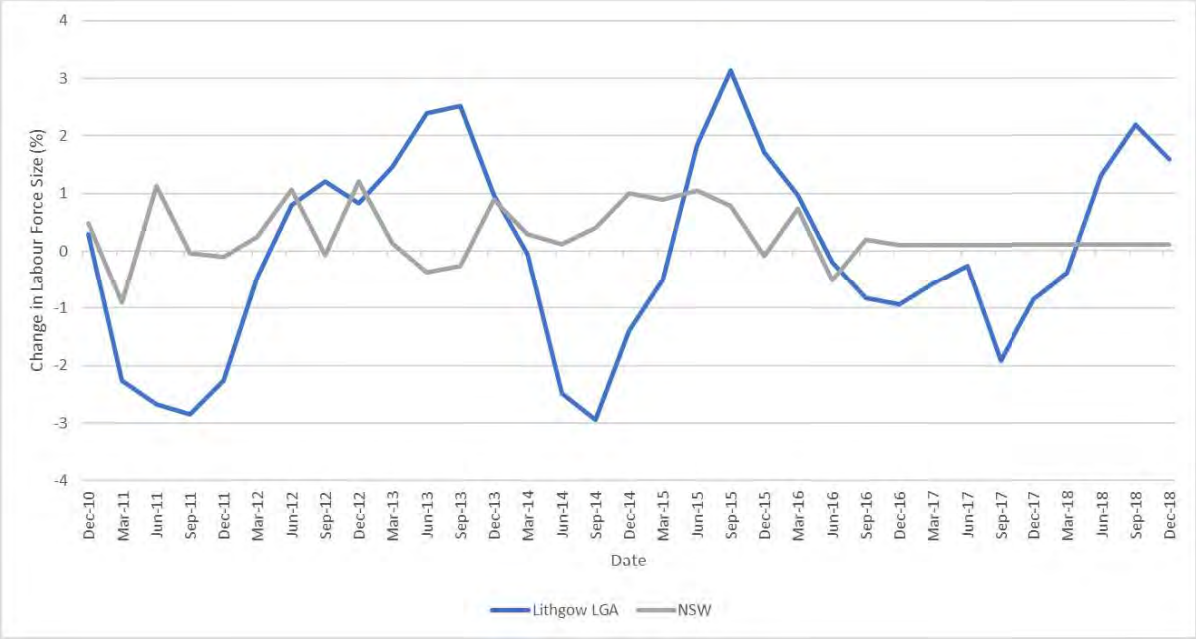
In 2016 there were 8,445 residents of the Lithgow LGA in the labour force including:

- 4,627 people (54.8%) employed full-time;
- 2,678 people (31.7%) employed part-time;
- 489 people (5.8%) away from work; and
- 651 (7.7%) people unemployed.

Labour force information from the Department of Employment, Skills, Small and Family Business (DESSFB) shows that in March 2019 the Lithgow LGA had a labour force of 10,247 people suggesting significant growth between 2016 and 2019.

Graph 4 shows the change in labour force size across the Lithgow LGA and NSW between December 2010 and December 2018. Localised labour force disruptions are evident within the data. The labour force size in Lithgow LGA has experienced significant fluctuations over time compared to the NSW trend. The significant labour force decline in the Lithgow LGA in 2014 aligns with the closure of WPS and the care and maintenance of Angus Place Mine. SIA consultation with residents and various stakeholders indicates that at this time many people left Lithgow LGA and/or remained in the LGA, but found work outside of the region i.e. in Mudgee, Bathurst etc.

Graph 4
Change in Labour Force Size, 2010 – 2018



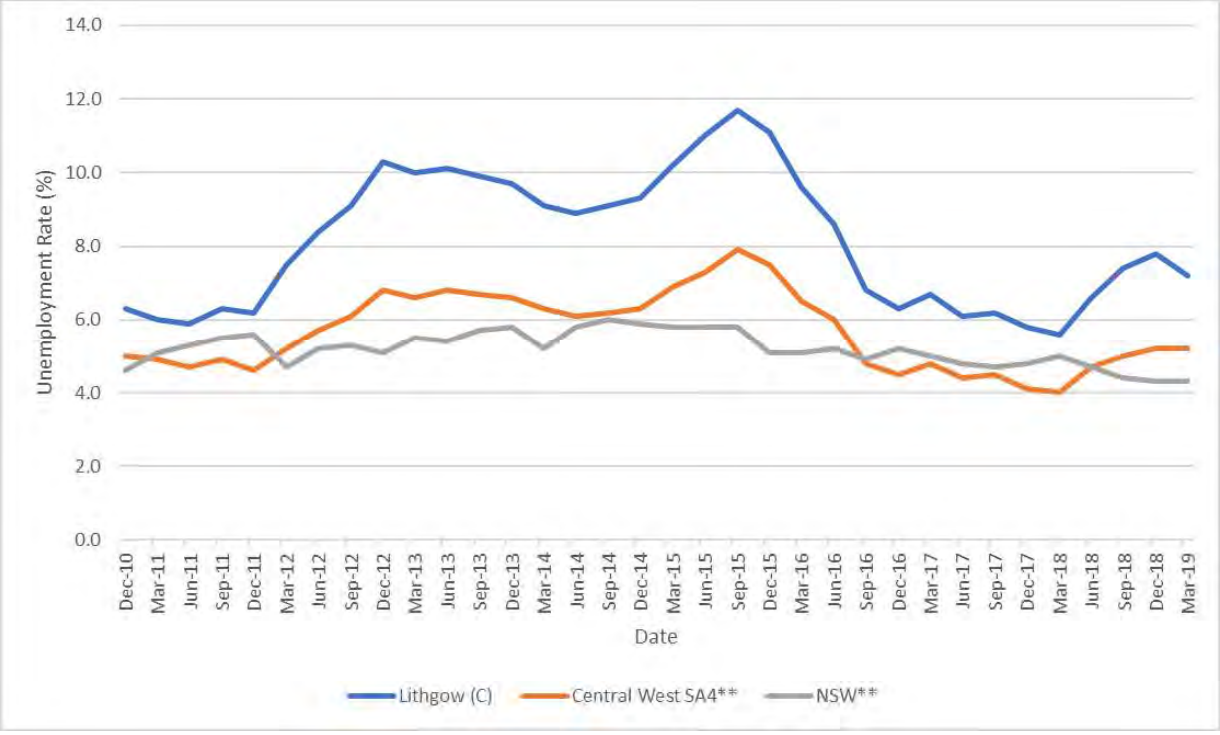
Source: (Department of Jobs and Small Business, 2019).

Unemployment

Graph 5 presents trends in unemployment for Lithgow LGA relative to the CW Region and NSW. Trends in unemployment rates across the Lithgow LGA, the CW Region and NSW are generally consistent, with Lithgow LGA maintaining a significantly higher unemployment rate than the comparative areas.

At March 2019, Lithgow LGA had an unemployment rate of 7.2% (735 persons), compared to an unemployment rate of 5.2% in the CW Region and 4.3% in NSW.

Graph 5
Unemployment Rate, 2010 - 2018



Source: (Department of Employment, Skills, Small and Family Business, 2019).
*Notes: ** Unemployment rates for Central West SA4 and NSW are unsmoothed data*.

Employment by Industry

Mining and agriculture have been the pillars of the Lithgow LGA economy for decades. However, employment in other industries has now surpassed mining. In 2016, in the Lithgow LGA, the top three industry sectors of employment for the resident population were:

- Health Care and Social Assistance (904 people or 11.6%);
- Retail Trade (761 people or 9.8%); and
- Public Administration and Safety (745 people or 9.5%).

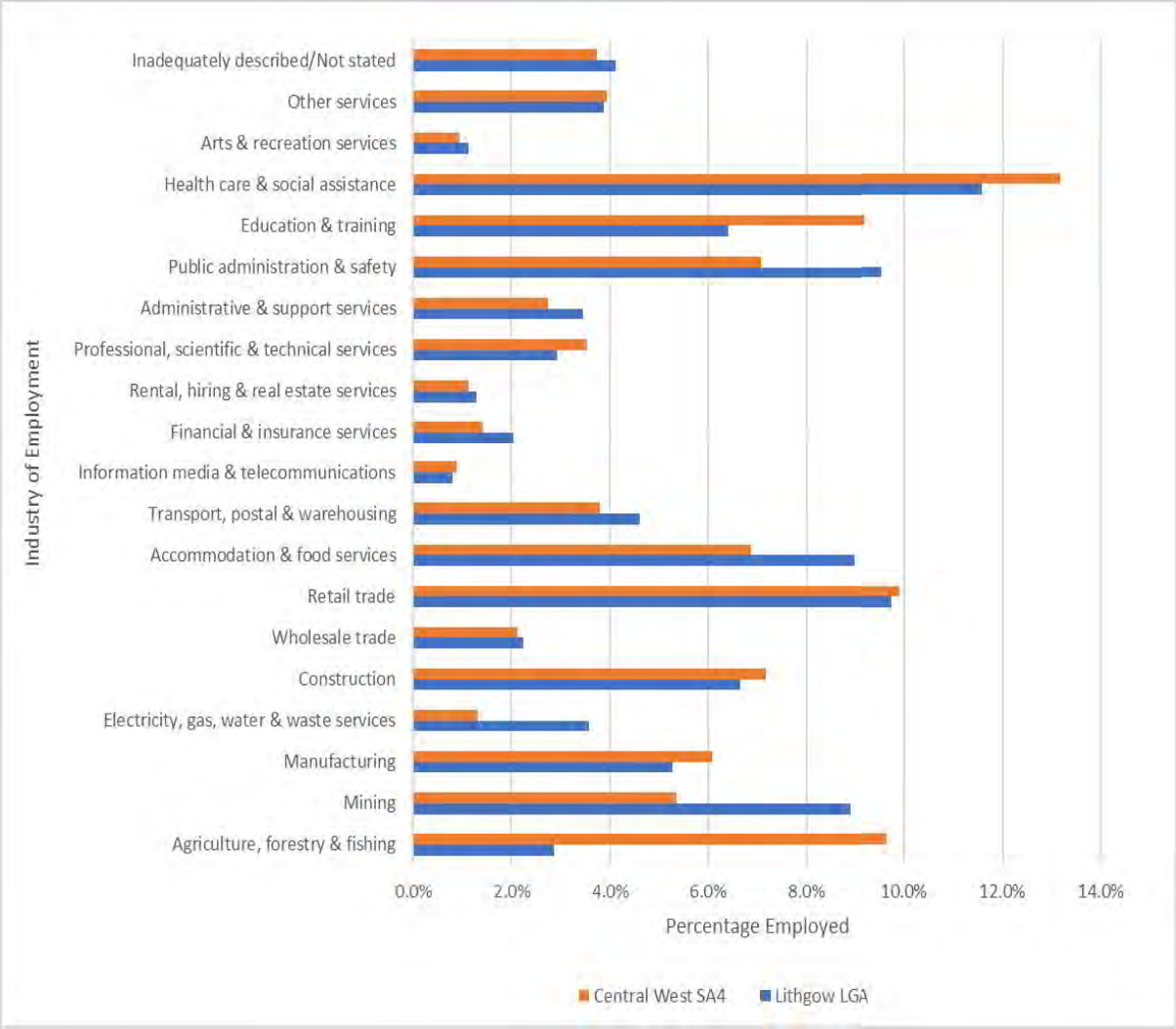
The mining industry sector was the fifth top sector of employment in 2016, employing 694 people (8.9% of total employment across all industry sectors). Despite the change in sector employment the LCC continues to recognise the economic importance of mining in local economy (AIGIS Group, 2019).

The REDS (Lithgow City Council, 2018b) notes that employment in manufacturing has shown an overall decline in the LGA, consistent with trends in capital-intensive industries. The REDS (Lithgow City Council, 2018b) suggests this could also be associated with reduced employment in small to medium enterprises that supply the mining industry.

Of note is the stable or growing workforces evident in Thales Australia[9] and Ferrero, two of the largest employers in the Lithgow LGA (Lithgow City Council, 2018b).

Graph 6 shows industry of employment, by proportion, for the Lithgow LGA and the CW Region (SA4).

Graph 6
Industry of Employment, 2016



Source: (ABS, 2017).

Industry Sector Contributions

The Gross Regional Product (GRP) of the Lithgow regional economy was $1.1 Billion (B) for the 2015-2016 period, which represented approximately 0.2% of NSW Gross State Product (GSP) and $52,157 GRP per capita. The Lithgow REDS identified that the mining industry was

[9] ADI World Class is a partner in the Lithgow Arms. The ADI brand is owned by Australian Munitions a business of Thales Australia Limited. In 2019 Thales Australia unveiled plans for further investment in the Lithgow Arms.

the largest contributor to GRP during this period and was both the largest exporting and importing industry operating in the LGA during this time (Lithgow City Council, 2018). The GRP of Lithgow LGA was estimated at $1.27 B in 2018, supported principally by the continued value added, imports and exports of mining.

Tourism

In 2017-2018 the tourism and hospitality sector of Lithgow LGA amounted to $108.7 M in sales, and $56 M in value added. In 2017/2018 there were 495 people employed in the tourism and hospitality sector up from 396 in 2012/2013. LCC, as evident in the CSP and the *Destination Management Plan – A tourism Strategy for Lithgow* (Lithgow City Council, 2013), has a focus upon marketing the regional area and growing the tourism industry sector. Destination Pagoda is also aligned with regional tourism aspirations seeking to attract tourist to the area through the preservation and advertisement of Lithgow's natural heritage.

5.4.6 Family and Household Characteristics

Key characteristics of family and household composition within Lithgow LGA and the comparative regions are discussed in the following sections.

Household Composition

Table 21 shows the 2016 household structure Lithgow LGA and the CW Region. Relevant trends in the data include:

- All areas of interest have a relatively high proportion of family households, similar to NSW;
- Lithgow LGA has a significantly higher proportion of lone person households than all other areas of interest; and
- Lithgow LGA has a smaller proportion of group households.

Table 21
Household Structure, 2016

Geographic Area	Households (%)			Total Households
	Family	Lone Person	Group	
Lithgow LGA	65.1	32.6	2.3	7,862
Central West SA4	68.5	28.8	2.7	74,743
NSW	72.0	23.8	4.2	2,604,306

Source: (ABS, 2017).

Family Structure

Table 22 presents the percentage of families by family type for the Lithgow LGA and the CW Region. Table 22 shows that Lithgow LGA had significantly higher proportions of one parent families than other areas of interest, and higher proportions of couple families without children. This is more reflective of the family structure for the CW Region than of NSW. One parent families constitute 19.3% of all families within Lithgow LGA.

The Lithgow REDS notes that the LGA is expected to experience a decline in the proportion of families (Lithgow City Council, 2018). During consultation, service providers and residents noted the intergenerational family ties within the region - many families stay and grow within the region.

Table 22
Families by Type

Geographic Area	Couple Family (%)		One Parent Family (%)	Other Family (%)	Total Families (No.)
	With Children	Without Children			
Lithgow LGA	37.2	42.2	19.3	1.3	5,209
Central West SA4	40.3	41.3	17.1	1.3	52,041
NSW	45.7	36.6	16.0	1.7	1,940,226

Source: (ABS, 2017).

5.4.7 Indigenous Population

In 2016, Lithgow LGA had an Indigenous population of 1,208 people, equivalent to 5.7% of the total population. The proportion of Indigenous population in the Lithgow LGA is greater than NSW (2.9%) but smaller than the Indigenous population of the CW Region (6.4%). Between 2011 and 2016, the Indigenous population in the Lithgow LGA increased by 34% compared with a total population increase in Lithgow LGA of 5% for the same period. Further aboriginal history and cultural values are described in Section 5.2.2.

Table 23 presents key indicators of the Indigenous population in the Lithgow LGA compared to the non-Indigenous population. Analysis of these indicators at the time of the 2016 ABS Census (NSW Department of Education, 2017) show:

- A significantly younger Indigenous population than the non-Indigenous community with a median age of 25 years compared to 46 years, respectively;
- A smaller proportion of Indigenous population aged 65 years or more (7%) compared with the non-Indigenous population (23%);

- A greater proportion of population aged under 18 years (38%) compared with the non-Indigenous population (19%);
- The same dependency ratio (0.64) for the Indigenous and non-Indigenous communities of Lithgow LGA. This indicates each Indigenous person of working age has the same number of dependents to support, on average, as the non-Indigenous community; and
- Larger household occupancy rates for the Indigenous communities compared to the non-Indigenous community of the Lithgow LGA (2.9 residents compared with 2.3 residents).

Table 23
Characteristics of Indigenous Persons

Indicator	2016		
	Indigenous	Non-Indigenous	Gap
% of households owning/buying their home	54	72	-19
Median weekly income of adults (15+)	443	517	-14
Median weekly income of households	1,031	980	5
% of infants under 5 in education	22	24	-2
% of adults (15+) who have left school	23	32	-10
Average school year completed	10.1	10.4	-0.3
% of people with a severe, long-term disability	8.4	6.6	1.8

Source: (NSW Department of Education, 2017).

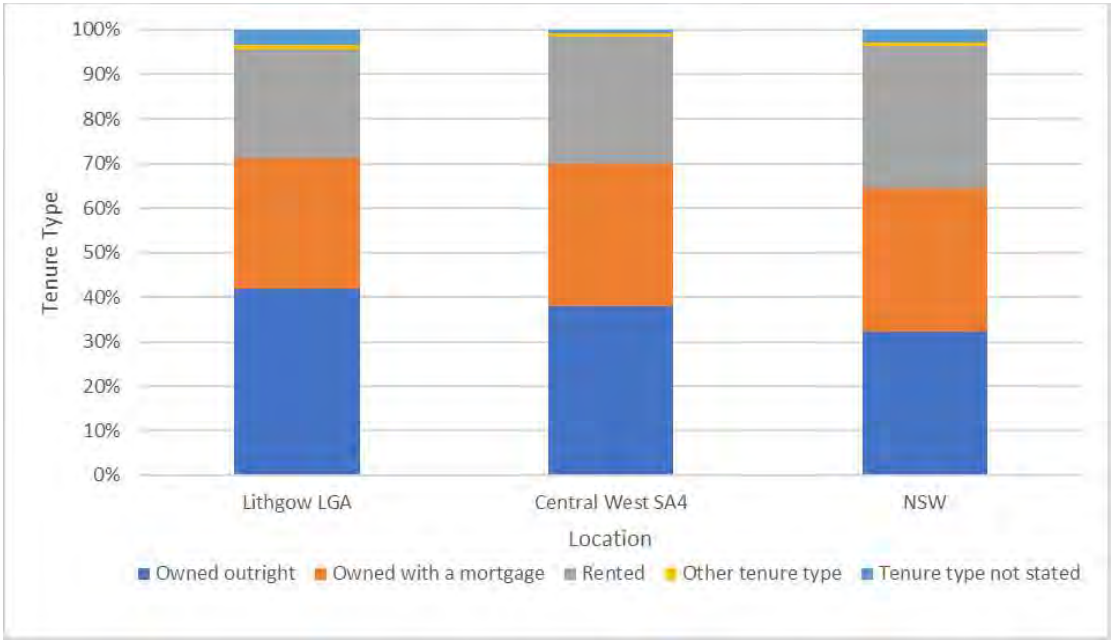
5.4.8 Housing and Accommodation

This section focuses on housing stock and tenure, the housing market and social housing, as well as short-term accommodation in the Lithgow LGA. Some data is provided for Portland and Wallerawang. Despite being the closest locality to the project, the village of Lidsdale is not considered in detail in the following analysis of housing and accommodation due to its small size. Housing data has been sourced from the 2016 Census, SQM Research and Realestate.com.au.

Housing Tenure

Graph 7 shows housing tenure types in the regional social area of influence relative to the CW Region and NSW. Lithgow LGA and the CW Region share a common housing tenure profile with the majority of housing either owned outright or owned with a mortgage.

Graph 7
Housing Tenure, 2016



Source: (ABS, 2017).

Housing Stock

Table 24 shows the housing and unit stock available for purchase in the postcode areas of Lithgow, Wallerawang and Portland from 2012 to 2018. Key trends evident in Table 24 include:

- A steady decline in stock availability in Lithgow between 2012 and 2018; and
- A rapid decline in housing stock in Wallerawang over the same period, indicating a greater demand for housing within Wallerawang. This aligns with the findings of SIA consultation that indicated an influx of new residents to the area.

Comparatively, Lithgow has experienced rapid growth in unit stock available on the market during 2012 to 2018. In all areas of influence, the greatest decline in housing stock occurred between 2014 and 2016. This is likely attributable to the flow-on effect of the booming Sydney housing market at that time. This had the effect of reducing the negative impacts of changes in the local mining and energy sector (Aspect Property Consultants, 2015).

Table 24
Stock on Market

Stock on Market (Houses)					
Location (Postcode)	**2012**	**2014**	**2016**	**2018**	**Change 2012 - 2018 (%)**
Lithgow (2790)	249	233	153	212	-12.5
Wallerawang (2845)	43	34	18	9	-79.0
Portland (2847)	44	46	35	45	2.2
Stock on Market (Units)					
Lithgow (2790)	22	25	31	48	118.2
Wallerawang (2845)	1	0	2	1	0.0
Portland (2847)	2	0	0	0	-100.0

Source: (SQM Research, 2019).

Housing Costs

Market Prices

Table 25 shows the change in asking price and the median weekly asking prices for the postcode areas of Lithgow, Wallerawang and Portland. This information is drawn from SQM Research. Housing prices are noted to be higher in Lithgow compared to Wallerawang and Portland. According to local residents this may be attributed to the proximity and range of services available in Lithgow.

Table 25
Median Asking Price Over Time

Location (Postcode)	Weekly Asking Property Prices - Sept 2019	Weekly Asking Property Price 12 Month Change (%) (All Houses) Sept 2019	Weekly Asking Property Price 3 Year Change (%)
Lithgow (2790)	$389,113.00	1.7	17.1
Wallerawang (2845)	$354,394.00	-13.9	26.0
Portland (2847)	$304,257.00	4.2	22.1

Source: (SQM Research, 2019).

Over the last three years, the property prices in all areas of interest have increased. Lithgow has experienced the smallest property price increase over the last three years compared to Portland and Wallerawang. Wallerawang has experienced a substantial three-year property price increase, yet in the past 12 months, property prices have declined considerably (13.9%). This is likely attributable to the cessation of works associated with the construction of the

SDWTS. The construction phase of this project saw considerable demand for housing in the postcode areas of Wallerawang-Lidsdale and Portland.

Rental Prices

Table 26 shows the highest and lowest priced rental properties and the number of properties available for rent in the suburbs of Lithgow and Wallerawang in September 2019. The supply of available rental accommodation in Wallerawang was very small, and Portland did not have any listings during the period of research (September 2019). At the time data was analysed, housing in these areas was impacted by works undertaken by Centennial. Consultation identified that the availability of properties was seemingly low due to demand from contractors working on the SDWTS.

Table 26
Rental Price – High and Low, September 2019

Property Type and Location	Lowest Rent ($p/w)	Highest Rent ($/pw)	Number of Properties
	Lithgow (Postcode 2790)		
All Properties	210	500	74
3-bedroom + houses	265	500	47
2-bedroom houses	240	355	16
2-bedroom + units/ townhouses	210	360	8
	Wallerawang (Postcode 2845)		
All Properties	390	390	1
3-bedroom + houses	390	390	1

Source: (Realestate.com.au, 2019).

A review of property sale data available on Realestate.com.au (accessed 26 September 2019) showed:

- 163 properties for sale in Lithgow (Postcode 2790) of which majority were three or more bedroom houses. Properties ranged in price from $209,000 to $885,000.
- Nine residential properties for sale in Wallerawang (Postcode 2845) which were all two or three bedroom houses. Properties ranges in price from $208,000 to $410,000. An additional five blocks of land were for sale in Wallerawang.
- 21 properties for sale in Portland which were all two or three bedroom houses. Properties ranges in price from $220,000 to $660,000.
- Three properties for sale in Lidsdale which were two and four bedroom homes, ranging from $330,000 to $789,000 in price.

Short-Term Accommodation

Short-term accommodation relates to those types of accommodation that are typically provided to visitors or tenants for a short period of time for example, motels, serviced apartments, bed and breakfast, self-contained homes, caravan and camp sites. The length of tenancy in these forms of accommodation can often extend to lengthy stays, depending on accommodation availability, price and personal circumstances. Short-term accommodation providers in Lithgow provide temporary accommodation to tourism visitors and industry personnel to the LGA and broader CW Region.

There is a variety of short-term accommodation options available across the Lithgow LGA, and significantly more in neighbouring LGA's i.e. Bathurst. Short-term accommodation within the Lithgow LGA includes luxury B&Bs, hotels and motels and self-contained rental accommodation.

There is no purpose-built worker accommodation facility approved in the Lithgow LGA. The majority of Centennial employees live in proximity to their place of work and do not place any additional demand upon short-term accommodation providers.

Social Housing Provision

Data from the NSW Department of Family and Community Services (2018) indicates that 227 general applicants and 28 priority applicants are waiting to be placed into social housing in the Lithgow LGA. Expected wait times for all property types in the Lithgow zone is up to five to ten years.

Table 27 shows the proportions of social housing in Lithgow LGA and the surrounding region in 2016. Lithgow has a significantly higher proportion of social housing than the CW Region and NSW. Relatively low living costs, housing affordability and ready access to Sydney makes the Lithgow LGA an attractive destination for low socio-economic households.

Table 27
Social Housing, 2016

Location	State or territory housing authority	Housing co-operative/community/ church group	Total Social Housing
Lithgow LGA	21.6%	1.5%	23%
Central West SA4	13.3%	2.6%	16%
NSW	12.7%	2.1%	15%

Source: (ABS, 2017).

5.4.9 Health and Wellbeing

The following discussion provides a summary of key indicators of health and wellbeing in the Lithgow LGA comparative to NSW based on information available through ABS and the NSW Public Health Information Development Unit (PHIDU) (Torrens University Institute, 2017).

Volunteerism

Table 28 presents rates of volunteerism. Volunteerism is one measure of wellbeing and resilience in a community. Lithgow LGA has a high rate of volunteerism, which is consistent with feedback received from the local community during SIA consultation. During engagement with the broader community of Lithgow LGA, it was identified that the majority of the Springvale Mine workforce volunteer within their community and contribute a portion of their salaries towards a 'Community Assistance Fund'. This is further discussed in Section 2.5.

Table 28
Community Strength, 2016

Census Geographic Area	People aged 15 years and over who participate in voluntary work	Population aged 15 years and over	% Volunteers
Lithgow LGA	3,219	17,496	18.4
NSW	1,103,790	6,093,895	18.1

Source: (Torrens University Institute 2017).

Diversity and Vulnerability

Key indicators of diversity and vulnerability in the Lithgow LGA based on information available through ABS (Table 29) show:

- Lithgow LGA has a lower level of cultural diversity compared to NSW. In 2016, 79.7% of the population was born in Australia and almost 95% speak English at home. In comparison more than 70% of the NSW population was born in Australia and approximately more than 70% speak English at home;
- Lithgow LGA has a higher proportion of persons needing assistance (6.6%) compared to the region (5.6%) and NSW (5.4%);
- In 2016 the median weekly family income in Lithgow LGA was below $1,000 and in the CW Region it was $1,166; and
- The ABS's Socio-Economic Indices for Areas (SEIFA)[10] scores indicate that Lithgow LGA experiences relative advantage.

[10] SEIFA are composite indices of factors affecting socio-economic advantage and disadvantage, measured against an Australian benchmark index of 1,000.

Table 29
Diversity and Vulnerability Indicators, 2016

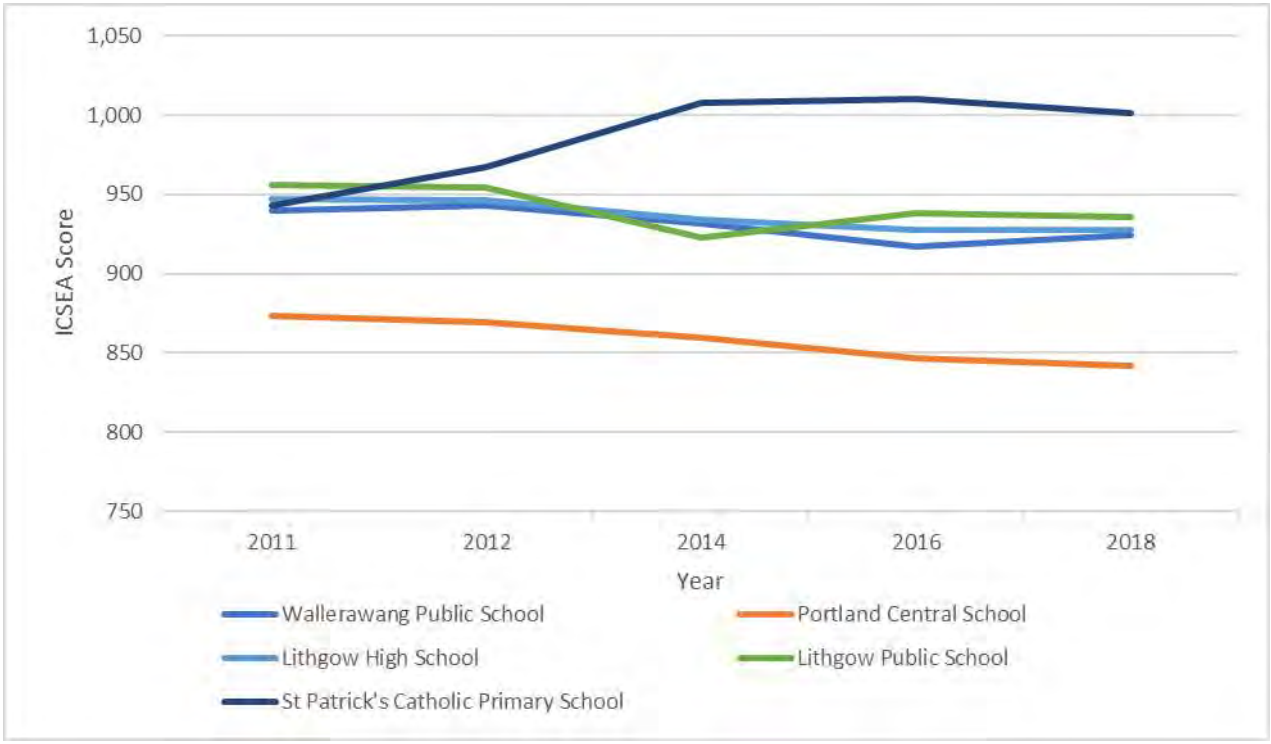
Location	People born overseas	Language other than English	Disability (need for assistance)	Weekly Family Income	SEIFA
Lithgow LGA	20.3	5.1	6.6%	$984	908
Central West SA4	16.9	4.9	5.6%	$1,166	N/A
NSW	27.7	26.5	5.4%	$1,486	1,000

Source: (ABS, 2017).

Index of Community Socio-Educational Advantage

Graph 8 presents the Index of Community Socio-Educational Advantage (ICSEA) for select schools and years in the Lithgow LGA. The ICSEA value provides an indication of these socio-educational backgrounds of students. The lower the ICSEA value, the lower the level of educational advantage of students who go to the school. ICSEA is set at an average of 1,000 and is used as a benchmark. Graph 8 shows that students at Portland Central School have a lower level of educational advantage than other surrounding schools.

Graph 8
Lithgow LGA Schools ICSEA Values



Source: (ACARA, 2019).

5.4.10 Social Infrastructure Accessibility

The range of services and facilities available in Lithgow LGA is consistent with the population size of Lithgow and other population centres within the LGA. A summary of the key services and facilities available in the Lithgow LGA is presented in Table 30.

Table 30
Summary of Service and Infrastructure Provision Lithgow LGA

Service Area	Description
Health Services	Lithgow LGA is located within the Nepean Blue Mountains Local Health District (LHD). Lithgow Hospital is the main referral hospital for the LGA. Nepean Blue Mountains LHD also provides a 'Community Health Facility' targeted towards children, young people and families. Lithgow Hospital provides a total of 46 beds and provides a 24-hour emergency department. The area is supplemented with a number of General Practitioner practices.
Emergency Services	Emergency services in the Lithgow LGA include: • Lithgow Ambulance Service; • Police – Chifley Local Area Command (LAC) with bases in Lithgow, Capertee, Portland and Wallerawang; • Lithgow Fire and Rescue; Lithgow West Fire and Rescue; Portland Fire and Rescue; Wallerawang Fire and Rescue; Lidsdale Fire and Rescue; and • Lithgow Fire and Safety – a part of the Central West Fire Service and Blue Mountains Fire and Safety Organisation.
Community Services and Organisations	There are a number of community services and organisations operating across the Lithgow LGA including Lithgow Community Projects Inc, Lithgow Meals on Wheels, Wallerawang Meals on Wheels, and Lithgow Can Assist. The majority of these services are based out of Lithgow township, are highly active in the Lithgow community and are staffed by volunteers. The smaller townships, such as Wallerawang and Portland, also have a number of organisations e.g. Wallerawang-Lidsdale Progress Association.
Children's Services	There are a number of children's services in the Lithgow LGA concentrated principally in the townships of Lithgow, Portland and Wallerawang. These services include child care, after school care and preschool services. Nine child care services are available in Lithgow township, one in Wallerawang and two in Portland. A high proportion of one parent families within the LGA may demand further child care services in the future, however, with an ageing and potentially declining population there may not be the demand for additional facilities. Further, the workforce for the project is anticipated to be sourced locally and would therefore not necessitate and/or place additional pressure on existing services and their capacity.
Education Services	The Lithgow LGA is well serviced with public and private primary schools. There are two high schools – La Salle Academy and Lithgow High School located in the Lithgow township. There is also one combined school catering for kindergarten to year 12, Portland Central School. Lithgow also has a TAFE NSW branch in the township. The University of Notre Dame Australia is located just outside the township of Lithgow in Bowenfels.

Service Area	Description
Recreation Services and Facilities	Within Lithgow LGA there are a number of sporting venues including a greyhound racing track and the Tony Luchetti sportsground and showground. Events in Lithgow are typically held at the Tony Luchetti Sportsground and Showground. The sportsground has several ovals and a large indoor hall. In proximity to the showground is the JM Robson Aquatic Centre. The town of Portland has an Olympic Pool also. Lake Wallace located in Wallerawang is used by sailing groups and clubs, for water skiing, and boating and fishing. Areas of Newnes Plateau are used recreationally for camping, climbing, hiking, 4WD, mountain biking and canyoning.
Commercial and Retail (Employment Hubs)	Lithgow is the main centre for retail and commerce in the Lithgow LGA. Portland has a stronger art sector, whilst Lithgow provides majority of the available accommodation in the LGA. Lithgow has several larger business entities who are significant employers including: • Ferrero Australia Factory; • Lithgow Correctional Centre; and • Emirates Wolgan Valley Resort. Wallerawang township has several larger business entities including Walker Quarries. Metromix Quarry in Marrangaroo is also located in proximity to Lithgow and provides employment to Lithgow LGA residents.
Transport	Lithgow township is located on the daily train service to Sydney on the Blue Mountains line. Other transport is provided to Wallerawang and Portland via bus services. Lithgow Buslines provides a range of school bus services connecting communities within Lithgow LGA with local schools, and also schools located outside of Lithgow LGA. There is also a local taxi service – Lithgow City Radio Cabs.

6 IMPACT ASSESSMENT

This section describes and evaluates the significance of the predicted social impacts and opportunities of the project for the project social area of influence.

6.1 OVERVIEW

Social impacts have been identified and assessed for the project social area of influence (primary, secondary and regional). The assessment shows that the majority of potential social impacts accrue to user groups of Newnes Plateau and people who value Newnes Plateau. The potential significant opportunities of the project accrue to the nearby communities and the broader Lithgow LGA.

The stand-out message from SIA consultation was the significant importance attributed to the continuation of mining (in the immediate term) in the local area for the sustainability of nearby communities. A small number of stakeholders raised issues in relation to potential subsidence impacts to cliffs and rock pagodas, as well as potential irreversible impacts to the swamps. The social dimensions of these environmental impacts have been considered within this section.

6.2 IMPACT ASSESSMENT

The potential social impacts and opportunities of the project are discussed below, and grouped into the following thematic areas:

- Employment and economic opportunities;
- Community liveability;
- Values and aspirations;
- Access and use of public land; and
- Cumulative impacts.

6.2.1 Employment and Economic Opportunities

The economic impact of the project, including consideration of employment opportunities is assessed through the EcIA (AIGIS Group, 2019) and is consequently not replicated in full in the SIA. A summary is provided in the following sections.

Employment Generation and Labour Market Dynamics'
The project will require a construction workforce of up to 40 FTE people, and an operations workforce of up to 450 FTE people.

If the project is approved, the presumed transfer of the majority of the current Springvale Mine workforce (450 FTE) would result in no material change in direct employment, from the perspective of the SIA.

The currently approved 450 FTE workforce at Springvale Mine includes contractors. However, based on internal contractor data, the majority of contractor work (by number of engagements and hours worked) is carried out by locally and/or regionally based contractors. As such, any material contractor component of the workforce is also likely to be resident in the Lithgow and surrounding regions. This is discussed further in the EcIA.

The findings of the EcIA (AIGIS Group, 2019) indicate that if the project is approved there is unlikely to be a material change in employment. There would therefore be no material effects on the regional labour market and given its relative scale, no discernible effect on the NSW labour market. In turn there would be no discernible impact on population size within the nearby communities and broader Lithgow LGA.

With the negligible change in population, and no project changes which would affect residential land supply, significant impacts on housing demand, availability or affordability are not anticipated as a result of the project.

Economic Opportunities

The construction and operation of the project will generate revenue at the federal, state and local level. The EcIA indicates that the project will contribute $139 M towards NSW Government royalties (AIGIS Group, 2019). Approximately $383 M will be spent with regional suppliers and $1,664 M with NSW based suppliers over the productive life of the mine (AIGIS Group, 2019). The EcIA acknowledges that the project will likely support the continuity of a portion of employment for Springvale Mine workers, and will permit households to remain in the region, thus maintaining social contributions to the regional community and economy (AIGIS Group, 2019).

The Lithgow LGA would likely benefit from a share of expenditure associated with the construction and operation of the project e.g. for construction services and supplies, scientific and technical services and food and accommodation services. Centennial has existing local supply arrangements that will have continued expenditure benefits from the project. However, there may be some loss of local business benefits from the closure of Springvale Mine and the cessation of care and maintenance activities at Angus Place Mine. As noted in the EcIA, it is anticipated that there will be a reduction in transactions with suppliers of approximately 12% (regional) and approximately 9% (NSW), as the care and maintenance of Angus Place Mine and production at Springvale Mine will cease.

The construction phase may encourage additional local expenditure, however this expenditure is anticipated to be small, and short-term.

Economic and Industry Diversity

During SIA consultation a number of participants commented on the Lithgow LGA's reliance on mining and limited evidence of industry diversification. Some participants noted that the reliance on mining was not perceived and/or experienced in a negative way, rather, that Lithgow was and still remains a "mining town". However, there were some stakeholders who did raise concern that the project simply reinforces a dependency on mining as a source of revenue for the Lithgow LGA.

The EcIA demonstrates the crucial economic contribution of coal mining at the local and regional levels, stating that the "*most obvious measures of these contributions are through employment and derived benefit associated with employees and their households, and the significant commercial interrelationships between mining and its regional supply chains*" (AIGIS Group, 2019).

The project, if approved, would support the continuation of employment in mining and the supply of power to NSW from MPPS. As described in Section 5.4.5, the GRP of Lithgow LGA in 2018 was estimated at $1.27 Billion (B) (Profile ID, 2019). Mining was the most productive industry, generating $236 million (M) in 2017-2018 (Profile ID, 2019). The project will support the continuation of the mining sector output in the Lithgow LGA for the duration of the operations phase.

The mining industry sector was the fifth top sector of employment in 2016 in the Lithgow LGA, employing 694 people (8.9% of total employment across all industry sectors). Project operations will result in a continuation in the number of people employed in the mining industry sector in the Lithgow LGA. This suggests the mining industry sector may remain one of the top sectors of employment in the Lithgow LGA throughout the project life.

The REDS (Lithgow City Council, 2018b) acknowledges the need for economic diversification across the Lithgow LGA. Centennial acknowledges the potential impacts of the project on other sectors of the economy i.e. potential growth reservation. Centennial will continue to liaise with LCC in relation to the cessation of mining. The Centennial Swamp Offset Strategy (Centennial Coal, 2019a) (Section 6.2.3) reinforces Centennial's commitment to supporting the environment, and other non-mining industry sectors i.e. tourism.

Transitional Economy

The Lithgow REDS provides a framework for securing greater economic diversity across the Lithgow LGA. The Lithgow REDS recognises that each of the mining and power generation operations across the Lithgow LGA have an end date. Together the project and the existing mining and power generation operations in the Lithgow LGA provide a defined time-frame for the LCC and key stakeholders to work towards greater economic diversity through the implementation of the actions and strategies articulated in the Lithgow REDS. The continuation of mining in Lithgow LGA provides a relatively stable platform upon which the LCC can pursue alternative industry and employment options across the life of the project.

The findings of SIA consultation indicate mixed public perceptions regarding the extent to which Lithgow is transitioning away from mining. A number of stakeholders perceive there is a desire across the communities of Lithgow LGA, for economic transition away from mining towards greater economic diversity. This is also reflected in the findings of consultation undertaken to inform the Lithgow REDS.

Several participants involved in SIA consultation perceived that the Lithgow LGA has struggled to capitalise on the more recent opportunities presented for economic diversification citing examples of various small to medium sized businesses that have been lost to nearby Bathurst. The Lithgow REDS, as described in Section 5.1, provides a framework for diversification and key economic objectives for the LGA. Community consultation undertaken to inform the REDS revealed a need for "*strong local leadership to bring the community together, to navigate a changing civic identify and maximise the economic benefits of the transition"* (Lithgow City Council, 2018b).

Economic diversification across the LGA will take time. The project life presents a realistic timeframe for LCC to target economic diversification. Further should the project be approved, the Swamp Offset Strategy could be a catalyst for early realisation of the tourism and environmental protection aspirations of the GSA and other stakeholders in relation to Destination Pagoda.

Sustained Energy Security

The project will enable continuation in the supply of coal to MPPS and will support energy security for NSW. MPPS is a coal-fired power station which uses black coal typically sourced from the nearby Centennial mines, with Springvale Mine being the primary provider. The power station's furnaces are designed to utilise the characteristics of the locally available coal for improved efficiency and the power station's emissions are below statutory requirements. MPPS is scheduled to be decommissioned in 2053. Springvale Mine is transitioning to closure by 2024.

The proximity of the Angus Place Mine to MPPS permits delivery of coal to the power station by existing overland conveyor infrastructure. This is a significant advantage when compared to sourcing fuel from alternative suppliers, which would entail greater socioeconomic and environmental costs in terms of alternative transport requirements. Certain townships in the Lithgow LGA, particularly Lidsdale and Wallerawang, could be exposed to potentially significant social impacts in circumstances where MPSS is supplied by coal from alternative mines, located further afield.

The EcIA considers the economic implications of the project not proceeding and these findings are summarised in Section 6.3.

6.2.2 Community Liveability

In this section, community liveability refers to the environmental and social quality of an area as perceived by residents, employees and visitors. This includes accessibility, safety and health, local environmental conditions, the strength of the community and the quality of social interactions. The discussion focusses on the communities of Lidsdale, Wallerawang and Portland as this is the area likely to experience the most significant social benefits as a result of the project and conversely the greatest social impacts, should the project not be approved. Relevant information is also provided for Lithgow as this is where the majority of the Springvale Mine workforce resides. The information presented in the following sections draws on the findings of SIA consultation.

Community Strength and Identity

The SIA has considered the potential impacts and opportunities of the project for community strength and identity. The identity and sense of place of the communities in proximity to the PAA, and to a lesser extent the broader Lithgow LGA, are strongly influenced by the:

- Existing and historical presence of mining and power generation activity in the LGA; and
- The natural environment including the landscape frame provided by the GSNP and Newnes Plateau.

Within the primary and secondary social areas of influence the environmental attributes of the Newnes Plateau and the industrial land use setting contribute significantly to sense of place. Springvale Mine, WPS and Lidsdale Siding together with Lake Wallace, Wallerawang School and the commercial centre of Wallerawang are also important elements that contribute to sense of place. MPPS is also a significant contributor to sense of place.

The project, if approved, would not adversely affect the:

- Industrial setting of the primary and secondary social area of influence;
- Natural environment that forms the landscape frame of the nearby communities and the broader LGA; nor
- Natural or urban amenities, or the physical fabric within the local communities.

Importantly, the project would support ongoing recognition of the area's identity as a mining community.

A number of participants in SIA consultation described the existing community's strength across the Lithgow LGA as the way *"we work together and we live together".* This highlights the interconnectedness that exists between the mining industry and the neighbouring communities.

The contribution of mining to Lithgow LGA, in particular to communities in proximity to mining operations e.g. Wallerawang, Lidsdale and Portland, has reinforced a strong dependency on mining, and the benefits that accrue from mining i.e. workforce funds and donations, employment and local supply. For example, more than 11% of the labour force in Wallerawang-Lidsdale is employed in the coal mining industry, the majority are assumed to be employed at Springvale Mine, based on Centennial employment records.

Mining supports the ongoing sustainability of services in the nearby communities and underpins the continuity of service delivery for valued social and physical infrastructure. For example, Wallerawang Public School is reliant on enrolments to continue staffing arrangements. Many families within the area are mining families and in consultation with an education provider it was noted that mining generally supports and boosts enrolment numbers. During SIA consultation with the Principal of Wallerawang Public School it was mentioned that "*without mining, the community wouldn't exist, the school wouldn't exist…*" (per comms September 2019). Wallerawang has a small commercial centre, and many residents who participated in SIA consultation indicated that they try hard to shop locally in Wallerawang to ensure the services remained viable.

SIA consultation found that Centennial was a silent contributor to:

- A range of local and regional events including the annual New Year's Eve event held at Lake Wallace, and fishing events; and
- Families identified as 'in need'.

During SIA consultation some residents noted that coal mining was engrained within the community and the benefits delivered are considered necessary to the functioning of community. During SIA consultation Centennial was described as *"incredibly supportive*" and that they are a part of the "*unique community*" (pers comms September 2019). Centennial employees also contribute to community and families, separate to the organisation, through the '*Community Assistance Fund'.*

Communities in proximity to Angus Place Mine have been exposed to periods of time whereby mining has ceased i.e. Springvale Mine stand down and the care and maintenance of Angus Place. During SIA consultation, residents identified the following experienced impacts of a downturn in mining activity:

- Less local spending;
- Reduced involvement in the community and community events;
- Increased anxiety amongst previously employed workers and their families;

- The loss of families from the area and resulting fracturing of social connections. Some participants in the SIA consultation noted that several families moved out of the area when Angus Place Mine was placed on care and maintenance, and those residents that stayed found work within and outside of Lithgow LGA (sometimes travelling further distances to their place of employment); and
- Reduction in commercial activity both within the smaller communities e.g. Wallerawang but also in the larger centre of Lithgow.

The closure of Springvale Mine in the absence of the project would have a significant and negative impact on the strength and identity of the nearby communities of Wallerawang and Lidsdale and to a much lesser extent Portland (due to proximity). Conversely the project, if approved will:

- Enable the continuation of the social and economic benefits of mining to nearby communities in the absence of alternative employment and economic diversification, with positive benefits for infrastructure and service sustainability, social connectedness and community identity as we as mental health and well-being; and
- Enable the continuation of social and economic benefit streams derived from financial and in-kind support provide by Centennial to nearby communities.

As one resident expressed, the project will enable the community to continue to "band together" (pers comms September 2019).

Road Safety and Accessibility

SIA consultation findings indicate a low level of concern in relation to the potential impacts from the project on road safety, pedestrian safety and accessibility. These aspects of liveability are discussed in the following sections.

Construction Phase Impacts

The SIA has assessed the social impacts (i.e. public safety) associated with increased vehicle movements on Newnes Plateau during project construction. A *Traffic Impact Assessment* (TIA) (EMM, 2019) has been prepared as part of the APR and includes an assessment of the impact of the construction and operations activities on road capacity, intersection performance and travel time. Project related construction activities will result in an increase in the number of light and heavy vehicles accessing Newnes Plateau. The predicted daily construction traffic generation (bore infrastructure and downcast shaft construction) as a result of the project is:

- 114 Light Vehicle (LV) movements; and
- 163 Heavy Vehicle (HV) movements (EMM, 2019).

The HV movements is considered a worst-case scenario.

The majority of project induced oversized and heavy vehicle use will occur on the Newnes Plateau during construction. The findings of the TIA indicate that traffic increases during construction would occur on a number of roads across the Newnes Plateau including Old Bells Road, Glowworm Tunnel Road, Blackfellows Hand Trail and Sunnyside Ridge Road, and on the wider road network. From a compliance perspective the TIA has assessed the additional project related traffic on these roads as acceptable due to the temporary nature of construction activities (EMM, 2019).

During construction, the average vehicle delays at the Chifley Road/Petra Avenue/Old Bells Line of Road intersection will be similar to current delays experienced. Due to the temporary nature of project related construction activities, no long-term significant impacts are anticipated on the road network during construction.

Road safety issues associated with construction activities were not raised as an issue by participants in SIA consultation. Several participants confirmed that they were not concerned from a road safety perspective about any potential increase and/ or cumulative impacts in relation to heavy vehicles on the Newnes Plateau. The use of oversized and heavy vehicles will be conducted in accordance with requirements of the National Heavy Vehicle Regulator and arrangements addressed in a Construction Traffic Management Plan (CTMP), implemented by Centennial. Any project vehicles accessing the plateau during operations will be accessing the surface site facilities only.

The TIA makes the following management recommendations:

- Implementation of a road maintenance program for the affected unsealed rural roads within Newnes State Forest (namely Old Bells Line of Road, Glowworm Tunnel Road, Blackfellows Hand Trail and Sunnyside Ridge Road). The road maintenance program should include measures such as regrading of the road surface to repair potholes and road corrugations at three monthly intervals during construction and a commitment by Centennial Angus Place to restore the road surface to its pre-construction condition at the completion of construction.
- Installation of construction and speed management signage along the affected sections of the unsealed road network.
- Preparation of a CTMP and Driver Code of Conduct prior to commencement of construction and incorporation of the road maintenance program and other traffic control measures throughout construction.

<u>Cumulative Construction Phase Impacts</u>

The TIA indicates that part of the assessed route on Newnes Plateau has the potential to be significantly affected under a concurrent construction scenario for the project and the proposed Clarence Mine pipeline construction (Section 6.2.5) (namely Old Bells Line of Road, Glowworm Tunnel Road and its continuation onto Blackfellows Hand Trail). Both the

construction compound for the proposed pipeline and the active work areas as part of the project related construction activities have potential to be accessed via these roads. Construction of the proposed pipeline is expected to take approximately 18 months and is expected to have a peak construction workforce of approximately 60 people.

The findings of the TIA indicate that a maximum of 455 daily vehicle movements could occur on Glowworm Tunnel Road under a concurrent construction scenario, thereby exceeding the recommended threshold of 150 daily vehicle movements for unsealed minor roads. The majority of these movements are attributable to the project and not the proposed pipeline project. However, the TIA notes that this level of exceedance will only be temporary and will only occur under a concurrent construction scenario and will therefore not have a significant long-term impact on Glowworm Tunnel Road (EMM, 2019).

Social impacts associated with a cumulative increase in traffic in the Newnes Plateau would be addressed through the preparation and implementation of a CTMP and a Driver Code of Conduct, as previously described.

The findings of the social impact significance assessment (Section 0) shows that the potential traffic impacts during construction from a safety perspective are considered low, however cumulative traffic impacts during construction are considered to be moderate.

Operations Phase Impacts

The potential for project operations related traffic impacts in the PAA was raised by one participant in SIA consultation.

Existing daily traffic on Wolgan Road is estimated at 240 light vehicle movements and includes minimal existing traffic to/from the Angus Place Mine pit top since the mine is currently in care and maintenance (EMM, 2019).

The findings of the TIA indicate:

- Additional project related daily light vehicle movements during operations will contribute to a 209.2% increase in traffic on Wolgan Road (south of the mine access intersection) (EMM, 2019).
- While the largest traffic number on-site at the Angus Place Mine pit top at any one time is anticipated to occur during the Sunday night and Monday morning shift changeover period, the actual peak daily traffic volumes will likely occur from Tuesday to Thursday.
- Assessment of intersection capacity with the project shows that there will be only minor changes to the baseline intersection operations. Overall, project related vehicle movements during operations will have negligible impacts on the assessed intersections.

Despite the findings of the TIA, the predicted increase in traffic on Wolgan Road is a significant change in existing traffic volumes on Wolgan Road. However, the anticipated travel volumes are similar to that experienced when Angus Place Mine was in operation. It is notable that during SIA consultation residents of Lidsdale indicated, policing of Wolgan Road was regularly visible when Angus Place Mine was operating, and that this contributed to the management of concerns in relation to public safety.

Several school buses operate in Lithgow LGA, through both Wallerawang and Portland during morning and afternoon school times (7:30am to 9:00am and 3:30pm to 4:45pm). Shift changeover times align with school bus route times in the Lidsdale and Wallerawang communities. However, both communities and service providers are familiar with the existing shift arrangements for the surrounding mine operations. Residents of Lidsdale who participated in the SIA consultation were not concerned about pedestrian and public safety in the context of interactions between project related traffic and school bus operations. Several residents indicated they were unaware of any issues when Angus Place Mine previously operated. Despite this, Centennial will continue to engage with the Lidsdale community to remain aware of any emerging issues in relation to pedestrian safety along Wolgan Road.

The following strategies are proposed to avoid and minimise the potential for road safety incidents associated with the project:

- Preparation of a CTMP and a Driver Code of Conduct as previously described;
- Ensure workers are aware of local roads, and the varying speed limits on sealed and unsealed roads; and
- Implementation of fatigue management measures.

Residential Amenity

Preliminary scoping of social impacts and opportunities considered the following key areas of potential impact and opportunity in relation to residential amenity:

- Potential impacts of construction activities on residential amenity;
- Potential impacts of operations activities on Newnes Plateau to impact residential amenity;
- Potential for increased vehicle movements on Wolgan Road during operations to adversely impact residential amenity in the community of Lidsdale;
- Potential for operations activities at the Angus Place Mine pit top to impact residential amenity including potential to cause sleep disturbance;
- Potential for positive residential amenity outcomes compared with operations prior to care and maintenance, due to the use of overland conveyors rather than haul trucks to transfer the coal; and

- Potential impacts to recreational amenity in the Newnes Plateau, however this issue is discussed in Section 6.2.4.

The potential impact of construction activities on residential amenity was assessed as negligible. The findings of the NVIA indicated that this is because construction activities, where they occur on the surface, are confined to the Newnes Plateau, with a minimum separation distance in the order of 4 km between construction activity and the nearest potentially affected residential locations. Intervening topography and the nature of other land use located in closer proximity to sensitive receptors also contributes to minimising amenity impacts.

The AQIA assessed the impact of construction activities on nearby receptors. The findings of the AQIA indicate that there would be no human receptors impacted by construction dust (EMM, 2019b). With regards to operations activities the results of the AQIA show that the predicted concentrations and deposition rates for incremental particulate matter (total suspended particles (TSP), PM_{10}, $PM_{2.5}$ and dust deposition) are below the applicable impact assessment criteria at all assessment locations (EMM, 2019b).

The potential for operations activities on Newnes Plateau to impact residential amenity was also assessed as negligible. The findings of the NVIA indicate that the operation of the additional downcast shaft and additional dewatering bore facilities within the 1000 longwall panel area on the Newnes Plateau are not expected to be significant sources of noise. Given the separation distance to residential receptors, noise impacts are expected to be negligible from these sites. It is noted in the NVIA that traffic associated with the ongoing operation of the borehole infrastructure and downcast ventilation shaft on Newnes Plateau will be minimal and therefore potential noise from associated road traffic is assessed as negligible.

The SIA has therefore assessed the:

- The potential for operations activities at the Angus Place Mine pit top to impact residential amenity including potential to cause sleep disturbance;
- Social impacts associated with an increase in vehicle movements on Wolgan Road during project operations; and
- Benefits accruing to residential amenity due to the use of overland conveyors.

It is notable that no participants in the SIA consultation raised concerns in relation to potential increases in traffic on Wolgan Road during project operations. Several local participants confirmed that they were not concerned about any potential increase in traffic on the local road network from an amenity perspective. Concerns raised related to perceptions of safety.

Amenity impacts due to operations activities at Angus Place Mine pit top

Operational noise emissions from the project are predicted to result in negligible residual noise impacts at all assessment locations (EMM, 2019a). Predicted maximum noise levels from the project are below the maximum screening criteria and generally consistent with the results of previous noise compliance monitoring. In relation to sleep disturbance the findings of the NVIA indicate that maximum noise levels from operation of the dozer or truck loading activities during the night at the nearest residential assessment location are predicted to be below the relevant sleep disturbance criteria.

The main vibration generating activities from operations will be the existing pit top coal handling plant and the stockpile dozer. Given the minimum separation distance of approximately 680 m between the mine's pit top and the nearest potentially affected locations, together with the mitigation measures already in place at the Angus Place Mine pit top vibration levels from these activities were predicted to be negligible and below levels of human perception at the nearest receivers.

Since the mine is currently in care and maintenance it was not possible to validate the adopted sound power levels or the relevance (or not) of modifying factors to account for annoying noise characteristics. Centennial Angus Place have made a commitment to limit evening and night operations until sound power levels of on-site plant and equipment and off-site noise emissions can be verified (EMM, 2019a).

Noise emissions from the project will continue to be managed in accordance with the existing *Noise Management Plan - Western Region June 2018* (NMP). The NMP outlines the noise mitigation and management measures common to all Centennial operations within the western region, where applicable, as well as those specific to Angus Place mine.

Amenity Impacts due to Increased Traffic on Wolgan Road

The NVIA (EMM, 2019a) has assessed the potential noise and vibration related impacts of the predicted increase in traffic on Wolgan Road. The NVIA found that operational road traffic noise levels are predicted to satisfy the relevant noise criteria for the nearest residential locations. This however does not mean that residents along Wolgan Road will not experience a change in residential amenity. There will be some changes in background noise levels, however these will be confined largely to shift change over times (Section 2.2.2).

The NVIA and AQIA identified 16 project sensitive receptors, of which seven are residential receptors and nine are recreational receptors located on Newnes Plateau. With regards to the seven residential receptors the findings of both studies indicate that any generated noise impacts from increased traffic will be within permissible criteria (EMM, 2019a).

The impact of the project on residential amenity along Wolgan Road is assessed as moderate.

Amenity Benefits due to Use of Overland Conveyor System

Coal from the Springvale Mine is transferred to MPPS via a series of overland conveyor systems and in accordance with existing approvals. Prior to care and maintenance coal from Angus Place Mine was transferred to WPS and MPPS via private haul roads. Centennial is now seeking to transfer coal, once longwall production commences from Angus Place Mine to the Springvale Mine pit top via underground roadways. Once at the Springvale Mine pit top, coal will be transferred to the MPPS via the existing and approved overland conveyor system. Centennial is still seeking approval to enable the transfer of coal from Angus Place Mine by road (using dedicated haul roads) in the event that there are unforeseen issues with the underground conveyor system connecting Angus Place Mine to Springvale Mine, or unforeseen issues with the overland conveyor system. This approach will ensure security of coal supply for MPPS.

However, under normal operating conditions the use of the overland conveyor will negate the need for the trucking of coal from Angus Place Mine as previously occurred prior to care and maintenance. This is a significant amenity benefit of the project when compared to operational arrangements prior to care and maintenance. A number of submissions to the 2014 EIS raised concerns about the amenity impacts associated with the use of the dedicated haul roads and public roads for coal haulage. The haul roads connecting to MPPS are not dedicated Centennial haul roads and are used by both EA and Centennial.

Health and Wellbeing

This section discusses the potential for the project to impact or benefit community health and wellbeing. SIA consultation findings suggest little concern from near neighbours and communities regarding the health and wellbeing impacts of the existing Springvale Mine operation and the project. There were no project specific health and wellbeing concerns raised during SIA consultation, except in the context of the project not proceeding. In this regard almost all participants reflected on the experienced health and wellbeing impacts of the closure of WPS and Angus Place Mine, and the Springvale mine stand down. One or two residents also cited examples of short-term amenity impacts experienced due to noise from overland coal conveyors, however these residents also expressed satisfaction with the way the issues had been handled by Centennial at the time.

The project not proceeding would result in the redundancy of the majority of personnel at Springvale Mine, and the loss of an unknown number of indirect jobs as arrangements with suppliers and customers cease. The end of coal production at Springvale Mine and a lack of coal supply alternatives to MPPS could also affect the operation of MPPS and threaten existing jobs at MPPS and associated supply arrangements. It would also have the potential to result in a reduction in power supplied by MPPS which could in turn lead to indirect health and wellbeing impacts on communities within and outside of the project's social area of influence. Access to stable employment supports mental health by enabling housing security, self-development and social connections. The continuation of employment provided through the project would support positive mental health outcomes for many of the existing Springvale

Mine employees and local suppliers, and provide a level of comfort and security to their families.

The health and wellbeing benefits of the project, if approved has been assessed as significant.

6.2.3 Values and Aspirations

The SIA has assessed the potential impact of the project on Indigenous and non-Indigenous cultural and environmental values and aspirations. The project may give rise to damage and/or permanent loss of valued natural and cultural attributes in the PAA i.e. swamps, cliffs and rock pagodas. The project also has the potential to adversely impact Aboriginal aspirations in relation to future land ownership and preservation. Conversely the project will support the achievement of the environmental conservation aspirations for the GSA with respect to Destination Pagoda. These impacts and opportunities are discussed in the following sections.

Historic heritage values are not considered in the following discussion of impacts. This is because there were no historical heritage sites located within the PAA and historic heritage was not raised as an issue during SIA consultation.

Environmental Values of Newnes Plateau

SIA consultation findings indicate that the Newnes Plateau has important intrinsic value for a number of organisations and individuals within the Lithgow community. This is attributed in part to the presence of high value swamps within the Newnes Plateau and the associated biodiversity. There is a strong desire from some organisations within and outside the Lithgow LGA to protect and enhance the environmental values of Newnes Plateau.

<u>Swamps of the Newnes Plateau</u>

During SIA consultation Lithgow residents, Wiradjuri people and several NGOs, expressed concern that the project would result in irreversible damage and loss of high value swamps present on the Newnes Plateau. This is also evidenced in the submissions received in response to the 2014 EIS and media articles at that time. Concerns were also expressed that the damage or loss of these swamps would impact surrounding biodiversity. The concerns raised can be attributed to the experienced impacts associated with the operation of Springvale Mine, during which subsidence related impacts resulted in the irreversible damage and loss of high value swamps. The swamps are regarded as valued assets that are unique to the area and contribute to nature-based experiences for residents and visitors to the Newnes Plateau.

There are two shrub swamps located directly above the proposed mining area: Tri Star Swamp and Twin Gully Swamp. The potential impact of the project on these shrub swamps has been considered in a number of technical reports supporting the APR, notably the SWIA, GWIA and

the SPIA. The impact of the project on biodiversity values associated with the swamps is assessed in the BIA (RPS, 2019).

The findings of the SWIA and GWIA indicate that:

- Groundwater drawdown and reduced baseflow contribution are expected to impact the THPSS that exist above the proposed mining area;
- The reduced groundwater contribution to baseflow will also have a corresponding reduction in predicted surface flow on the PAA. The reduced flows have the potential to have cascading impacts for aquatic ecology and swamp flora and fauna; however, they are not of sufficient magnitude to impact on downstream surface water users; and
- The predicted subsidence is not expected to have a material impact on stream geomorphology or stream flow characteristics.

The BIA found that subsidence related impacts on the THPSS may result in vegetation dieback, major incision and erosion (in some instances down to bedrock), associated with loss of peat layer, significant loss of ecosystem function and ecological resilience, and ecological and geomorphic threshold exceedance. As such, impacts to THPSS associated threatened species are also likely in these locations. However, the BIA findings suggest that given the current THPSS monitoring results, it is considered unlikely that the THPSS systems will be lost in entirety.

Since the 2014 EIS was lodged, Centennial has made significant changes to the design of the longwall panels in order to avoid areas of high value swamps. However, in the absence of mitigation or offset, the social impacts associated with the continued degradation of swamps on Newnes Plateau from the project is assessed as significant for those people and organisations who highly value the swamps. Since 2014 Centennial has also engaged in extensive consultation with government and non-government organisations in relation to the development of a strategy to offset the experienced swamp impacts at Springvale Mine and the predicted swamp impacts from the project. Centennial has developed a multi-layered swamp offset strategy to compensate for the current and potential impacts to THPSS and their associated threatened species for both Springvale Mine and the project (should it be approved). The Swamp Offset Strategy (Centennial Coal, 2019a) demonstrates compliance with the Springvale Mine existing conditions of consent and meets state and federal offset policy requirements for both Springvale Mine and Angus Place Mine. The Swamp Offset Strategy is included in the BIA.

The Swamp Offset Strategy comprises:

- Support for the transfer of State Forest owned land into a State Conservation Area (SCA);
- Monetary contribution to management of that land impacted at Springvale Mine;

- Payment of funds into the Biodiversity Conservation Trust Fund for Angus Place Mine; and
- Commitment to ongoing monitoring and research of swamps and obligate species to understand long term trajectory of swamps post mining (Centennial Coal, 2019a).

Importantly the Swamp Offset Strategy provides the mechanism through which the GSA can progress the realisation of Destination Pagoda. This is a long-term aspiration of the GSA.

In addition to the Swam Offset Strategy the SPIA includes a number of additional recommendations for managing the potential impacts of subsidence on the swamps. Management plans have also been developed for the swamps which have been previously mined beneath at Angus Place and Springvale Mines. These included methods of remediation where adverse impacts have been observed as a result of subsidence. The SPIA recommends that the existing management strategies and methods of remediation are reviewed, based on the assessments provided in the SPIA and the reports by other specialist consultants on the project.

Rock Pagodas and Cliffs

A key finding of SIA consultation was the value some residents of the Lithgow LGA place on the preservation of cliffs and rock pagodas within the Newnes Plateau and the adjoining GSNP. It is evident through consultation that these natural features contribute significantly to the passive and active recreational experience for users of the Newnes Plateau and adjoining GSNP areas. Some community members also identified the cliffs and rock pagodas as contributing to the natural heritage of the area.

Stakeholders expressed concern that subsidence from mining activity could result in rock fracturing, impacting the structural integrity of the cliffs and pagodas, and adversely impacting passive and active use of the area.

Cliffs, minor cliffs and rock pagoda complexes have been identified within the valleys of the Wolgan River, Carne Creek and the tributaries to the Wolgan River and Carne Creek. The mining layout has been designed such that the majority of the cliffs and rock pagoda complexes are located outside of the area of influence from subsidence.

The findings of the SPIA indicate that:

- There are some cliffs located on or inside the angle of draw and minor cliffs and isolated pagodas are located adjacent to and above the proposed mining area.
- It is unlikely, that the cliffs and rock pagoda complexes would experience adverse impacts due to the proposed longwalls.

- There are some minor cliffs, rock pagodas and other rock formations that are located adjacent to or directly above the proposed longwalls. The proposed mining is likely to result in fracturing of some of these features and, where the rock is marginally stable, this could then result in chipping or crumbling of the exposed rockfaces. It is expected that the impacts on these minor cliffs, pagodas and rock formations would represent less than 1% to 3% of total exposed rockface areas of these features which are located directly above the proposed longwall panels.

The likelihood of public safety risks associated with rock falls is assessed as low. Centennial has an established and extensive subsidence monitoring system in place across the Newnes Plateau. Cliff falls are a natural occurrence. Evidence from previous mining activity at both Angus Place and Springvale Mine indicates that Centennial has mined beneath several cliffs and rock pagodas across the Newnes Plateau without impact. On this basis it is unlikely that the project will have any aesthetic value on the cliffs and pagodas located above the mining area.

The findings of the SPIA suggest that surface cracking and deformation are not expected within the GSNP due to the distance of the National Park from the mining area. The GSNP is located north of the proposed mining area, at a distance of 1,040 m from the proposed longwall panel 1011. In response to submissions on the 2014 EIS, Centennial shortened a number of longwall panels in proximity to the GSNP boundary in order to minimise any potential for impacts to the GSNP. The effects of longwall mining will be continuously monitored, allowing for an ongoing review of predicted movements.

Given the findings of the SPIA, it is unlikely that the project will have any significant impact on community held values relative to the cliffs and pagodas of the Newnes Plateau and GSNP.

The SPIA recommends that:

- A Landscape Management Plan be developed for cliffs, minor cliffs and pagoda complexes as part of the Extraction Plans for the mine;
- Periodic visual inspection be carried out when mining adjacent to these features and for a period after the completion of mining;
- Remediation be carried out on the larger surface cracking which could result in increased erosion or restrict access; and
- Management strategies be developed to ensure that these measures are implemented and that these measures themselves (i.e. use of plant or other equipment) do not adversely impact on the environment.

With appropriate management strategies in place it is unlikely that there would be long term impacts on the steep slopes and rock outcrops resulting from the proposed mining.

Wolgan River and Carne Creek

During SIA consultation some stakeholders expressed concerns regarding the potential for impacts to surface water and groundwater resources located within and outside of the PAA. Representatives from Emirates Wolgan Valley Resort, One & Only (Emirates) raised key concern regarding the impact of subsidence on the Wolgan River and the potential for reduced water flows. The natural attributes of the Wolgan Valley, of which the Wolgan River is one, form a significant component of the business operation for Emirates. Tourists stay at the resort for the natural environment and the accompanying peace and tranquillity. Emirates has made a significant investment in rehabilitation of the banks of the Wolgan River in proximity to the resort facilities.

NGO's also expressed concern in relation to potential impacts of project related surface water and groundwater discharge on Wolgan River and Carne Creek. These concerns were also raised during submissions to the 2014 EIS.

The closest surface water users to the PAA are located in proximity to Carne Creek and the Wolgan River in the Wolgan Valley.

The findings of the SWIA (Jacobs, 2019) and the GWIA (Jacobs, 2019a) indicate:

- No infrastructure will be sited in the vicinity of any waterways and pipelines will not be trenched through any waterway.
- The impact of the project on surface water quality and flows in Carne Creek and Wolgan River will not be significant for downstream water users.
- From 2020, there will be no discharge of mine water from Angus Place Mine and all mine water not used on site during the project will be transferred to the SDWTS. The dewatering of the mine will continue post-mining, in conjunction with neighbouring Springvale Mine, with water transferred to the SDWTS until 2053.

Site water management at the Angus Place Mine pit top will remain unchanged. Centennial will continue to monitor any potential impacts to surface water flows, however the impact is anticipated to be low.

Wolgan River has experienced subsidence effects from previously extracted longwall panels at Angus Place Mine and Springvale Mine. Fracturing of Wolgan River is not anticipated for this project, however, if fracturing does occur it would likely result where the river is closest to the proposed mining area. Any fracturing is expected to be minor i.e. less than 20 mm, and will not result in adverse impacts on the surface water flows in the river. The findings of the SWIA indicated that the Wolgan River is unlikely to experience adverse physical impacts due to the extraction of the proposed longwall panels. This is due to the distance of the creek from the longwall panels. The project is therefore unlikely to have any significant impact on the value and use of the river and creek systems within and outside the PAA.

However, the SPIA recommends the preparation of a Water Management Plan for the project that includes monitoring and management of the Wolgan River.

Indigenous Cultural Assets and Values

There are a number of different Aboriginal parties with strong connections to land located within the PAA. These include the Wiradjuri People and the Gundungurra People (Niche Environment and Heritage, 2019).

As described in Section 5.2.2, local Aboriginal people and Aboriginal people of the CW Region are concerned about any development that might impact upon Aboriginal heritage and other physical and intrinsic values of traditional land. Any development upon, or disturbance of land is contrary to principal Aboriginal beliefs regarding land, its values and its inherent cultural significance. During SIA consultation representatives of the Mingaan Wiradjuri Aboriginal Corporation indicated that the area known as *Maiyingu Marragu* (Blackfellows Hand) was of cultural significance to Wiradjuri people. This area is located within the PAA and its cultural values are described in detail in the CHIA. Through consultation it was noted that the area had experienced mining impacts i.e. subsidence, and a resultant loss of or damage to artefacts. Representatives of the corporation also expressed some concern in relation to the experienced impacts of mining at Springvale Mine. Specific issues raised include the:

- Presence of additional cracking on the Newnes Plateau - attributable to subsidence; and
- Impact of subsidence and its effects on grinds and grooves, and artefacts i.e. paintings. There is a perception that mining beneath the Newnes Plateau has resulted in a reduction in water levels enabling the shale oil level to rise, which in turn has resulted in the deterioration of Aboriginal paintings.

Wiradjuri representatives also perceive that mining activities on the plateau have reduced access for their people to different areas of the plateau. SIA consultation with Wiradjuri representatives indicated concern for the cumulative loss of land and artefacts resulting from local and regional changes in land use, including the continuation of mining.

The project will result in the potential disturbance of 49 Aboriginal cultural heritage sites identified within the PAA, nine of these sites are located within 600 m of the proposed longwall mining areas. These sites are more likely to experience disturbance due to their proximity to the longwall panels. Of these nine sites:

- One site has been assessed to have high significance, and one site medium significance, all other sites have been assessed to have low scientific significance; and
- Two shelter sites are within the angle of draw, with one of these sites (Site Ref 45-1-0084) is considered at risk of subsidence (Niche Environment and Heritage, 2019).

The Aboriginal heritage sites within the PAA are all rock shelters with deposits. The shelters are located on the sides of the valleys. These sites are therefore not expected to experience

the valley related upsidence or compressive strains due to valley closure, as these occur near the valley base, rather than along the valley sides.

The SPIA found that the extraction of longwall panel 1006 is likely to result in fracturing of the exposed bedrock along the ridgeline above which Site Ref 45-1-0084 is located. The SPIA has assessed the potential for adverse impacts on Site 45-1-0084, including fracturing and movement on existing bedding planes and joints, as approximately 10% (Mine Subsidence Engineering Consultants, 2019). The fracturing and movement could result in rockfalls where the rock is marginally stable. The potential for rockfalls at this site is considered to be less than 10%.

The remaining Aboriginal heritage sites are located at distances between 150 m and 570 m outside the proposed mining area. Whilst these sites could experience very low levels of vertical subsidence and far-field horizontal movements, they are not expected to experience measurable tilts, curvatures or strains (Mine Subsidence Engineering Consultants, 2019). Adverse physical impacts are not expected for the sites that are located outside the proposed mining area.

The CHIA findings indicate that the swamps within the PAA have been determined archaeologically sensitive, as areas of raised terrace within the swamp landscapes provide suitable locations for habitation and resource gathering, open camp sites, isolated artefacts, and scarred trees are possible (Niche Environment and Heritage, 2019). Potential impacts to swamps has been previously discussed.

Centennial, through the project design, has sought to avoid areas of high potential for Aboriginal cultural heritage sites such as cliff lines and the areas surrounding the Wolgan River in order to minimise potential subsidence and surface impacts.

Given the high and medium scientific significance of two of the identified Aboriginal cultural heritage sites within the PAA, the cumulative effects from the project are considered to be moderate, and will be mitigated by the ongoing archaeological recording recommended within the CHIA.

The significance of the social impact associated with predicted impacts to items of Aboriginal cultural significance within the PAA is assessed as high. This is because of the importance and value attributed to the rock shelters by relevant Aboriginal groups.

Centennial has developed a strong working relationship with RAPs for the project and the Mingaan Wiradjuri Aboriginal Corporation. Centennial is committed to involving the local Aboriginal community as integral participants in the management of Aboriginal cultural heritage values in the PAA. Centennial will continue to involve the registered Aboriginal stakeholders and any other relevant Aboriginal community groups or members in matters pertaining to the mine development.

All Aboriginal heritage in the PAA will continue to be managed in consultation with the RAPs, in accordance with the *Western Region Aboriginal Cultural Heritage Management Plan* and any future updates.

Indigenous Land Use Aspirations

During SIA consultation representatives of the Mingaan Wiradjuri Aboriginal Corporation expressed an aspiration for land within and adjoining the PAA to be returned to the Traditional Owners post mining, along with funds for fire management and land conservation management. Representatives expressed concern that the high levels of use of the Newnes Plateau by 4WD groups and motorbike riders presented a risk to the remaining cultural artefacts and values within the Newnes Plateau. This concern was attributed to a perceived lack of cultural awareness amongst user groups on the plateau.

The Mingaan Wiradjuri Aboriginal Corporation expressed a future aspiration to establish an Indigenous cultural and education centre within the Newnes Plateau and or adjoining areas. This would also provide the foundations for the establishment of an Indigenous Rangers Program to support conservation and preservation of the Newnes Plateau area.

To date, the Mingaan Wiradjuri Aboriginal Corporation has been involved in constructing bollards around *Maiyingu Marragu* seeking to limit access, in particular 4WD access to the area. Consultation with some Wiradjuri people indicated that they understood mining was economically important to the region and its' continued prosperity.

Centennial continues to support the Mingaan Wiradjuri Aboriginal Corporation in undertaking work to protection *Maiyingu Marragu* and enhance the cultural educational value of the site.

The Swamp Offset Strategy presents an opportunity for the future preservation of the Newnes Plateau.

6.2.4 Access and Use of Public Land

The SIA considers the impact of the project on:

- Access to areas of Newnes Plateau;
- Use of Newnes Plateau by the public; and
- The 'user experience' of Newnes Plateau in the context of amenity and enjoyment.

Changes in Access to Newnes Plateau

SIA consultation findings indicate that ready access to Newnes Plateau contributes to the local way of life for a number of residents. The use of Newnes Plateau is discussed in Section 5.2.3.

Access to Newnes Plateau will be required for the construction of surface site facilities (borehole infrastructure), as well as ongoing maintenance. Centennial currently accesses Newnes Plateau for a range of purposes including to:

- Undertake environmental monitoring programs;
- Undertake subsidence impact monitoring;
- Maintain existing infrastructure; and
- Maintain access tracks to infrastructure areas and environmental monitoring locations.

Stakeholders expressed concern that construction activities could potentially restrict the public access, use and enjoyment of areas of Newnes Plateau for some user groups.

The project will require additional persons and vehicles on Newnes Plateau for short periods of time as described in Section 2.2.3. Construction activities i.e. borehole infrastructure and an additional downcast shaft, may result in temporary restrictions on access to discrete areas of the plateau during works. Construction activities will be short in duration and periodic. During construction, all existing public access tracks will remain accessible for public use and will not limit recreation opportunities.

Existing tracks will be used where possible to access surface infrastructure areas. One new access track will need to be developed. This additional access track is unlikely to encourage public use into a new area as the track will only access the surface site facilities. Recreational amenity impacts associated with the proposed additional access track are considered to be negligible.

Centennial has sought to site surface infrastructure areas away from the main public use areas on the Newnes Plateau. This is to minimise any potential impact on the use and enjoyment of the area. New borehole infrastructure areas will ultimately be fenced and secure to prevent public access.

Users of the plateau are familiar with the type of infrastructure that is proposed on Newnes Plateau. This is because Centennial currently utilise the plateau for surface facilities associated with Springvale Mine. The findings of SIA consultation with user groups of Newnes Plateau suggested that the existing facilities on the plateau do not detract from the recreational use and enjoyment of the space.

Centennial has an existing agreement with NSW Forestry to maintain access tracks on Newnes Plateau for the purpose of accessing surface infrastructure and conducting environmental monitoring activities. This has obvious benefits for public access. Maintenance of main access roads (fire trails) is not the responsibility of Centennial.

The findings of SIA consultation suggest that during the operation of Angus Place Mine, the access tracks were well maintained. One representative of a 4WD user group of Newnes Plateau perceived that track maintenance had become more periodic since 2015, and further when Angus Place Mine was operational many more people were able to access Newnes Plateau due to the better track conditions. However, the track maintenance activities of Centennial have not changed since Angus Place Mine was placed on care and maintenance. Degradation of tracks (including tracks maintained by Centennial) continues to occur across the Newnes Plateau. This degradation is most noticeable on the main access roads. This degradation can be attributed to weather conditions as well as the volume of public users, the different user groups and a lack of established protocols to control recreational vehicle access across the plateau.

The project will not impact access and use of Newnes Plateau. Centennial will continue to maintain all necessary access tracks as required in its agreement with Forestry Corporation of NSW and the relevant conditions of consent.

Recreational Amenity in Newnes Plateau

The Newnes Plateau is widely used by local residents and domestic tourists on day trips from Sydney (Section 5.2.3). Visitors engaged in canyoning and other activities based on the attributes of the local area don't access Newnes Plateau in proximity to the proposed surface infrastructure areas. The findings of consultation indicate that the natural environment of Newnes Plateau, including the cliffs and pagodas, contributes significantly to the recreational experience. A review of submissions in response to the 2014 EIS, and current SIA consultation identified that some residents are concerned that mining may detract from the Newnes Plateau recreational experience, specifically the visual amenity. A small number of stakeholders expressed concern that project infrastructure and any potential increase in noise from infrastructure operations i.e. the vent shafts, could detract from existing recreational amenity on Newnes Plateau.

Local residents indicated that they typically avoid the mining related surface infrastructure areas on Newnes Plateau, and that it is well known that the area contains mining infrastructure. SIA consultation findings suggest that groups and clubs (canyoning and mountain biking) that use the plateau typically use natural areas located beyond the boundary of the PAA. Tourists (4WD drivers and motor bike riders) use the main access roads and a range of access trails across the plateau. Bushwalkers and people undertaking more passive recreational pursuits are more likely to visit the swamps and areas in closest proximity to project infrastructure.

Surface infrastructure is proposed to be located in small isolated areas of Newnes Plateau. The NVIA has considered the acoustically worst-case scenario for both standard and out-of-standard-hours construction activity. The findings of the NVIA show that, based on a likely acoustically worst-case construction scenario, areas up to 250 m from the construction activity

will experience noise levels above the noise management level of 60 decibel (dB) for passive recreation areas.

Noise emissions from the project will continue to be managed in accordance with the existing Angus Place Noise Management Plan (NMP), which describes the monitoring program for the mine including both attended and real-time, unattended noise monitoring. Should the project be approved, the NMP will be updated to include the project.

Construction activities on Newnes Plateau will necessitate the clearing of isolated areas of vegetation for placement of new infrastructure. It is possible that project clearing may adversely impact the visual amenity of a very localised area due primarily to vegetation disturbance. However, given that the majority of surface infrastructure areas will be located away from main thoroughfares the impact on recreational amenity is considered negligible.

The cliffs and rock pagodas contribute to the recreational experience of Newnes Plateau. Subsidence fractures are present within the Newnes Plateau from previous mining operations. During SIA consultation, it was noted that the existing fractures did not detract from the user experience, but that they were visible. The SPIA has assessed the impact of subsidence on the cliffs and rock pagodas of the Newnes Plateau. The predicted subsidence is generally lesser in the central and north-eastern part of the mining area, where the majority of cliffs and rock pagodas are located. As discussed previously (Section 6.2.3) it is unlikely, that the cliffs and rock pagoda complexes would experience adverse impacts due to the proposed project longwall panels. Hence, it is unlikely that the recreational experience in Newnes Plateau will be adversely affected by the project.

Subsidence has the potential to generate minor safety issues on main access roads and access tracks on Newnes Plateau where they are located above the longwall panels. The SPIA indicates that the unsealed roads and tracks within the PAA can be maintained in safe and serviceable conditions throughout the mining period using normal road maintenance techniques. There are existing management strategies for the unsealed roads and tracks located above the previously extracted longwalls at Angus Place Mine. The SPIA recommends that these same strategies are used to maintain the unsealed roads and tracks located within the PAA. It is also recommended that these roads and tracks are periodically inspected during active subsidence.

6.2.5 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*" (International Financce Corporation, World Bank, 2013). There are existing mining and power generation activities in proximity to the PAA as described in Section 4.1.3. The closest existing mining operation is Springvale Mine. Whilst mining activity at Springvale Mine will continue in parallel with the ramp up of operations at Angus Place

Mine, workforce numbers and production at Springvale mine will reduce significantly during this period. Hence it is unlikely that Springvale Mine will contribute to any cumulative amenity impacts.

This section therefore considers the potential for cumulative social impacts from major projects proposed in the Lithgow LGA and adjoining LGAs as shown in Table 31. However, there are no projects close enough to the PAA to contribute to cumulative impacts on local amenity. Of note is the Clarence Pipeline Project. Whilst the site of the pipeline project is too far away from the PAA to result in cumulative impacts, there is potential for project construction activities on Newnes Plateau to overlap with construction activities associated with the Clarence Pipeline Project (Section 6.2.2).

Table 31
Major Projects in the Lithgow LGA and Adjacent LGAs

Project	Proponent	Status	Workforce
Lithgow LGA			
Airly Coal Expansion – Mod 3 – Production, workforce and train movement increases	Centennial	Application	CP – NA OP – 200 (increase from 150)
Clarence Colliery Modification 5 – Workforce Increase	Centennial	Assessment	CP – NA OP – 400
Lidsdale Siding Coal Loader Modification 2	Ivanhoe Coal Pty Ltd	Assessment	CP – NA OP – 10
McPhillamys Gold Project – Pipeline Corridor	LFB Resources NL	RTS	CP – 120
Springvale Water Treatment Project Modification 4	Centennial and EA	RTS	CP – NA OP – NA
Wallerawang Quarry Modification 3	Walker Quarries Pty Ltd	RTS	CP – NA OP – 15
Within Bathurst Regional LGA			
Bathurst Second Circuit	Bathurst Regional Council	Prepare EIS	CP – NA OP – NA
Brewongle Solar Farm	Photon Energy	Prepare EIS	CP – 100
Kempfield Silver Mine	Argent Minerals Limited	Prepare EIS	CP – 150 OP – 90
Within Oberon LGA			

Project	Proponent	Status	Workforce
Oberon Timber – Modification 2 Gas Turbine Installation	Borg Panels Pty Ltd	Assessment	CP – NA OP – 250
Paling Yards Wind Farm	Union Fenosa Wind Australia Pty Ltd	RTS	CP – 65 OP – 11
Within Mid-Western Regional LGA			
Bowdens Silver	Bowdens Silver Pty Ltd	Prepare EIS	N/A
Moolarben Coal Mine - Moolarben Stage 1 Modification 15 - UG4 Ancillary Works	Moolarben Coal Operations Pty Ltd	Prepare Mod Report	CP – 250 OP – 740
Wollar Solar Farm	Wollar Solar	RTS	CP – 500 OP – 5
St Matthews Catholic College	Catholic Education Diocese of Bathurst	Arrange Exhibition	N/A

Source: Department of Planning Industry and Environment, 2019
Notes:
CP – Construction Phase.
OP – Operations Phase.

The potential for significant cumulative social impacts is assessed as low for the following reasons:

- The project would have negligible additional impacts on population, social infrastructure or housing given the anticipated workforce sourcing arrangements, 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 is unlikely to result. This is because of the small construction workforce associated with the project.
- Lithgow residents currently experience the cumulative impacts of mine and power generation related activity on the road network outside of Newnes Plateau. The project would represent a continuation of Springvale Mine's existing contribution to these cumulative impacts, but would not significantly intensify impacts.
- The Lithgow community is experienced in managing the cumulative impacts of mining operations, so a degree of resilience to impacts is likely (as demonstrated in the historical development of the communities of Wallerawang, Lidsdale and Portland).

Any cumulative social impacts of the project are likely to relate to:

- Cumulative degradation in valued natural attributes i.e. cliffs, swamps, rock pagodas (discussed in Section 6.2.3); and
- Cumulative impacts on road safety due to an increase in light and heavy vehicle movements on the Newnes Plateau if the project coincides with the Clarence pipeline project (Section 6.2.2).

6.3 CONSEQUENCES OF PROJECT NOT PROCEEDING

Mining has a strong history in the Lithgow LGA. A number of communities within Lithgow LGA continue to be sustained by nearby mining and power generation industries (Section 5.3.1 and 5.4.1). Despite a shift in industry sector employment from mining and power generation to public administration sector, mining remains a significant employer and a major contributor to GRP in the Lithgow LGA. During SIA consultation, a number of residents expressed the sentiment that without mining, Lithgow would not exist, nor would it function as it does currently i.e. with support and funding.

The EcIA (AIGIS Group, 2019) provides a summary of the potentially negative economic effects if the project were to not proceed, these effects include:

- All direct, contract and derived employment associated with operation of the mine/s would cease, with related negative effects in the local and regional economies;
- All commercial transactions with local, regional and NSW-based businesses would cease, depriving suppliers of goods and services to the mine of this source of business; and
- Supply of coal to MPPS from Centennial operations would cease. This would in all likelihood result in EA being obliged to source fuel from other, more distant mines. This would necessitate increased costs for MPPS, which may ultimately be passed on to customers in the form of higher prices. This in turn may increase the need for supply by rail or road. This would result in increased impacts such as traffic, air quality and greenhouse gas emission effects, as Springvale Mine and Angus Place Mine would supply coal via overland conveyor to MPPS.

The Lithgow economic profile (Profile ID, 2019) data for 2017/2018, reports 6,907 total FTE positions in the Lithgow LGA. If the project did not proceed, the loss of 450 FTE positions would be equivalent to a reduction of 6.5% in total FTE positions across the LGA (6,907 employees). The EcIA identifies that an increase in frictional unemployment would occur, as well as the entry of potentially more highly skilled workers into the labour market that may produce other distortions, such as displacement of workers from other industries and businesses, in preference for employment of available, possibly more skilled, workers. Alternatively, these skills and members of some employee households may be lost to the

region, as former employees and their families are forced to out-migrate in search of alternative employment.

The potential impacts of the project not proceeding can also be illustrated with reference to the *Springvale Survey Research Report – Springvale 2015 Stand Down Research Project* (AIGIS Group, 2017). The research was derived from focus group discussions following the stand down event and found that:

- The stand down had a significant adverse impact on many employees and their families and continues to have an impact due to uncertainty of the security of employment in this area. During SIA consultation, some residents identified that people in community remained uncertain of their futures and were experiencing anxiety;
- There was an impact on the local and broader community via reduced spending (from both employees and operations) which had a flow on effect to local retail trade. SIA findings suggest that a number of shopfronts in Lithgow closed due to a reduction in local spend;
- There is ongoing uncertainty about future employment in Lithgow; and
- Springvale employees are intrinsically linked to their community demonstrated via their participation in the financial and social economy of the area.

If the project is not approved then Centennial Angus Place will need to progress a formal mine closure process.

6.4 MINE CLOSURE

This section considers the social implications of mine closure for nearby communities and the broader Lithgow LGA. As discussed in Section 5.4.1, the communities of Lithgow LGA have experience in managing and responding to the sudden and unplanned closure of major industry and economic contributors.

Mining projects have the potential to create social impacts across all project phases e.g. from exploration through to final decommissioning, as communities adapt to change. There is an increasing community and regulatory focus on the social, cultural and economic impacts of mine closure, largely resulting in increased awareness of potential negative social impacts (Owen, J. and D. Kemp, 2018). Early consideration and planning for mine closure can contribute to reducing negative social impacts associated with mine closure and in turn can contribute to increasing potential benefits. For example, excessive dependency on a mining operation by a local community can be minimised and managed through the design of mine infrastructure and the support of community investment programs.

The potential socio-economic impacts and opportunities associated with project closure include:

- Extensive job changes or loss and subsequent impacts such as financial stress due to lack of income;
- Reduced household incomes and increased welfare dependence;
- Decreased economic activity and economic diversification in the local area;
- Reduced local business diversity due to changes in local expenditure arising from a reduction in direct mine contributions and local spend from employees;
- Local population decline with flow on effects to residential property values;
- A shift in available employment opportunities from mining to other industries such as tourism, services, government and agriculture;
- Divestment from mine-owned and leased land and resulting impact on rates payable to LCC;
- Reduced government funding for services in an area due to population decline leading to a loss of staff and service diversity;
- Increased demands on community organisations and local social services and rising costs of essential services (e.g. fuel, power, telecommunications and water);
- Potential declining enrolments in local schools;
- Stress and fear may arise due to uncertainty about the future of the mine and the community, and expectations regarding the impacts that will occur;
- Population and demographic change in host communities and nearby towns, including reduction in population retention;
- Changes in community structure and social connectedness if mine employees move from the local area; and
- Reduced corporate investment in community development programs.

Centennial will undertake a mine closure SIA for the project approximately five years prior to the envisaged closure date, or immediately if the project is not approved. To assist in the mine closure process, it is recommended that Centennial investigate, develop and incorporate social closure goals and impact management strategies within the mine closure plan/mine closure SIA. It is suggested that the mine closure SIA and associated strategies involve engagement with LCC and other key partners to support economic transition opportunities for Lithgow LGA. Once decommissioning and closure is underway, closure planning strategies and programs should be monitored to provide opportunities for adaptive management. On cessation of mining activities, the project will rehabilitate all disturbed areas associated with the pit top and the Newnes Plateau infrastructure areas to create final landforms commensurate with the surrounding areas i.e. 'environmental protection works' and forestry.

7 MANAGEMENT, MONITORING AND REPORTING

7.1 INTRODUCTION

This section describes the approach to the management, monitoring and reporting of social impacts for the project and includes a significance assessment of the predicted social impact and opportunities described in Section 6.

This section includes:

- A description of the mitigation measures incorporated into project design to avoid social impacts and minimise the magnitude of predicted impacts;
- A description of the key tools to manage potential social impacts;
- A set of management frameworks to address key areas of impact and to support the implementation of management actions;
- The outcomes of the impact and opportunities significance assessment; and
- Description of the approach to impact monitoring, reporting and review.

7.2 ACTIONS TO AVOID, MITIGATE AND MANAGE

7.2.1 Project Design

Iterative project planning, informed by 2014 EIS consultation, a review of 2014 EIS submissions, the baseline studies described above and a range of other related technical studies e.g. SWIA and GWIA has allowed a range of social impacts to be avoided and others to be minimised throughout the life of the project. Several specific actions have been taken during the design of the project and the final site layout to avoid and minimise potential social impacts, these include:

- Shortening longwall panels to provide a minimum setback from the GSNP of 1,000 m to reduce the risks of subsidence related impacts on the National Park;
- Shortening longwall panels to avoid directly undermining the Trail 6 Newnes Plateau Shrub Swamp and minimise impacts on cliffs and pagodas; and
- Preparation of a Swamp Offset Strategy.

7.2.2 Key Management Tools

Table 32 outlines the key tools to manage the potential social impacts of the project and enhance potential opportunities. Additional actions described in Sections 7.4 will support the implementation of these management tools.

Table 32
Summary of Key Management Tools

Actions	Description
Community Contribution Fund	Centennial will continue to make financial contributions to the LCC in accordance with the existing agreement (Section 2.5). These contributions will assist LCC to respond to any increased demand for services and facilities generated by the project workforce, noting the likelihood of project induced impacts in these areas has been assessed as low and of minor consequence.
Stakeholder Engagement Plan (SEP)	Angus Place Mine will have its' own SEP. Key stakeholders will be identified in the Angus Place Mine SEP. The SEP will be prepared in accordance with the good practice approaches described in *ECMS 04 – General Minimum Environmental Performance Standards for Stakeholder Contact* (ECMS 04) (Centennial Coal, ud) and the associated guidance notes. The SEP will describe the mechanisms for keeping key stakeholders and the broader the Lithgow community informed of the progress of operations. Any changes to the current consent and future modifications will be subject to standalone consultation in accordance with a new and separate SEP.
Social Baseline Review	Centennial will undertake a social baseline review of all communities of interest for Centennial operations in the Lithgow LGA. Reviews will be aligned with the ABS census periods (i.e. every 5 years). These reviews will be informed through qualitative (consultation) and quantitative analysis (statistical data analysis).
Socio-economic Contribution Reporting	Centennial has commenced annual longitudinal profiling of the social and economic contribution of the business to its host communities i.e. Lithgow LGA. This profiling will support the social baseline review described above.
Western Region Combined CCC	The Western Region Combined CCC will continue to operate for the life of the project. The CCC's key role will be to foster dialogue between Centennial, the community and key stakeholders regarding the project and other Centennial operations and projects.
CCC Reporting	Centennial has an established CCC reporting framework consistent across all Centennial operations in NSW. This reporting framework is used for every CCC meeting and mirrors the Centennial annual and quarterly environmental reporting. It covers a range of reporting elements including a summary of operations, environmental performance, environmental management, compliance, community engagement and complaints management as well as future activities.
Complaints and Grievances Procedure	Centennial procedure ECMS 04 and the associated guidance notes establish minimum standards for engaging with near neighbours, key stakeholders and the broader Lithgow community. It establishes protocols for the recording of complaints and responding to community queries, issues and concerns. All environmental incidents, including community complaints, are recorded in the Environment and Community Database (ECD), or its equivalent.
Adaptive Management Framework	To account for uncertainties and to improve management responses, all impacts to environmental and cultural values will be managed using an Adaptive Management Framework. The project mine plan has been designed to enable Centennial to take an adaptive management approach to impact identification and management.
Mine Closure SIA and Management Plan	Centennial will commence the preparation of a mine closure SIA and Management Plan at least five years prior to the potential mine closure.

Actions	Description
Swamp Offset Strategy	The *Springvale Mine and Angus Place Colliery Swamp Offset Strategy* (Centennial Coal, 2019a) (the strategy), supports the potential realisation of Destination Pagoda for the GSA through: • Support for a transfer of land (currently owned and managed by Forestry Corporation NSW (FCNSW)) into a State Conservation Area on a staged basis; and • Payment into the Biodiversity Conservation Trust Fund in respect of subsidence related effects to THPSS and their associated threatened species associated with the project (if approved).

7.3 IMPACT SIGNIFICANCE ASSESSMENT

This section presents the outcomes of the significance evaluation of the social impacts and opportunities of the project identified and discussed in Section 6. The assessment of impact significance is based on the methodology described in the SIA Guideline.

The Social Risk Matrix (Table 33) has been used to quantify each social impact and opportunity.

Table 33
Risk Rating Matrix

			Consequence Level				
			1	2	3	4	5
			Minimal	Minor	Moderate	Major	Catastrophic
Likelihood Level	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
Social Risk Rating							
	Low		Moderate		High		Significant

Source: (DPE, 2017).

An initial evaluation of social risk, using Table 33 was undertaken prior to consideration of management and mitigation measures. The outcomes of the initial risk assessment informed the need, or otherwise for the development of the project specific strategies described in Section 7.4.

7.3.1 Impact Significance Assessment Outcomes

The outcomes of the impact significance assessment are presented in Table 34 and Table 35. Table 34 presents the outcomes of the significance evaluation of potential project impacts and summarises:

- Predicted social impacts for the social area of influence resulting from the project proceeding;
- Stakeholders potentially affected;
- Predicted duration of the impact;
- Predicted project phase in which the impact will occur;
- Level of stakeholder concern as identified during consultation in relation to the predicted impact;
- Evaluation of the risk associated with the potential social impact, in the absence of specific mitigation strategies other than those already incorporated into the design of the project (Unmitigated Risk); and
- Evaluation of residual risk (Mitigated Risk), in consideration of project-specific social management strategies

Table 35 presents the outcomes of the significance evaluation of potential project opportunities and summarises the:

- Predicted social opportunities for the social area of influence;
- Stakeholders potentially affected;
- Predicted duration of the opportunity;
- Predicted project phase in which the opportunity will be realised;
- Evaluation of the opportunity in the absence of specific enhancement strategies other than those already incorporated into the design of the project; and
- Evaluation of enhanced opportunity in consideration of project-specific social enhancement strategies.

The outcomes of the significance evaluation indicate that the key areas of social impact relate to the following areas:

- Continued regional economic reliance on the coal mining industry sector;
- Cumulative increases in construction traffic on Glowworm Tunnel Road impacts road safety for Newnes Plateau user groups; and
- Impact to sense of place and community values due to adverse changes i.e. damage or permanent loss, in valued natural attributes of the local area (i.e. swamps).

The assessment also shows significant positive social outcomes associated with the project proceeding. These positive outcomes or opportunities relate primarily to a continuation in the socio-economic benefit stream derived from the existing Springvale Mine operation.

Table 34
Project Significance Assessment – Social Impacts

SIA Ref	Social Impact	Stakeholder	Temporal	Project Phase	Stakeholder Concern	Unmitigated Risk	Mitigated Risk
6.2.1 & 6.2.2	Continued reliance on coal mining to secure employment and economic benefits to the Lithgow LGA.	LCC and the broader Lithgow community	Long-term	Life of Mine	L	B2	B2
6.2.3	Impacts to valued environmental attributes of Wolgan River and Carne Creek.	Environmental NGOs, Newnes Plateau user groups, Local residents and Emirates Wolgan Valley Resort	Medium-term	Operations	H	D2	D2
6.2.1 & 6.2.3	Impacts on downstream water users due to project impacts on Carne Creek and Wolgan River.	Downstream water users along the Wolgan River and Carne Creek	Long-term	Life of Mine	L	D2	D2
6.2.3	Impact to cultural values due to project subsidence impacts on cliffs and rock pagodas.	Indigenous Groups, RAPs, Local residents, GSNP and Newnes Plateau user groups, and people with historical connection to the land	Long-term	Intergenerational	H	C2	C2
6.2.2	Impact on future land use aspirations of local Aboriginal community.	Wiradjuri people	Long-term	Post mining	M	C3	C2
6.2.4	Adverse changes in in the use and enjoyment (recreational amenity) of Newnes Plateau for passive and active recreational user groups.	Local residents, Newnes Plateau user groups, tourists and local businesses	Medium-term (only during specific construction activities over the course of the project)	Construction Phase	H	C2	C1

SIA Ref	Social Impact	Stakeholder	Temporal	Project Phase	Stakeholder Concern	Unmitigated Risk	Mitigated Risk
6.2.3	Impact to sense of place and community values due to adverse changes i.e. damage or permanent loss, in valued natural attributes of the local area (i.e. swamps).	Lithgow LGA residents, Indigenous Groups, RAPs, and people with historical connection to the land	Long-term	Life of Mine	H	A3	B3
6.2.2	Increased mine traffic on the local and regional road network reduces safety for road users.	Local road users	Long-term	Operations Phase	L	C3	D2
6.2.2	Increased mine traffic on the local road network reduces residential amenity i.e. increased traffic noise specific to Wolgan Road residents.	Wolgan Road residents and local road users	Short-term (confined to shift change over periods)	Life of Mine	L	A3	C2
6.2.2	Noise and vibration from Angus Place Mine pit top reduces residential amenity for near neighbours.	Near neighbours to Angus Place Mine pit top	Long-term	Life of Mine	L	D2	D2
6.2.2	Cumulative increases in construction traffic on Glowworm Tunnel Road impacts road safety for Newnes Plateau user groups.	Newnes Plateau users and local residents	Short-term/ temporary	Construction Phase	M	B3	C2
6.2.4	Development of additional access tracks impacts intrinsic environmental and cultural values.	Newnes Plateau users and local residents	Long-term	Life of Mine	L	D2	D2

Table 35
Project Significance Assessment – Social Opportunities

SIA Ref	Social Opportunity	Stakeholder	Temporal	Project Phase	Stakeholder Interest	Opportunity	Enhanced Opportunity
6.2.1	Opportunity to provide energy security for NSW.	NSW Government and NSW residents	Long-term	Operations Phase	H	A4	A4
6.2.1	Continuity of employment.	Existing Springvale Mine workforce, local suppliers and community business operators	Long-term	Operations Phase	H	B4	B4
6.2.2	Supports realisation of environmental conservation aspirations for NGOs.	GSA	Long-term	Post mining	H	D2	B4
6.2.2	Project supports positive health and wellbeing outcomes for nearby communities.	Wallerawang, Lidsdale and Portland communities	Long-term	Life of Mine	H	A4	A4
6.2.1	Economic benefits of continued operation support program, service and infrastructure delivery across Lithgow LGA.	Lithgow LGA residents and LCC	Long-term	Life of Mine	H	B3	A3
6.2.1	Continuation of economic benefit to the CW Region.	Residents, business operators, service providers and Councils in the CW Region	Long-term	Life of Mine	M	A3	A3
6.2.1	Continued local procurement ensures security for commercial operations, including local businesses, and facility and service providers.	Local business owners and residents of Lithgow LGA	Long-term	Life of Mine	H	B3	B4

7.4 MONITORING, REPORTING AND REVIEW

7.4.1 Monitoring

The monitoring and evaluation of social impact management activities is important in understanding how programs are performing against expected outcomes and how successful these programs are at mitigating or managing identified impacts. Table 36 lists the primary tools proposed for monitoring the effectiveness of the proposed management measures.

Table 36
Social Impact Monitoring Tools

Monitoring Tool	Type	Frequency	Purpose
Employment records	Quantitative	Annual	Monitor employment qualifications and local residency.
Complaints and grievances	Quantitative and qualitative	Monthly	Continue to monitor community complaints, issues and suggestions regarding the project, including any follow-up conversations conducted by Centennial.
Procurement records	Quantitative	Annual	Monitor project spend on goods and services within the Lithgow LGA.
Monitoring of social baseline of nearby communities (i.e. Wallerawang and Lidsdale)	Quantitative and qualitative	Every five years	Monitor population and demographic change, values and aspirations, and perceptions of Centennial etc.
Workforce survey	Qualitative	Biannual	Record workforce perceptions about general wellbeing and community issues.
Western Region Combined CCC (meeting minutes)	Qualitative	Quarterly	Continue to review issues raised and feedback received on initiatives progressed.
Annual report from the Western Region Combined CCC Chairperson	Qualitative	Annual	Continue to review issues raised and feedback received on initiatives progressed.
Annual report from the Western Region Combined CCC Chairperson	Qualitative	Annual	Continue to review activities conducted by the Western Region Combined CCC.

7.4.2 Reporting and Review

Communicating the results of monitoring activities is important in providing information on social impact management activities to the community and stakeholders. Monitoring will provide Centennial with important data on whether the objectives of program activities are being met and if management performance goals are being achieved. This enables impact management activities to be adapted to improve overall impact management performance.

Centennial will report against the monitoring mechanisms defined in Section 7.4 as part of the Annual Review for the project.

7.4.3 Western Region Combined CCC

The CCC plays a critical role in the monitoring, reporting and review process. As set out in the NSW Government's *Community Consultative Committee Guideline for State Significant Projects* (NSW Government, 2019a) (CCC Guideline), Centennial will regularly provide the CCC with timely, accurate and comprehensive reports on the project's operations and performance on its environmental management and community relations. Centennial will also publish the minutes of all CCC meetings on their operations website. In accordance with the CCC Guideline, Centennial will continue to provide the CCC with copies of:

- The project's consent and other relevant documents including management plans;
- Results of environmental monitoring;
- Annual review or compliance reports;
- Audit reports;
- Reports on community concerns or complaints and the proponent's responses to these matters; and
- Any other information specified by the DPIE.

8 CONCLUSION

This SIA has been informed through a tailored and comprehensive SIA consultation process and a thorough examination of qualitative and quantitative data. The SIA assesses material social impacts, defined in the SIA Guideline as *"impacts that matter the most, and/or pose the greatest risk to those expected to be affected"* (Department of Planning and Environment, 2017). The project's social area of influence consists of the people impacted or likely to be affected by the project. In this regard the SIA has focussed on the communities proximate to the PAA i.e. Lidsdale, Wallerawang, Portland, Lithgow City and the broader Lithgow LGA.

Angus Place Mine is an existing underground coal mine within the Lithgow LGA. Angus Place Mine was placed on care and maintenance in 2015. Angus Place Mine PA 06_0021 and its' subsequent modifications remain current and authorises the extraction of up to 4 Mtpa ROM coal at Angus Place. The existing development consent will expire in August 2024 and a new development consent is required to ensure Angus Place Mine is operational beyond this date. Centennial Angus Place is seeking the extension of mine life and operation of Angus Place Mine. The project will have a construction workforce of up to 56 FTE workers and up to 450 FTE workers during operations.

The Angus Place Mine pit top is located five kilometres north of the village of Lidsdale, and approximately seven kilometres north-east of the village of Wallerawang. The Angus Place Mine pit top, coal handling and transport infrastructure, and the underground mined areas from the previous workings of Angus Place Mine are all located within the PAA (Figure 4). Most of the land surface within the PAA and its' environs lies within the Newnes Plateau, which forms part of the NSF.

The Lithgow LGA has a long history of coal mining dating back to the 1800s. The town of Lithgow and nearby communities established on the foundations of coal mining. There are several coal mines operating in the region, including Springvale Mine in close proximity to Angus Place. Springvale Mine employs a sizeable workforce that is sourced primarily from the surrounding areas. In Lithgow LGA, mining was the most productive industry, generating $236 M in 2017-2018 (Profile ID, 2019).

The predicted social impacts of the project proceeding for the project's social area of influence would include:

- Continued reliance on coal mining to secure employment and economic benefits to the Lithgow LGA;
- Temporary and minor adverse changes in the use and enjoyment (recreational amenity) of small isolated areas of Newnes Plateau for passive and active recreational user groups during project construction;

- Impacts to sense of place, community and cultural values due to adverse changes in valued natural attributes i.e. cliffs, swamps, rock pagodas;
- Potential reduction in road safety due to increased traffic on Wolgan Road during project operations; and
- Cumulative impacts on road safety due to an increase in light and heavy vehicle movements on the Newnes Plateau if the project coincides with the Clarence Pipeline Project.

Of these impacts the most significant relate to:

- The continued economic reliance on the mining sector;
- Impacts to valued environmental attributes, specifically the swamps; and
- Potential cumulative traffic impacts on Newnes Plateau.

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 potential opportunities presented by the project for the social area of influence, are significant and include:

- Continuity of employment;
- Positive health and wellbeing outcomes for nearby communities;
- Long-term sustainability of social infrastructure and services in nearby communities;
- Continuity in economic benefits to the LCC supports service and infrastructure delivery across Lithgow LGA; and
- Continued local procurement ensures security for commercial operations, including local businesses, and facility and service providers.

Further, if approved the project will secure the future of MPPS and energy security for NSW.

The Lithgow LGA and nearby communities will experience a number of sustained economic and social benefits from the project. The project will contribute:

- $139 M towards NSW Government royalties (AIGIS Group, 2019); and
- Approximately $383 M spent with regional suppliers and $1,664 M with NSW based suppliers over the productive life of the mine (AIGIS Group, 2019).

Lithgow LGA will directly benefit from the project through:

- Direct and indirect employment generation;
- Investment in community infrastructure and services, made possible through Centennial voluntary contributions and the those of the workforce; and
- The provision of additional time to enable the planned and coordinated implementation of strategies that support economic transition towards a more diversified economy.

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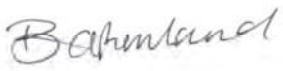
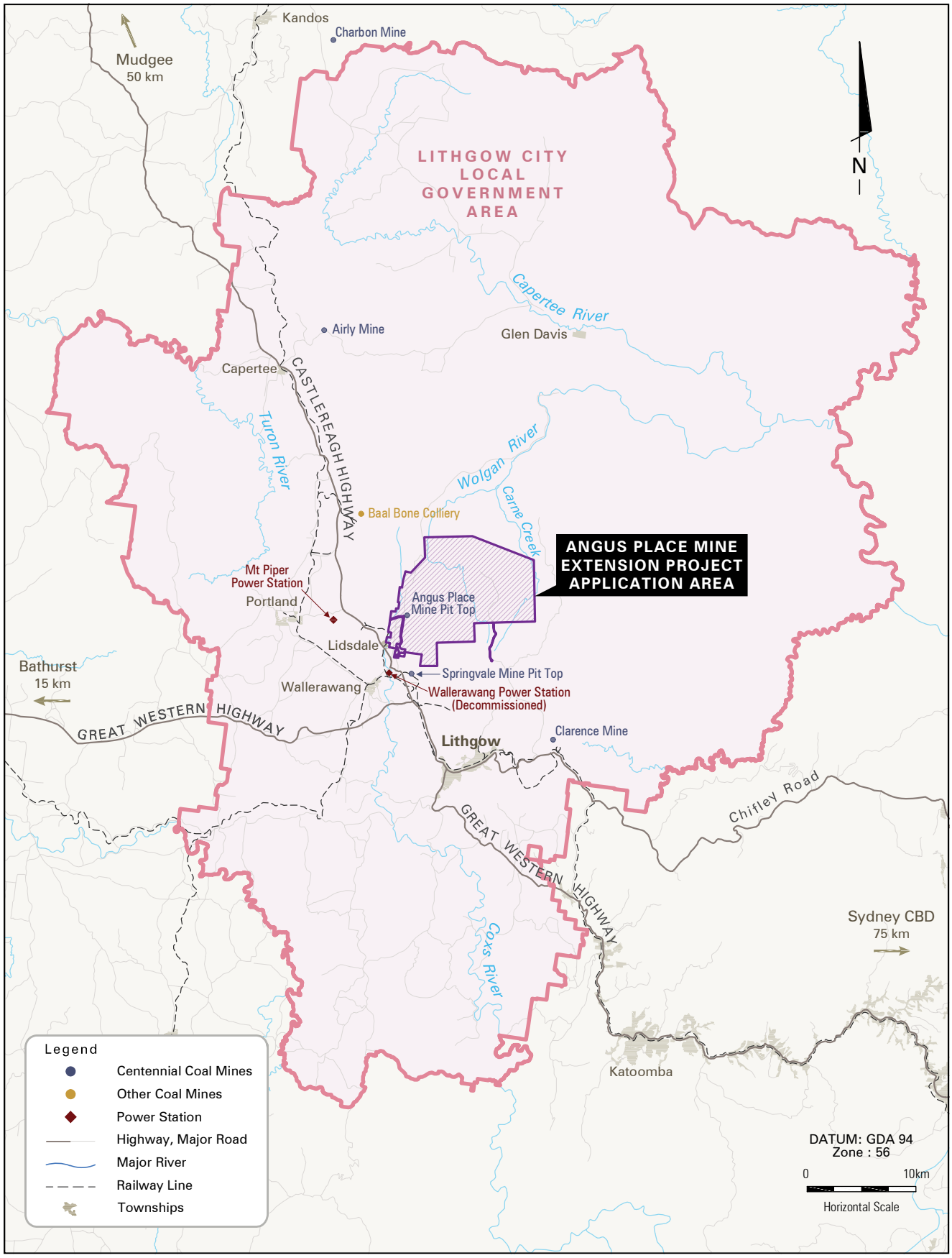
for
HANSEN BAILEY



Bronwyn Pressland
Principal Social Planner

Peter Hansen
Director

FIGURES

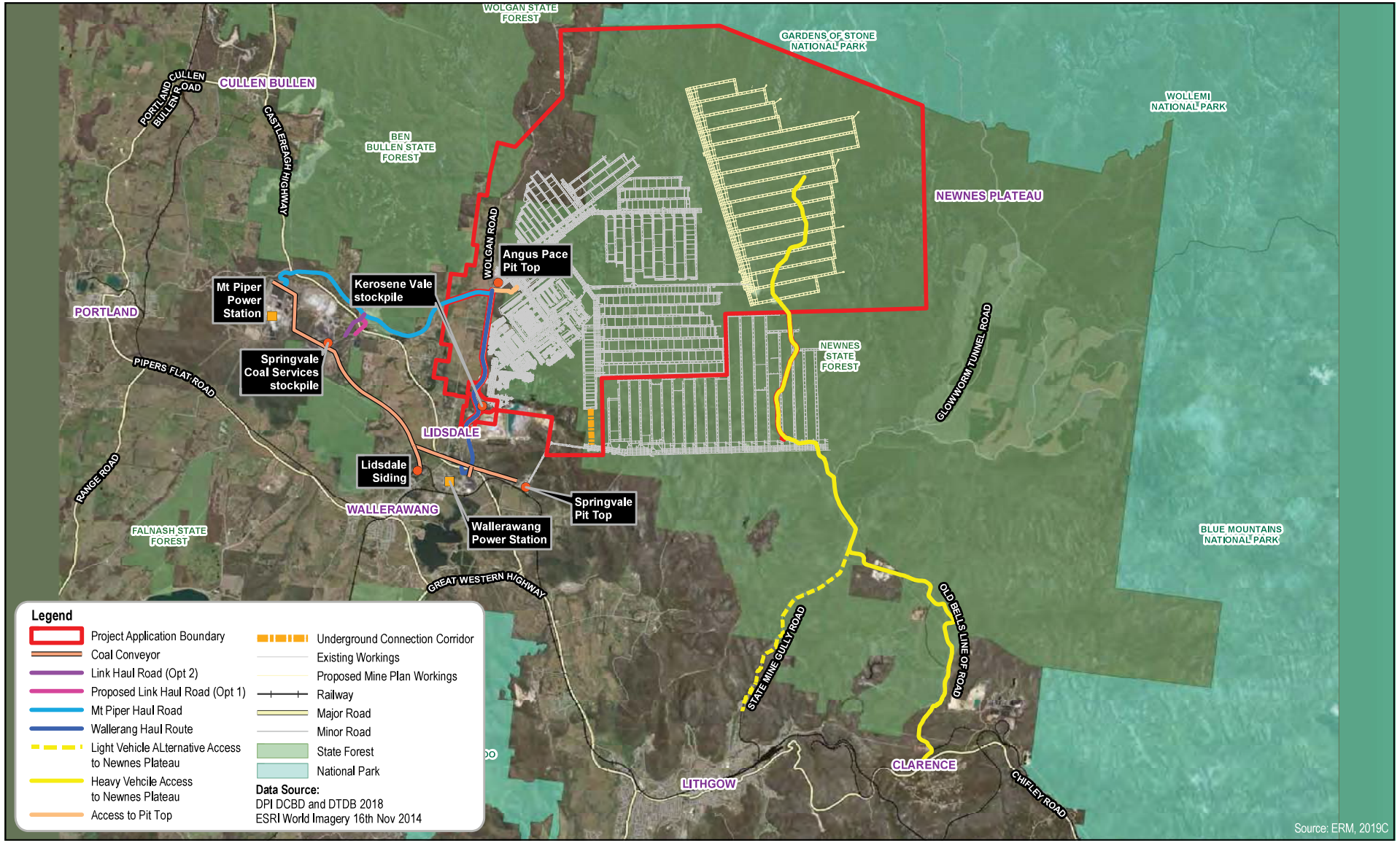


ANGUS PLACE MINE EXTENSION PROJECT

CENTENNIAL | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Geographical Setting

FIGURE 1

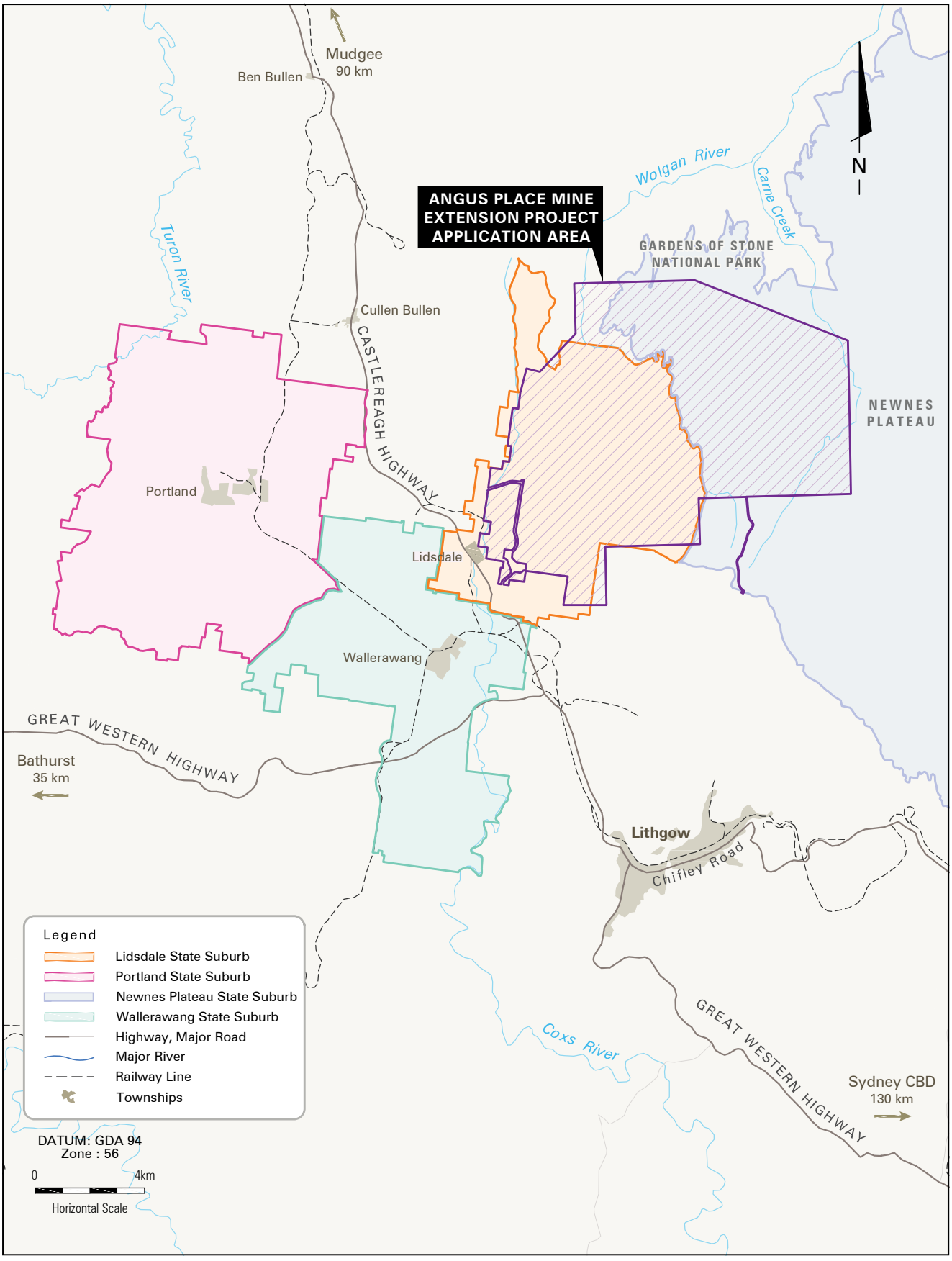


ANGUS PLACE MINE EXTENSION PROJECT

CENTENNIAL | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Mine Access, Haulage Routes and Coal Handling Infrastructure

FIGURE 2

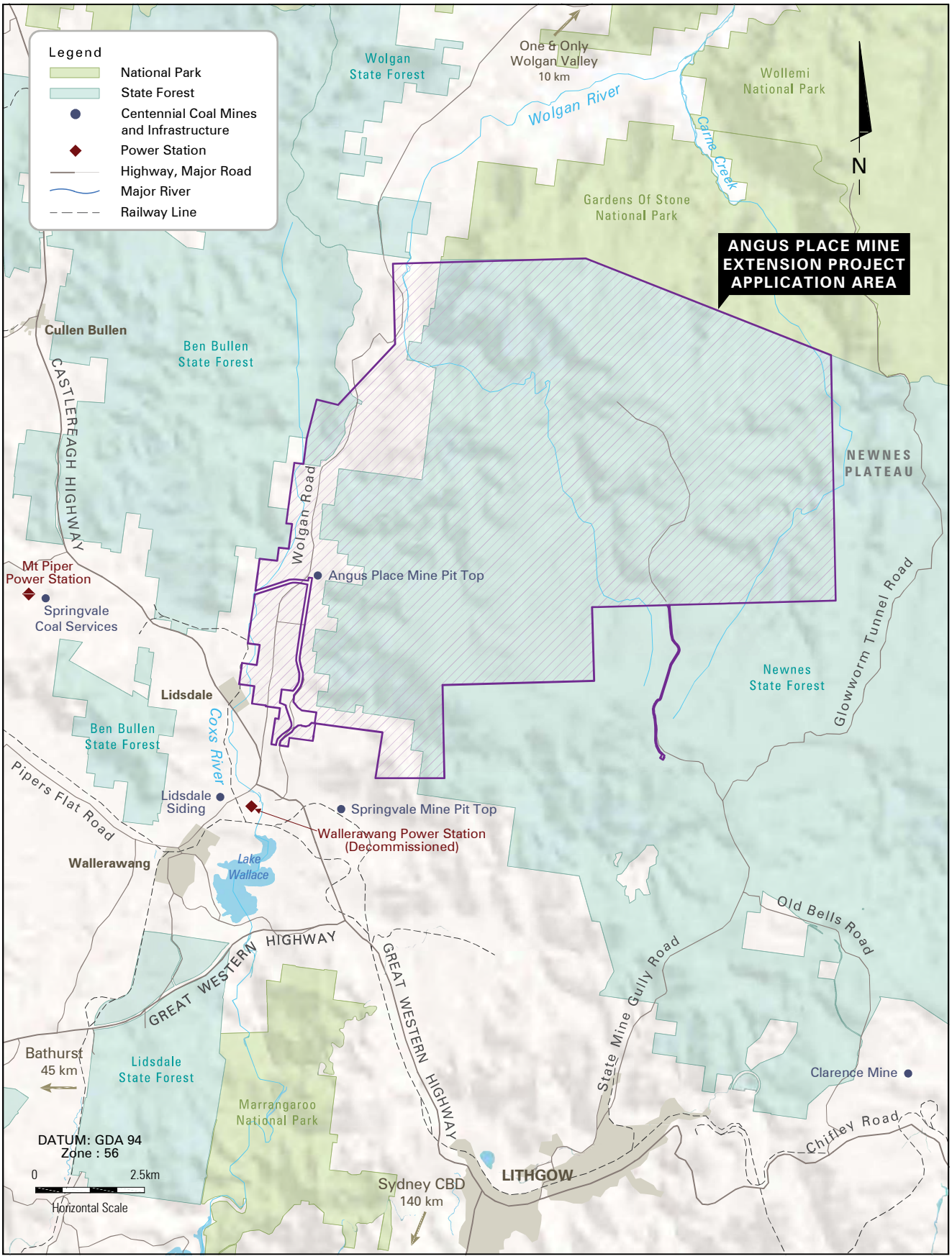


ANGUS PLACE MINE EXTENSION PROJECT

CENTENNIAL | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Project Social Area of Influence

FIGURE 3



ANGUS PLACE MINE EXTENSION PROJECT

CENTENNIAL | Hansen Bailey ENVIRONMENTAL CONSULTANTS

Local Setting

FIGURE 4

APPENDIX A

Curriculum Vitae

Bronwyn Pressland

Principal Social Planner

CURRICULUM VITAE

Areas of Expertise

- Social Impact Assessment and Management;
- Quantitative and Qualitative Social Research;
- Social Risk Identification and Assessment;
- Indigenous Participation Planning;
- Local Content Planning and Management;
- Workforce Housing and Accommodation Management;
- Workforce Recruitment and Training Planning;
- Stakeholder Consultation;
- Social Performance Monitoring and Evaluation;
- World Bank and IFC Standards; and
- Environmental Impact Assessment and Approvals.

Qualifications

- Masters of Environmental Management, Griffith University 1999.
- BBE Urban and Regional Planning, Queensland University of Technology, 1992.

Career Highlights

Bronwyn is a Principal Social Planner with international experience specialising in social impact assessment, community development and community engagement. She has over 20 years of practical experience in social impact assessment with extensive experience in mining and resource development (coal, manganese, bauxite, copper and gold. Bronwyn has experience in the Philippines in social and health impact assessment, resettlement, Free and Prior Informed Consent (FPIC) in line with World Bank and International Finance Corporation Standards (IFC). Bronwyn also has experience in engagement with Traditional Owners and the assessment of significant social impacts on Indigenous communities.

Key project experience includes:

- *Social Impact Assessment – identification, analysis and management of social impacts associated with major developments including copper-gold mining in the Philippines, bauxite mining in Cape York, manganese mining within an Indigenous Protected Area (IPA) of Northern Australia, coal mining throughout Queensland (Qld) and New South Wales (NSW), gold mining activities in NSW, and port and shipping activities within Qld.*
- *Social Impact Management Plans – development of social impact management and monitoring plans for the resources sector across Australia.*
- *Workforce housing and accommodation management – development of tailored strategies for housing and accommodation of significant sized workforces, including the use of Temporary Worker Accommodation Facilities and in-town accommodation.*
- *Community Consultation – design and implementation of community consultation programs incorporating a range of consultation mechanisms for impact assessment, issue management, master planning and policy development.*
- *Local Content Planning and Management – analysis of local industry capability, preparation of local capability plans and advice on local content plans.*
- *Environmental Impact Assessment – extensive experience in the preparation and delivery of environmental impact statements for a range of complex multidiscipline projects.*

Employment History:

HANSEN BAILEY, Brisbane (2007 – present)

Principal Social Planner and Communications Consultant

PLACE Design Group, Brisbane (Feb 2007 – 2007)

Contracting Senior Environmental and Social Planner

JACOBS UK, Leeds (2005 – 2006)

Senior Environmental and Social Planner

Earth Tech Australia, Brisbane (2002 – 2004)

Senior Environmental and Social Planner

URS AUSTRALIA, Brisbane (1998 – 2002)

Senior Environmental and Social Planner

ERM Mitchell McCotter, Brisbane/Sydney (1996 – 1998)

Environmental Planner

Project Experience ***Social Impact Assessment (SIA), Community Consultation and Environmental Impact Assessment***

- Provision of strategic stakeholder engagement advice to Idemitsu for a range of projects in Australia.
- Various projects for Centennial Coal (Central West NSW and Newcastle) (confidential) – Preparation of social impact assessment reports in compliance with the NSW Social Impact Assessment Guideline
- Boggabri Coal Mine (BCM) (Boggabri, NSW) (Idemitsu) (under preparation) **Social Impact Management Plan (SIMP) –** Preparation of a SIMP for the existing operations at BCM.
- Aurukun Bauxite Project (Aurukun, QLD) (Glencore) (under preparation) **– SIA**. Preparation of an SIA for a substantial greenfield bauxite mining operation nearby the town of Aurukun. Project involves bauxite mining and processing, barging and transhipment activities. Design of a community engagement program for Indigenous and non-Indigenous stakeholder engagement. The SIA will require assessment of the potential social and economic impacts of the project on the relevant Traditional Owners.
- McPhillamys Gold Project (Blayney, NSW) (Regis Resources) (under preparation) **– SIA**. Preparation of an SIA for a greenfield gold mine located outside the town of Blayney in NSW. The SIA is being prepared in accordance with the NSW SIA Guidelines (2017) and supports a development application to the NSW Department of Planning and Environment for a state significant development (SSD).
- McPhillamys Gold Project (Blayney, NSW) (Regis Resources) **– SIA Scoping Study**. Preparation of an SIA Scoping Study for a greenfield gold mine outside the town of Blayney in NSW. The SIA Scoping Study was prepared in accordance with the new NSW SIA Guidelines (2017) and supported an application to the NSW Department of Planning and Environment for Secretary's Environmental Assessment Requirements (SEARs).
- Tcharawopin Project (Aurukun, Qld) (Glencore) **– SIA and stakeholder engagement**. Preparation of an SIA for a greenfield bauxite mining operation nearby the town of Aurukun within the Aurukun Shire. Project includes bauxite mining, and barging activity in local river systems and coastal zone. Design of a community engagement program for Indigenous and non-Indigenous stakeholder engagement. The SIA will require assessment of the potential social and economic impacts of the project on the relevant Traditional Owners

- Bylong Coal Project (Hunter Valley) (KEPCO) **– Draft Social Impact Management Plan (SIMP).** Preparation of a draft SIMP for the Bylong Coal Project, an underground and open cut mining project located nearby the small rural village of Bylong.
- Bylong Coal Project (Hunter Valley) (KEPCO) **– SIA and stakeholder engagement.** Preparation of a SIA for an underground and open cut mining project located nearby the small rural village of Bylong. The project involved extensive work around workforce accommodation and housing, including a detailed survey of housing and accommodation provision across the region. The SIA involved significant targeted consultation through focus groups with residents of the Bylong Valley, preparation of social impact management actions to address issues such as population decline, workforce housing and accommodation, rural land management. The Response to Submissions (RTS) process has also involved further baseline social surveys (tourism accommodation survey) and additional analysis of the local housing market.
- Groote Eylandt Mining Project (GEMCO) Eastern Leases Project (Groote Eylandt, NT) South 32 **– Assessment of the potential social and economic impacts of the project on the Traditional Owners of the Groote Eylandt Archipelago**. The SIA required consideration of a diverse range of issues including Indigenous use of the project land, spiritual associations with the land and water, long-term maintenance of Indigenous culture, employment and training, distribution of royalties, Commonwealth and Territory Indigenous legislation and regulations.
- Groote Eylandt Mining Project (GEMCO) Eastern Leases Project (Groote Eylandt, NT) South 32 **– Design and implementation of Indigenous consultation strategy** for the project approvals phase of the Eastern Leases Project. The consultation strategy included a significant field based component where Bronwyn conducted land use mapping with Traditional Owners. Consultation included a number of small focus groups with Indigenous women's groups and Indigenous Elders, participation in community events, meetings with education providers, health representatives, child services, emergency services etc. Bronwyn conducted significant consultation with the Indigenous Employees of South 32 on Groote Eylandt including engagement around rehabilitation practices, employment and training.
- Tampakan Copper-Gold Mine Project (Philippines) (Xstrata) **– Management of the Social Impact Assessment and Environmental Health Impact Assessment studies**. Bronwyn was responsible for managing and working closely with the locally appointed consultants for the conduct of the SIA, in particular the field surveys. Bronwyn contributed to the identification and analysis of social impacts, the drafting of the SIA report and was responsible for ensuring compliance with World Bank and IFC Standards.
- Tampakan Copper-Gold Mine Project (Philippines) (Xstrata) **– Assistance with design and implementation of the community consultation process for project approvals.** Bronwyn was involved in the design of consultation materials, key messages, issues questions and concerns. Preparation of Stakeholder Engagement Plan for the environmental approvals process. Assistance in analysis and response to the findings of significant community consultation such as public hearings. Preparation of the issue response management plan following the completion of the initial phases of stakeholder consultation

- Tampakan Copper-Gold Project (Philippines) (Xstrata) **– Preparation of Briefing Note on obtaining Free and Prior Informed Consent (FPIC) from Indigenous people**. Bronwyn assisted with the preparation of a FPIC briefing note for the project including analysis of World Bank and IFC standards. Bronwyn then assisted with the implementation of key actions around securing FPIC for the project
- Project China Stone (Galilee Basin) (MacMines) **SIA – Preparation of a SIA and design and implementation of a community engagement process for the development of a significant open cut and underground mining operation in the remote Galilee Basin**. The SIA involved an extensive community engagement process, labour force supply analysis, local content capability assessment and preparation of a social impact assessment management plan.
- Anglo American (Moranbah, QLD) **– Provision of strategic advice and assistance with the management of social impacts associated with mining operations in the Moranbah region**. This included the provision of assistance with the undertaking of a corporate review of operations using the Anglo American Socio-Economic Assessment Tool (SEAT), conduct of focus groups with residents of Moranbah, documentation of outcomes in the Annual Moranbah SEAT Report.
- Boggabri Coal Project (Boggabri, NSW) **–** Preparation of SIA for a new open cut mine at Boggabri, NSW.
- Grosvenor Project (Moranbah, Qld) **–** Stakeholder Consultation Coordinator and SIA Manager. **Design and implementation of a stakeholder consultation program for the preparation of an EIS for the Grosvenor underground mine.** Preparation of the SIA component of the EIS and SIMP. Assistance with the development of workforce accommodation strategy and the development of measures to manage associated potential social impacts.
- Minyango Project (Blackwater, Qld) **– Stakeholder Consultation Coordinator and SIA Manager.** Design and implementation of a stakeholder consultation program for the preparation of an EIS for the Minyango underground mine. Preparation of the SIA component of the EIS, including the design of the SIA methodology, conduct of focus group discussions with all sectors of the community and preparation of a SIMP.
- Foxleigh Project (Middlemount, Qld) **– Stakeholder Consultation Coordinator and SIA Manager**. Design and implementation of a stakeholder consultation program for the preparation of an EIS for the Minyango underground mine. Preparation of the SIA component of the EIS and SIMP.
- Belvedere Project (Moura, Qld) **– Stakeholder Consultation Coordinator and SIA Manager.** Design and implementation of a stakeholder consultation program for the preparation of an EIS for the Belvedere underground coal mine. Preparation of the SIA component of the EIS.
- Innes Park South Quarry Project (Bundaberg, QLD) **– Project Manager for the preparation of a Material Change of Use Application for the establishment of a new basalt quarry on rural land in Innes Park.** Completion of town planning report and design and implementation of a targeted community consultation process.
- Eagle Downs Project (Moranbah, Qld) **– Stakeholder Consultation Coordinator and SIA Manager.** Design and implementation of a stakeholder consultation program for the preparation of an EIS for the Peak Downs East underground mine. Preparation of the SIA component of the EIS.

- Mount Arthur North Coal Project (Hunter Valley, NSW) – Environmental Planner assisting with the compilation and final production of the EIS document.
- Darling Anabranch Pipeline and Environmental Flows EIS (Murray Darling Basin Commission) – Project Coordinator for planning and environmental approvals/specialist consultation advisor and social impact assessor.
- QNI Yabulu Nickel Refinery Extension Project EIS (QNI Pty Ltd), (Townsville, Qld) – Consultation/Social/Planning Manager for the preparation of an EIS for the refinery extension.
- Dalrymple Bay Coal Terminal Stages 6 & 7 Expansion EIS, (Ports Corporation of Queensland) – **Assistant Project Manager/Land Use Planner/Social Impact Assessor/Consultation Manager.** These roles involved management of multiple stakeholders as well as leading and developing a multidisciplinary design and implementation team.
- Bribie Island Road Upgrade (Main Roads) (Bribie Island, Qld) – Design and implementation of a community consultation program for the identification of a preferred option for road upgrade.
- Lincoln Southern Bypass (Lincolnshire County Council) – Design and implementation of a community consultation program for the conceptual and detailed design of a Southern Bypass road.
- Alcan Gove Alumina Refinery Expansion Project (Gove, NT) – Design of indigenous and non-indigenous stakeholder consultation program for the EIS. Development of the SIA methodology for the preparation of the EIS.
- Naturelink Cableway EIS – Project Manager/Land Use Impact Assessor/Consultation advisor and Social Impact Assessor.
- Interconnection to the National Grid EIS (Powerlink) – Coordination of land-use and Social Impact Assessment.
- Banyo Defence Land Disposal Study and Masterplan (Department of Defence) – Project Manager for the preparation of a land use concept plan, site constraints and analysis investigation.

Social Planning Studies

- Social Sustainability Assessment of Northern England Coalfield Communities (Northern England Economic Development Board) – Project involved a detailed sustainability assessment of 20 coalfield communities, prioritisation of communities for social infrastructure investment and development of investment programs for high priority communities.
- Preparation of Community Housing and Environmental Health Plans (CHEHP) NSW DAA/DPWS – Social Planner/Community Adviser
- Toomelah/Boggabilla Community Housing and Environmental Health Plan (CHEHP).
- Lightning Ridge/Collarenebri Housing and Environmental Health Plan.
- Gulargambone/Coonamble Aboriginal Community Development Program Early Works Implementation National Aboriginal Health Strategy.

These projects role involved assessment of community environmental health encompassing housing provision and condition as well as access to services and facilities. The role encompassed extensive consultation and negotiations with the Indigenous Community including the management of an Ingenious Working Party. Recommendations were made for the provision of additional facilities and services.

Funding mechanisms were identified for the provision of additional housing and services and facilities. Implementation plan for community servicing developed.

Strategic Environmental and Planning Studies

- Regional Monitoring Report (Yorkshire and Humber Assembly UK) – Development of a new monitoring framework for monitoring the environmental economic, built and social development aspects of the Regional Spatial Strategy.
- Yorkshire and Humber Regional Spatial Strategy (Yorkshire and Humber Assembly) – Drafting of 'outcome statements' and background reports for the preparation of the regional planning framework.

Countries Worked In

- Australia (QLD, NSW, NT, VIC), UK, Philippines.
- UK residency visa.

Lauren Jessup

Social Planner

CURRICULUM VITAE

Areas of Expertise

- Social Impact Assessment, Management and Reporting
- Quantitative and Qualitative Social Research
- Stakeholder Consultation

Qualifications

- Hon (Class I) Geographical Science, the University of Queensland, 2016
- Bachelor of Science, the University of Queensland, 2015

Career Highlights

Lauren is a Social Planner with experience in social impact assessment, community development and community engagement in Queensland, New South Wales, Victoria and Western Australia. She holds a Geographical Science degree which included the study of wider social impacts and demographics, an Honours degree of Geography specialising in Social Inclusion and Exclusion regarding large scale infrastructure and has had experience through working at GHD and Hansen Bailey. Currently, Lauren is assisting with social impact assessments and consultation to inform the EIS process for a proposed bauxite mine in the Cape York Peninsula and a proposed gold mine in New South Wales. Lauren also has experience in engaging with Traditional Owners and the assessment of significant social impacts on Indigenous communities.

Employment History

HANSEN BAILEY, Brisbane (June 2018 – Present)

Social Planner

GHD Pty Ltd, Brisbane (January 2017 – June 2018)

Stakeholder Engagement and Social Sustainability Consultant

Project Experience

Social Impact Assessment (SIA)/Community Consultation

- Boggabri Coal Mine (BCM) (Boggabri, NSW) (Idemitsu) (under preparation) Social Impact Management Plan (SIMP) – Preparation of a SIMP for the existing operations at BCM.
- Aurukun Bauxite Project (Aurukun, QLD) (Glencore) (under preparation) – SIA. Providing assistance for the preparation of an SIA, including consultation, for a substantial greenfield bauxite mining operation nearby the town of Aurukun. Project involves bauxite mining and processing, barging and transhipment activities. The SIA will require assessment of the potential social and economic impacts of the project on the relevant Traditional Owners.
- Aurukun Bauxite Project (Aurukun, QLD) (Glencore) (under preparation) – EIS Consultation. Providing assistance for the preparation of EIS consultation, including stakeholder identification, distribution of project materials, provide support to Glencore when on-country, maintain a stakeholder database and consult with stakeholder regarding EIS approvals timeframes.

- Tcharawopin Project (Aurukun, Qld) (Glencore) (complete) – SIA and stakeholder engagement. Providing assistance for the preparation of an Scoping Study and SIA for a greenfield bauxite mining operation nearby the town of Aurukun within the Aurukun Shire. Project included assessing the feasibility of bauxite mining, and barging activities in local river systems and coastal zone. Design of a community engagement program for Indigenous and non-Indigenous stakeholder engagement. The project assessment found this project not feasible.
- McPhillamys Gold Project (Blayney, NSW) (Regis Resources Limited) (under preparation) – SIA and stakeholder engagement. Providing assistance for the preparation of an SIA, including consultation, for a greenfield open cut gold mine operation in Blayney LGA. Project involves gold mining and processing on site. The SIA will require assessment of the potential social and economic impacts of the project on the relevant communities and near neighbours.
- Moranbah North Extension Project (Moranbah, QLD) (AngloAmerican) (under preparation) – Project Coordinator. Providing assistance for the preparation of a Major Environmental Authority (EA), whilst offering assistance to the Project Manager. Project involves extending the existing section of underground longwall mining. Assist with project scheduling and the submission of an EPBC Act Referral and in documenting a response for a request for information.
- Dartbrook Project (Hunter Valley, NSW) (submitted) – Modification SIA desktop report preparation. Providing assistance for the existing Dartbrook Mine through the completion and submission of an SIA for the project modification. Report included updating the social baseline and compiling and assessing project impacts.

GHD project experience includes:

- Business Impact Assessments (internal) – report diagnostics;
- Toowoomba Heritage Tunnel Upgrade Project – stakeholder engagement;
- Sydney Metro – SIA;
- North East Link (NEL) Tunnel – SIA and Options Analysis;
- Argyle Diamond Mine Closure – SIA;
- Moreton Bay Regional Council – community engagement toolbox development;
- Gold Coast Council Waste and Water Management – survey development and generate annual reports; and
- Riverside Drive Property Development – stakeholder engagement.

APPENDIX B

Preliminary Scoping Outcomes

Table B1
Preliminary Scoping of Impacts and Opportunities

Project Component	Potential Direct Social Impacts/Opportunities Considered	Duration	Extent	Likelihood (unmitigated)	Impact	Is the impact likely to be material and require further consideration in the SIA?
Continuation of operations at Angus Place	Energy security for NSW.	Long-term	NSW	Almost Certain	Negative	Yes
	Reinforces LGA reliance on coal mining (employment and economic).	Long-term	LGA residents business community and LCC	Almost Certain	Negative	Yes. Further consultation is required to understand this issue and future implications for Lithgow LGA.
Community Contribution Fund	Support for program, service and infrastructure delivery across the Lithgow LGA.	Long-term	Opportunities likely to be localised within the Lithgow LGA	Almost Certain	Positive	Yes, SIA consultation has indicated LCC and the community highly values the monetary contributions made by Centennial and its workforce.
Creation of employment opportunities	Employment security for nearby communities.	Long-term	Opportunities largely within the Lithgow LGA	Almost Certain	Positive	Yes. Benefits of employment continuity for residents of nearby communities is significant.
	Procurement security for commercial operations, facility and service providers who benefit from local spend.	Long-term	Lithgow LGA and neighbouring LGAs	Almost Certain	Positive	Yes, to be considered as an opportunity.
	Ongoing voluntary support by the workforce for local programs, services and initiatives.	Long-term	Lithgow LGA	Almost Certain	Positive	Yes, this is significant as some sectors of the community rely on this voluntary support.
	Positive social and economic benefits for local community and Lithgow LGA.	Long-term	Lithgow LGA	Almost Certain	Positive	Yes, to be considered as an opportunity.

Project Component	Potential Direct Social Impacts/Opportunities Considered	Duration	Extent	Likelihood (unmitigated)	Impact	Is the impact likely to be material and require further consideration in the SIA?
	Population increase in local area.	Long-term	Lithgow LGA	Unlikely	Positive	Project workforce will be sourced from the existing pool of labour in the Lithgow LGA and the pool of labour created by the cessation of mining at Springvale Mine. Negligible population growth directly attributable to the project is anticipated. No further consideration of impacts required.
	Increased demand for housing and accommodation, and increased demand for infrastructure and services.	Long-term	Lithgow LGA	Unlikely	Negative	Project workforce will be sourced from the existing pool of labour in the Lithgow LGA and the pool of labour created by the cessation of mining at Springvale Mine. Negligible population growth directly attributable to the project is anticipated. No anticipated increase in demand of housing of infrastructure and services is therefore anticipated. No further consideration of impact required.
Water management	Groundwater discharge impacting creek and river systems.	Long-term	Lithgow LGA	Unlikely	N/A	Current Centennial water management practices in place i.e. Water Treatment Plant, reflect community aspirations. Discharge impacts will not require further consideration in this SIA.
Subsidence	Potential change in surface water flow in Carne Creek and Wolgan River with impacts on downstream water users (livelihood impacts).	Long-term	Downstream water users and local community.	Possible	Negative	Yes, if likely to result in material livelihood impacts. Further consideration is required.

Project Component	Potential Direct Social Impacts/Opportunities Considered	Duration	Extent	Likelihood (unmitigated)	Impact	Is the impact likely to be material and require further consideration in the SIA?
	Potential change in water quality and quantity in the Wolgan River and Carne Creek.	Long-term	Downstream water users and local community.	Possible	Negative	Yes if likely to result in material livelihood impacts. Further consideration is required.
	Damage to cliffs and rock pagodas impacts cultural values particularly values held by local Indigenous groups.	Long-term	Indigenous Groups and RAPs	Possible	Negative	Yes, likely to be a significant issue as the cliffs and pagodas are valued natural assets.
	Visual changes to cliffs and pagodas reduces the recreational experience for users of the Newnes Plateau.	Long-term	Newnes Plateau user groups, local community members and environmental groups	Possible	Negative	Yes, further consideration is required.
	Damage or permanent loss of valued environmental assets e.g. swamps.	Long-term (to a small number of swamps)	Newnes Plateau user groups, local community members, Lithgow LGA and environmental groups	Almost Certain	Negative/ Cumulative	Yes, further consideration is required. Cumulative impacts to environmental assets (swamps) from other user groups i.e. vehicle damage and use, will require separate consideration.
	Potential changes in public access, use and/or amenity of GSNP.	Short-term	Wider community and user groups of GSNP	Unlikely	Neutral	No, further consideration will not be required in the SIA as access will be maintained to the GSNP, and the mine design is set back 1000 m from the GSNP to lessen potential impacts.

Project Component	Potential Direct Social Impacts/Opportunities Considered	Duration	Extent	Likelihood (unmitigated)	Impact	Is the impact likely to be material and require further consideration in the SIA?
	Potential changes in access to Newnes Plateau for user groups.	Short-term	Newnes Plateau user groups and Lithgow LGA	Unlikely	Neutral	Yes, further consideration required.
	Potential for further erosion of Indigenous cultural assets and values.	Long-term	Indigenous Groups and RAPs	Possible	Negative/ Cumulative	Yes, further consideration required.
Construction of surface facilities in Newnes Plateau	Potential for temporary reduction in public access to specific areas of Newnes Plateau during construction.	Short-term	Newnes Plateau user groups and Lithgow LGA	Unlikely	Negative	Centennial will not change or restrict long-term access to the Plateau or GSNP. User groups and visitors will still be able to recreate. This impact will be further considered in the SIA given stakeholder feedback and concern.
	Temporary changes in recreational amenity during construction phase due to introduction of additional built infrastructure.	Short-term	Newnes Plateau user groups and Lithgow LGA	Possible	Negative	Yes, further consideration is required.
	Access restrictions disrupt operations of commercial companies e.g. 4WD companies.	Short-term	Newnes Plateau user groups, Commercial companies and Lithgow LGA	Unlikely	Negative	Yes, further consideration is required.

Project Component	Potential Direct Social Impacts/Opportunities Considered	Duration	Extent	Likelihood (unmitigated)	Impact	Is the impact likely to be material and require further consideration in the SIA?
Increased vehicle traffic on Wolgan Road between Castlereagh Hwy and Angus Place Mine	Change in existing residential amenity for residents along Wolgan Road due to introduction of additional traffic and associated vehicle noise and fumes.	Long-term	Wolgan Road residents	Almost Certain	Negative	Yes, further consideration is required.
	Potential interactions with school bus routes.	Long-term	Local community and school bus operators	Almost Certain	Negative	Yes, further consideration is required.
Increased vehicle traffic using intersection of Castlereagh Hwy and Wolgan Road	Potential reduced road safety at intersection due to increased volume of traffic.	Long-term	Vehicle users.	Possible	Negative	Yes, further consideration is required.
Movement of construction traffic through Newnes Plateau	Potential safety issues for users of Newnes Plateau during construction due to presence of heavy vehicles on road network.	Short-term	Newnes Plateau user groups, other companies and heavy vehicle operators using Newnes Plateau as a cut through the Blue Mountains	Possible	Negative	Yes, further consideration is required. The impact will be further assessed in relation to the potential cumulative impact i.e. many large vehicles use this route through the Blue Mountains.

Project Component	Potential Direct Social Impacts/Opportunities Considered	Duration	Extent	Likelihood (unmitigated)	Impact	Is the impact likely to be material and require further consideration in the SIA?
Access track construction within Newnes Plateau	Impact to natural values due to construction of additional access tracks and long-term degradation of these access tracks due to increased recreational use by the public.	Long-term	Newnes Plateau user groups	Unlikely	Negative	Further consideration will be required.
	Impacts to management of GSNP due to potential creation of new and unauthorised access points given proximity of new surface facility access tracks to the NP boundary.	Long-term	Newnes Plateau user groups, GSNP users	Unlikely	Negative	No further consideration required as only one area of new access track will need to be constructed. Centennial also have an agreement with State Forest to use these access tracks, that requires that the tracks are maintained.
Increase in ROM stockpile size	Adverse changes in residential amenity for neighbours in proximate to Angus Place Mine Surface Site Facilities due to cumulative biophysical changes i.e. increased noise levels and dust levels.	Long-term	Local residents	Possible	Negative	No further consideration is required.
Increase in ROM coal	Impacts linked to residential amenity around stockpiles.	N/A	N/A	Unlikely	Negative	No further consideration required as Springvale Mine has approval for capacity, including Angus Place Mine ROM that would not exceed this.

Project Component	Potential Direct Social Impacts/Opportunities Considered	Duration	Extent	Likelihood (unmitigated)	Impact	Is the impact likely to be material and require further consideration in the SIA?
Coal transport	Reduced amenity impact footprint.	Long-term	Lithgow LGA	Almost certain	Positive	Further consideration required.
Wastewater	Additional demand on Council provided services.	Long-term	LCC	Unlikely	Neutral	No further consideration. The sewer system has capacity. Springvale Mine is also currently connected to the service.
Vegetation clearing	Reduced visual amenity and associated recreational experience for users of Newnes Plateau.	Long-term/ Cumulative	Newnes Plateau users/	Long-term/ Cumulative	Negative	Yes, further consideration is required.
	Adverse impact on Indigenous and non-Indigenous environmental and cultural values.	Long-term/ Cumulative	Lithgow LGA residents	Long-term/ Cumulative	Negative	No further consideration required.