

**JAMES MARSHALL & CO**

# Social Impact Assessment

Airly Mine Extension Project

August 2014

## SOCIAL IMPACT ASSESSMENT

### CENTENNIAL COAL: AIRLY MINE EXTENSION PROJECT

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# 1. Introduction

## 1.1 Overview and Methodology

James Marshall and Co has been commissioned by Centennial Airly Pty Limited (Centennial Airly) to undertake a Social Impact Assessment (SIA) of the proposed Airly Mine Extension Project (the Project). The Project involves the continuation of mining operations the existing Mining Lease ML1331 and extension of mining into the Authorisation 232 (A232) area at Airly Mine (Airly).

A SIA is a systematic, staged approach of enquiry which focuses on the human element of the environment to identify who may be affected by the Project and how they are affected. It takes into account the scope of the Project and how the Project will impact on the needs, issues, values and aspirations of community stakeholders. The purpose of the SIA is therefore to:

- Assess the social impacts of the Project including any impacts on local infrastructure and services.
- Assist in establishing the full facts about the Project, to support a well-informed decision about the appropriateness of the Project.
- Recommend mitigation measures to minimise adverse impacts and maximise benefits of the Project.
- Assess the impacts of the Project on future generations.
- Inform the community and facilitate participation by the community in the planning and assessment process.
- Facilitate the consideration of alternative Project proposals.
- Enhance existing data to inform the planning and development assessment process.

The broad steps in compiling a SIA are:

1. Profiling: This involves understanding the scale and scope of the Project, assessment and identifying the stakeholders (determined by the areas of affectation).
2. Scoping: This involves identifying the likely impacts arising from the Project and includes consultation and feedback from identified stakeholders. Consultation is undertaken in a range of ways and may include informal consultation, stakeholder engagement, surveys etc.
3. Assessment: This section explores the likely impacts that will arise. The scope of the assessment is determined by the likely impacts and as a guide may include (but not be limited to):
  - Changes to the population and characteristics of the area.
  - The community structure, its character or beliefs.
  - The health and safety of those living and working in the vicinity of the Project.
  - An assessment of safety as it relates to crime, anti-social and nuisance behaviour.
  - Social cohesion, in particular the quality of life of those living in the vicinity of the Project.
  - Cost of living, including housing affordability.
  - Accessibility.
  - Sense of place and community.
  - The impact on existing services, including tourism etc.
4. Management: All impacts should be identified and those that are identified as having an adverse or detrimental affect need to be managed and mitigated where possible. It is not

always possible to manage all adverse impacts however identification of these impacts and how they can be managed must be taken into account. Similarly, impacts that are identified as being positive need to also be identified and capitalised upon where possible and appropriate. This allows for an assessment as to whether the proposal meets net community benefit criteria.

5. Monitoring: Strategies to monitor identified impacts may need to be identified to ensure that management strategies are adhered to and those cumulative impacts are identified, monitored and taken into account with further development.

## 1.2 Director Generals Requirements (DGRs)

The DGRs that were issued on 6 November 2012 request that a Social and Economic Impact Assessment be completed. Revised DGRs were issued on 4 February 2014. The assessment criteria and where it is found is outlined in Table 1.

**Table 1: Director General's Requirements for Social and Economic Impact**

| Assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Found                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Potential direct and indirect economic benefits of the development for local and regional communities and the State.</li> </ul>                                                                                                                                                                                                                                                                                               | Refer Economic Impact Assessment (Appendix N of the EIS.                  |
| <ul style="list-style-type: none"> <li>Potential impacts on local and regional communities, including:               <ul style="list-style-type: none"> <li>➤ any increased demand for local and regional infrastructure and services (such as housing, childcare, health, education and emergency services); and</li> <li>➤ impacts on social amenity, particularly impacts on local residents of and other nearby landowners and residents.</li> </ul> </li> </ul> | This Document.<br><br>Section 5                                           |
| <ul style="list-style-type: none"> <li>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.</li> </ul>                                                                                                                                                      | Section 4                                                                 |
| <ul style="list-style-type: none"> <li>A detailed assessment of the costs and benefits of the development as a whole, and whether it would result in a net benefit for the NSW community.</li> </ul>                                                                                                                                                                                                                                                                 | Section 5<br><br>Refer Economic Impact Assessment (Appendix N of the EIS. |

## 1.3 Airly Mine History

Airly is situated approximately 40 kilometres north-northwest of Lithgow and around 4 kilometres northeast of Capertee, as shown in Figure 1. Access to the area is via the Castlereagh Highway to Capertee and then 3 kilometres along the Glen Davis Road to the intersection with the Mine Access Road leading to Airly pit top. The Wallerawang – Gwabegar railway line is situated 3 kilometres to the west of the pit top area.

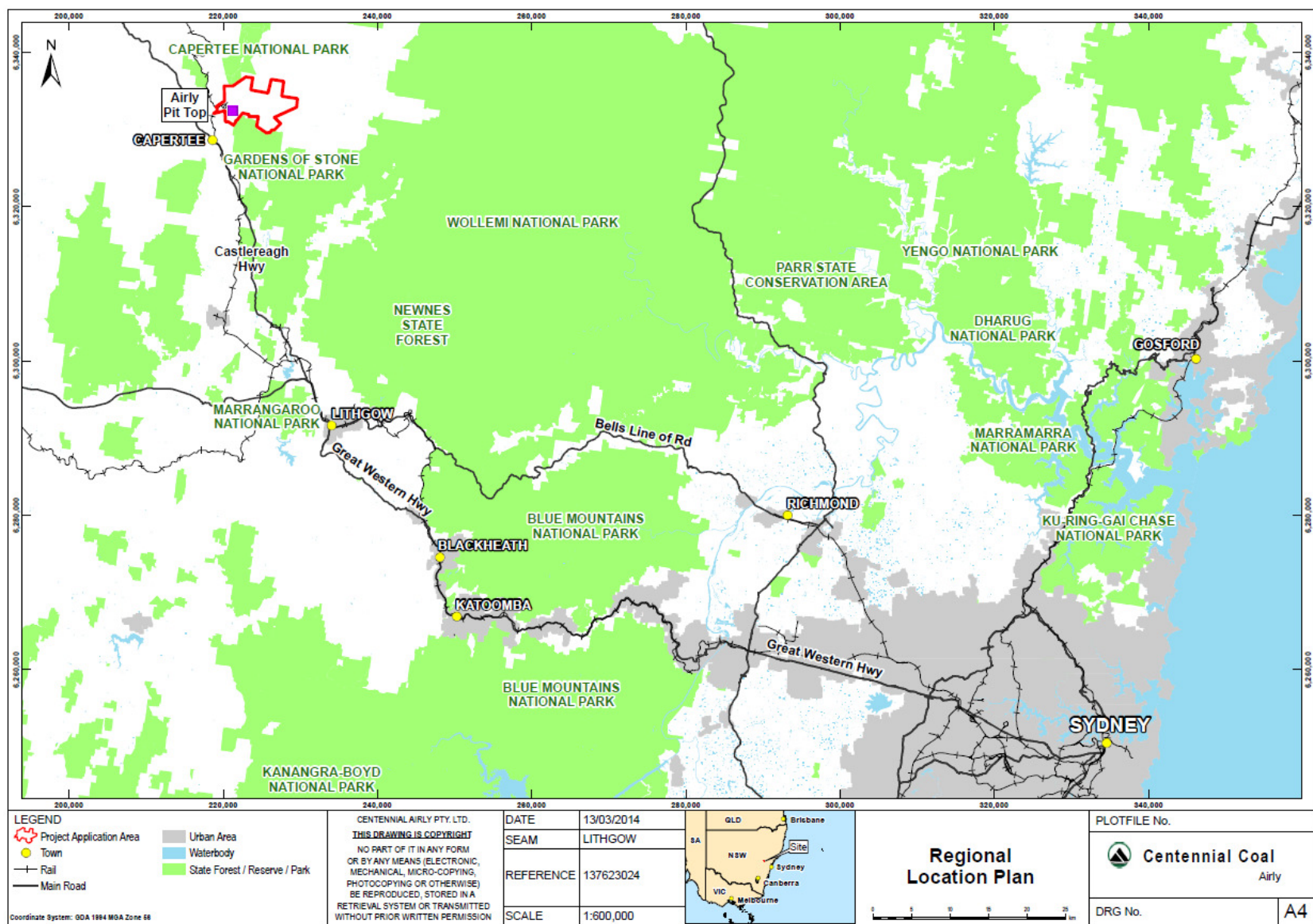


Figure 1: Locality of Airly Mine

A coal exploration program was carried out in 1984 consisting of 24 boreholes and field surveys of the old Torbane Colliery workings. The program established the economic significance and the extent of the coal resource in the region.

In 1987, a bulk sample operation was established to verify the initial exploration data and to determine appropriate underground mining sections and methods. This bulk sample was completed over six months and produced 26,000 tonnes of coal. All coal was loaded onto trucks and transported to the Western Main Colliery, situated at Blackmans Flat, where it was tested for coal quality and washability.

Airly was granted Development Consent DA162/91 on 14 April 1993 by the then Minister for Planning for the development of an underground coal mine following a Commission of Inquiry held in 1993. The development consent allows Airly to extract up to 1.8 million tonnes per annum (Mtpa) of run of mine (ROM) coal. Condition 2 in Schedule 2 of DA162/91 limits the duration of the consent to 21 years from the granting of Mining Lease ML1331. Given that the ML1331 was granted on 12 October 1993, DA162/91 is due to expire on 12 October 2014.

Centennial Coal Company Limited (Centennial Coal) purchased Airly from Novacoal Australia Pty Limited on 30 December 1997. On 26 April 1998, Centennial Coal commenced works at Airly in preparation for a trial mine. A small bulk sample was delivered to Mount Piper Power Station in June 1998. This material was won during the formation of the initial contractors' hardstand area. The Trial Mine Phase commenced in early December 1998 with regular transport of product coal to Mount Piper Power Station.

Development Approval (DA 162/91) was modified in 1999 to allow up to 500,000 tonnes per annum (tpa) to be transported by road for a period of two years. This period lapsed on 30 June 2002.

In mid 2008, Centennial Coal commenced detailed planning for the future development and operation of the mine. A contract was signed in February 2009 for the construction of the rail loop and permanent infrastructure to support the mine beyond the Trial Mine Phase and into its permanent operational phase. Construction of the rail loop and surface coal handling infrastructure commenced in March 2009.

First coal production for the purposes of developing the main portals and roadways to the underground mine occurred on the 14<sup>th</sup> December 2009. Coal won from the portal and roadway development was temporarily stockpiled within the box cut area and utilised for the commissioning of the surface conveyor infrastructure. The site surface conveyors were completed and commissioned in March 2010 with the first train load of coal leaving the Airly site destined for Port Kembla for export to Korea on the 22<sup>nd</sup> April 2010.

Production was gradually increased during 2011 in line with the completion of Stage 1 construction of the mine infrastructure with the completion of the mine ventilation fans and surface to underground trunk conveyor.

Due to market conditions, falling coal prices and the quality of the coal Airly was placed in Care and Maintenance in December 2012. Environmental monitoring continued at the site throughout this period and a Project team has coordinated the preparation of the Environmental Impact Statement (EIS) for the Project. Airly recommenced operations in March 2014.

#### **1.4 Airly Mine Extension Project: Proposed Operations**

Development Consent (DA162/91) for mining within ML1331 will lapse on 12 October 2014 and Airly is seeking approval to continue mining beyond this date. Airly proposes to extend its mining operations into the eastern section of its existing Mining Lease ML1331 and within its Authorisation A232 at Airly Mine.

The Project Application Area includes:

- the existing ML131 and A232 boundaries;
- the extent of contemporary mined areas (including historical mining activities);
- the existing Surface Facilities Area which includes:
  - workforce and materials access;
  - water management structures;
  - coal conveyor system, coal stockpile and coal loading facilities;
  - the rail siding and the rail load out facility; and
  - mine access.

The Project is seeking approval to:

- continue to extract up to 1.8 million tonnes per annum (Mtpa) of run of mine (ROM) coal from the Lithgow seam underlying the Project Application Area;
- extend life of mine by 25 years from the date of consent and which will include the rehabilitation of the mine following cessation of mining;
- extract coal using partial extraction methods within the mining lease (ML1331) and extend the mining area to the east of the existing workings into Authorisation 232 (A232) area;
- develop underground access headings and roadways from the current mining area to the east to allow access to the proposed mining areas;
- use various partial extraction mining methods, that will manage subsidence not to exceed 125mm in previously unmined areas and minimise further potential subsidence impacts in areas where the historical New Hartley Shale Mine has already impacted the environment;
- continue to operate and maintain the existing ancillary surface infrastructure for mine access, underground ventilation, electricity, water, materials supply, and communications at the pit top, and upgrade the infrastructure as required for mining operations;
- continue to manage the handling of run-of-mine (ROM) coal through a crusher and screening plant at the pit top for transfer to the existing and proposed stockpile areas as required to meet market demands;
- complete the construct a coal handling and preparation plant (CHPP) to include a Coal Preparation Plant (CPP) to beneficiate ROM coal;
- transfer beneficiated coal from the CPP, using the existing and new overland conveyor systems, to the product stockpile area for temporary storage prior to despatch to offsite locations;
- construct a life of mine reject emplacement area (REA) for the emplacement of reject materials from the CPP and the underground mine;

- continue to use the existing water storage dams at the pit top for the separation of clean and dirty water, construct appropriately sized new management storage dams for the proposed life of mine REA;
- continue to manage non-production waste in accordance with the site's Mining Operations Plan;
- despatch ROM and product coal off site using the existing rail load out facilities for the export and domestic markets;
- continue to undertake existing and initiate new environmental monitoring and geological exploration programs as appropriate;
- review and update existing environmental management plans as required;
- operate 24 hours per day and seven days per week for 52 weeks per year;
- provide employment to a full time workforce of up to 135 persons and 20 contractors;
- progressively rehabilitate disturbed areas at the pit top no longer required for mining operations and exploration boreholes;
- undertake life-of-mine rehabilitation at the pit top infrastructure disturbance areas to create final landforms commensurate with the surrounding areas.

The comparison between the existing approvals against the proposed Project is outlined in Table 2 and surface infrastructure layout can be seen in Figure 3. Photos of the Airly Mine pit top can be seen in Plates 1, 2 and 3.

**Table 2: Comparison of Existing Approval and Components of Proposed Project**

| Component                               | Mining Operations Approved in DA162/91                                                                                                                                                                                                                                                                                                     | Proposed Project                                                                                                                                                          |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mining area                             | ML1331                                                                                                                                                                                                                                                                                                                                     | ML1331 and A232                                                                                                                                                           |
| Mining method                           | Partial and full extraction methods                                                                                                                                                                                                                                                                                                        | Partial extraction methods to manage subsidence not to exceed 125mm.                                                                                                      |
| Mine access                             | Existing box cut portals and eastern portal                                                                                                                                                                                                                                                                                                | No eastern portal required                                                                                                                                                |
| Surface Facilities Area                 | Includes: <ul style="list-style-type: none"> <li>• Workshop and administration infrastructure</li> <li>• Water management structures</li> <li>• Coal conveyer system, coal stockpile area, coal crusher, Coal Preparation Plant (CPP) construction</li> <li>• Reject Emplacement Area (REA)</li> <li>• Rail load out facilities</li> </ul> | Currently approved infrastructure plus some additional infrastructure and upgrade of existing infrastructure.<br><br>Additional water management storage dams and drains. |
| Run-of-mine (ROM) coal production limit | 1.8 Mtpa                                                                                                                                                                                                                                                                                                                                   | No change                                                                                                                                                                 |
| Coal handling                           | Processing through the Coal Crusher and a Coal Preparation Plant.                                                                                                                                                                                                                                                                          | No change                                                                                                                                                                 |

Table 2: cont...

|                                       |                                                                                               |                                                                                                                       |
|---------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Reject management                     | Course and fine reject material to be emplaced within a surface REA                           | No Change                                                                                                             |
| Coal transport                        | Transported from the site via the rail load out facilities using an overland conveyor system. | No change                                                                                                             |
| Coal destination                      | Overseas export (ROM and processed coal)                                                      | Overseas export and possible utilisation of Centennial's current logistical infrastructure to supply domestic markets |
| Hours of operation and site personnel | 24 hours per day, 7 days per week<br>120 personnel                                            | No change to operating hours<br>Approximately 135 full time employees and up to 20 contractors                        |
| Life of mine                          | 21 years from the granting of ML1331 (due to expire on 12 October 2014)                       | 25 years from the granting of the consent.                                                                            |

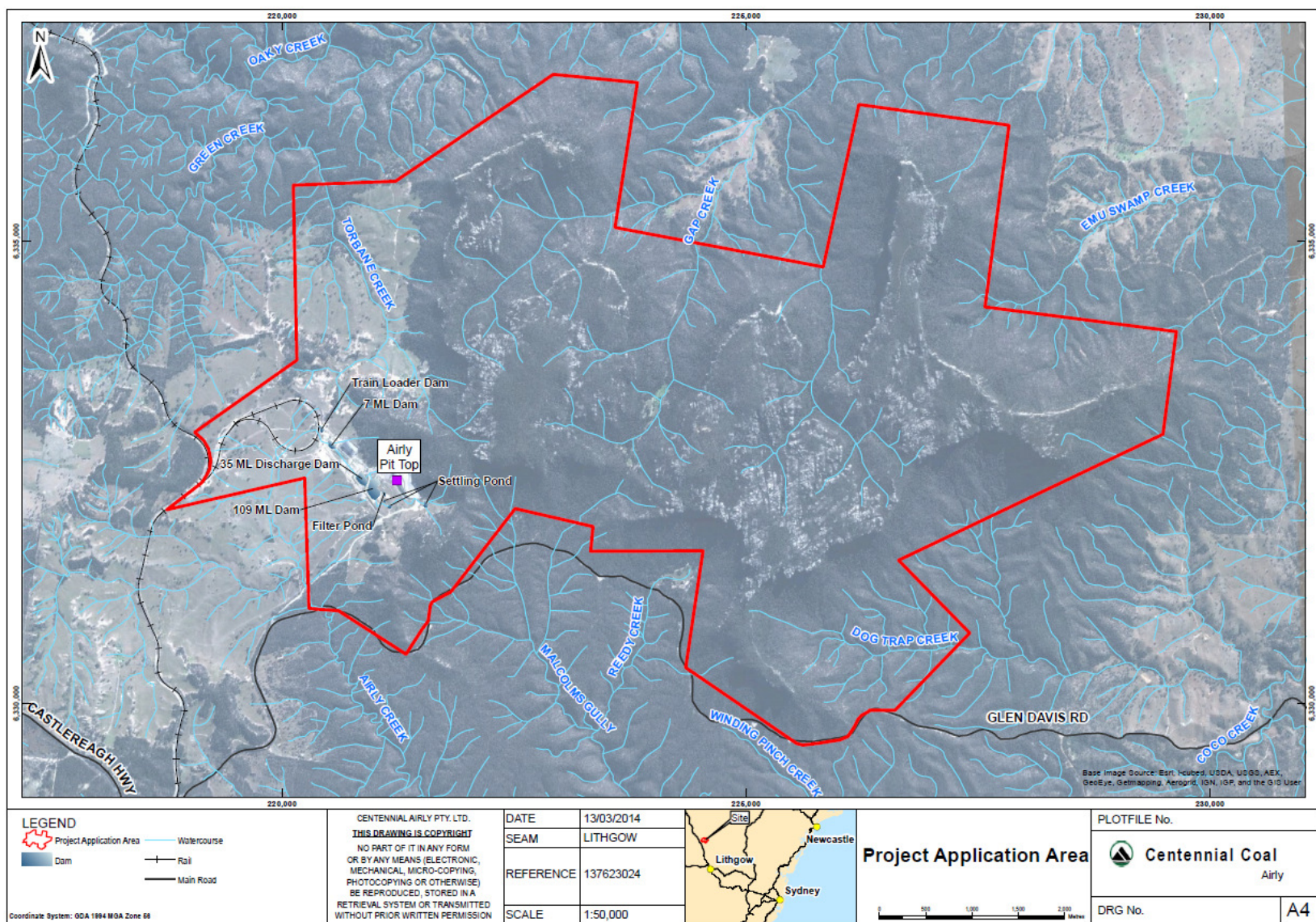


Figure 2: Airly Mine Project Application Area

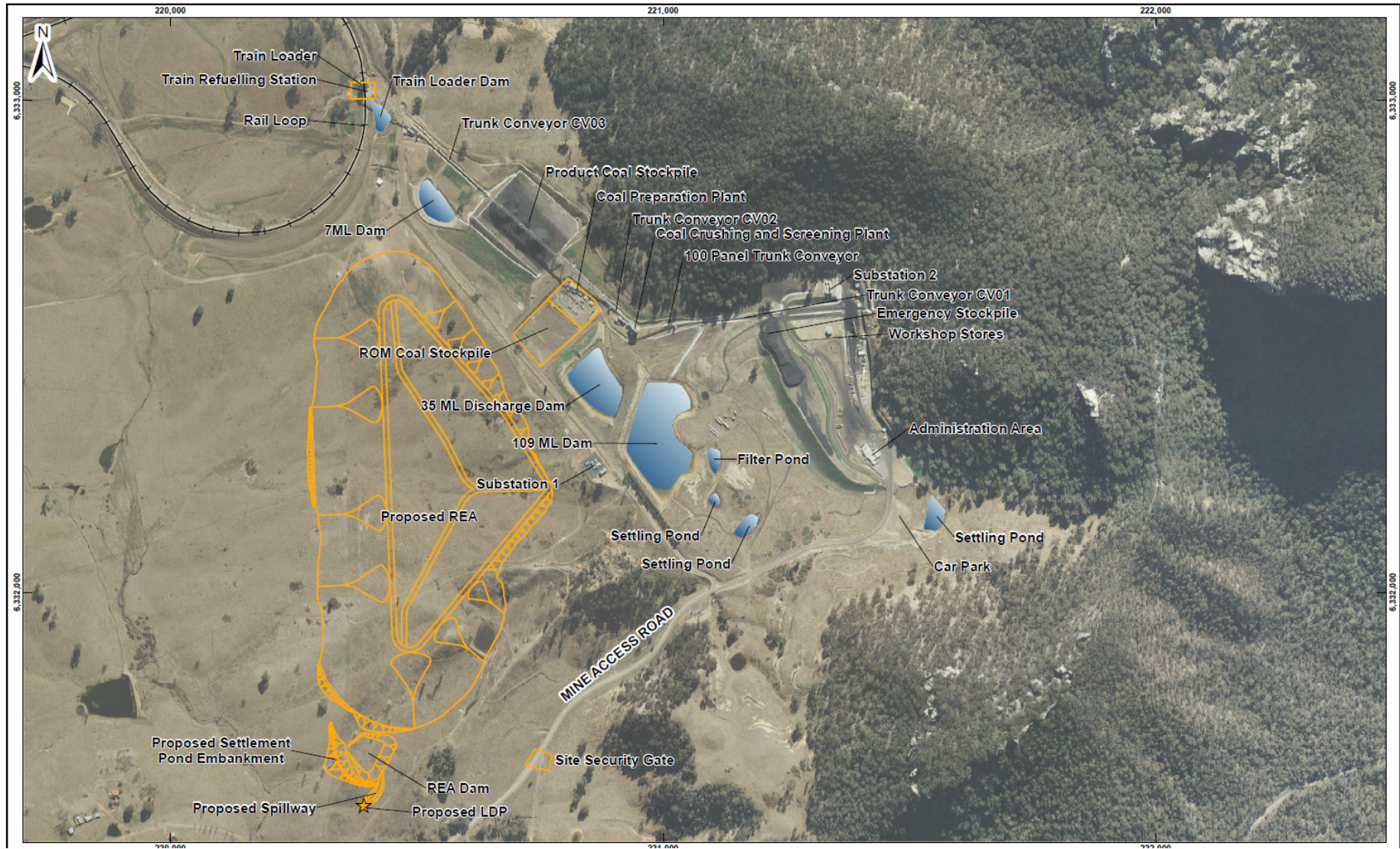


**Figure 3: Existing and Proposed Surface Infrastructure**



**Plate 1: Airly Administration Building**



**Plate 2: Airly Surface Facility**



**Plate 3: Airly Coal Handling Infrastructure**

## 2. Community Profile

### 2.1 Lithgow Local Government Area: Overview

The Lithgow Local Government Area (LGA) covers an area of approximately 4,551 square kilometres extending from the Capertee and Wolgan Valleys in the north, Little Hartley in the east, Hampton-Tarana in the south and Meadow Flat in the west. The vision for the LGA was developed in collaboration with the community and adopted by Lithgow City Council in 2006. It sets a vision for the next 10 to 20 years for the LGA.

The overarching vision statement is:

*A centre of Regional excellence that:*

- *Encourages community growth and development.*
- *Contributes to the efficient and effective management of the environment, community and economy for present and future generations.*

The following vision statements were developed to support the overarching vision statement of the LGA:

- **Community:** We retain, respect and strengthen both our overall sense of community, and the unique linked communities of groups, rural areas, villages and towns that make up the Lithgow LGA.
- **Transport:** Providing a choice of effective public and private transport options for those who live, work and visit our community.
- **Employment:** Developing and embracing diverse job opportunities for all ages and abilities.
- **Heritage:** Celebrating, protecting and sustaining our unique industrial and natural heritage, its cultural landscapes and its built heritage.
- **Education:** Progressing to a “learning city of excellence” with a broad range of formal and non-formal education services.
- **Health:** Creating a healthy community providing opportunities and facilities for a healthy lifestyle.
- **Environment:** Balancing, protecting and enhancing our diverse environmental elements, both natural and built, for the enjoyment and support of both current and future generations.
- **Arts and Culture:** Supporting, celebrating and expanding a diversity of cultural and creative adventures that explore and discover the richness in our society.
- **Youth:** Providing suitable entertainment and recreational facilities; education and employment opportunities and lifestyle choices for our valuable community of young people.

The majority of the LGA town or village population is located in the Lithgow urban area with 11,143 people. The LGA supports two other small towns: Wallerawang and Portland with populations of 1,855 and 1,829 respectively (ABS 2011 Census). Both towns are located north-west of Lithgow, with Wallerawang being 13 kilometres away and Portland 24 kilometres away from Lithgow.

Lithgow is the dominant urban and main administrative centre within the LGA. It has the largest population and greatest range of services. Portland and Wallerawang are small towns which provide services to meet the needs of their local population, although when a broader range of services are required, these are usually obtained within Lithgow, which is in close proximity to both townships.

The villages within the LGA provide variable services to their respective surrounding communities and to those people who reside within the village. Given the lack of basic services generally found in these small villages, residents and visitors would rely on the broader range of services and facilities on offer, in the small towns and the nearby centres of Lithgow, Bathurst, Oberon or Rylstone. The LGA's settlement hierarchy can be described in Table 3.

**Table 3: Lithgow LGA's settlement hierarchy**

| Classification    | Population Size                                                      | Example in the Lithgow LGA                                        |
|-------------------|----------------------------------------------------------------------|-------------------------------------------------------------------|
| Town              | 5,000 to 15,000 people                                               | Lithgow                                                           |
| Small Towns       | 1,000 to 5000 people                                                 | Portland, Wallerawang                                             |
| Villages          | Less than 250 people and zoned village in the LEP                    | Capertee, Cullen Bullen, Tarana and Rydal                         |
| Rural Communities | Dispersed population with no specific commercial centre of services. | Ben Bullen, Glen Davis, Glen Alice, Hartley, Hampton, Marrangaroo |

Source: Lithgow Land Use Issues Paper

### **2.1.1 Rural Interface**

The rural areas within the LGA are defined by an array of physical characteristics. Cleared grazing land is evident across many parts of the area and indicates that pastoralists have played, and continue to play, an important role in Lithgow's development. Heavily vegetated areas of high scenic and environmental quality are also prevalent across the LGA, including a number of National Parks, featuring rugged bushland, high ridges, steep escarpments and vast valleys (e.g. Wolgan and Capertee Valleys) and lookouts.

A large proportion of the rural areas are inter-mixed with both grazing and environmental attributes creating a diverse character to the rural landscape. This also includes plantations and native Forestry which is both an economic and environmental asset in the rural areas. Industrial activity and infrastructure is also evident throughout the rural parts of the LGA, particularly coal mining and power station activities.

### **2.1.2 Relationship between rural and settlement areas**

The larger settlements of Lithgow, Portland and Wallerawang have a mainly agricultural / scenic edge to their urban areas, which has acted as a boundary to future development. However, rural-residential development has emerged creating a transition between the urban and rural areas in these centres.

The town of Lithgow is also typical of the rural/urban interface in the LGA, with environmentally sensitive hill slopes surrounding the urban areas, providing a highly significant natural asset at the northern, eastern and south-eastern edges of the town. Emerging residential development within South Bowenfels and future urban development in the West Bowenfels/Marrangaroo area is an example of the gradual transition and merging of the rural and urban areas.

The villages of Capertee, Cullen Bullen, Tarana and Rydal are all characterised by agricultural/rural land uses at the edge of the settlement area (and in some cases reaching into it). There is no gradual

transition in character or 'buffer' between the two areas. The rural communities are very much a part of the rural area within which they are situated. There is generally no defined 'town edge' to these communities, with the settlements basically comprising several buildings within the broader agricultural landscape. Examples include Ben Bullen, Glen Davis, Glen Alice, Hartley and Hampton.

## 2.2 Population Overview

According to the 2011 ABS Census, the Lithgow LGA population on Census night was 20,161 which represent a 2.04% increase in population since 2006. The majority of the population live in Lithgow urban area (11,143 people), Wallerawang (1,855 people) and Portland (1,829 people). The remainder of the population (approximately 26%) live across the smaller villages and rural localities across the LGA.

The LGA's population has seen some slight fluctuations since 1996. There was a small decrease in population recorded between the 1996 and 2001 census period and a slight increase in population between the 2001 and 2011 census period. The fluctuating population would be attributed to a number of factors which include:

- the changing employment characteristics of the area meaning that there is constant in/out migration, in particular families with young children;
- a trend for younger people (18 – 24 years of age) to move out of the area to seek lifestyle, education and/or employment opportunities;
- in-migration of mature age people seeking a rural lifestyle ("tree change").

The major change in Lithgow's population has occurred in rural areas. According to the Lithgow Land Use Strategy (LUS) between 1996 and 2009 over 55% (699 in total) of all dwelling approvals has occurred within rural areas. This has increased the population in these areas by approximately 1,678 persons over this time. Population migration data indicates that the trend towards rural living is usually from people moving from outside of the LGA, seeking alternative lifestyle choices or securing land to be used as a place to visit on weekends and holiday periods. As with most regional areas, Lithgow's population is ageing. As illustrated in Table 3 the median age of the LGA is now 42 years; in Capertee the median age is 48 years and Glen Davis 51 years. Table 4 summarises population characteristics of the LGA between 2001 and 2011.

**Table 4: Time Series Data (2001 – 2011) – Lithgow LGA**

| <b>Selected Medians</b>                   | <b>2001</b> | <b>2006</b> | <b>2011</b> |
|-------------------------------------------|-------------|-------------|-------------|
| Population                                | 19,332      | 19,756      | 20,161      |
| Median age of persons                     | 37          | 40          | 42          |
| Median Total personal Income (\$ weekly)  | \$295       | \$356       | \$455       |
| Median total family income (\$ weekly)    | \$822       | \$1,027     | \$1,190     |
| Median total household income (\$ weekly) | \$642       | \$751       | \$894       |
| Median mortgage repayment (\$ monthly)    | \$750       | \$1,083     | \$1,452     |
| Median Rent (\$ weekly)                   | \$110       | \$135       | \$170       |
| Average household size                    | 2.5         | 2.4         | 2.3         |

Source: ABS Census 2011

The following are summary characteristics of residents and workers living in the Lithgow LGA:

- There are fewer young people living in the LGA.
- Lithgow has a population which is aging at a relatively faster rate than the NSW average.
- Marginal population growth to 2017 is forecast for Lithgow, after which the population is forecast to decline.
- The largest employer in Lithgow LGA is mining, followed by retail trade, accommodation and food services, public administration and safety, health care and social assistance.
- The majority of workers in Lithgow (84.9% or 5,820 persons) live and work within the LGA.
- 15.1% of total workers live outside the LGA and travel into Lithgow for work, with the majority travelling from the Blue Mountains.
- 24.5% of the resident workforce leaves Lithgow LGA to work, mostly to the Blue Mountains followed by Bathurst.
- Those who travel to the Blue Mountains mainly work in health care, accommodation and food services, retail trade and public administration and safety. Most of those working residents who travel to Bathurst work in manufacturing, agriculture, education and training.
- Only a very small proportion of working residents travel to Sydney and Penrith.
- The majority of working residents in Lithgow LGA work in mining, manufacturing, retail trade, accommodation and food services, public administration and safety, health care and social assistance.
- Those working residents that leave Lithgow LGA to work, mainly work in manufacturing, construction, wholesale trade, transport, postal and warehousing, information media and telecommunications, professional, scientific and technical services, administrative and support services, education and training, arts and recreation services (based on more than 25% of working residents leaving the LGA by industry type).

### 2.2.1 Population Projections

Population projections are based on historical data of births, deaths and migration patterns. As seen below in Table 5; Lithgow shows a projected static to declining population. This trend will exacerbate the ageing nature of the population across the LGA. Population targets however are desired goals for population growth which are influenced by strategic policies that include areas for land release, dwelling targets, employment, education, access to social infrastructure and a good road network.

**Table 5: Historical and projected age distribution - Lithgow LGA**

| Age   | Persons |       |       |       |       |       |       |       |       |
|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | 1996    | 2001  | 2006  | 2011  | 2016  | 2021  | 2026  | 2031  | 2036  |
| 0-4   | 1,600   | 1,380 | 1,190 | 1,130 | 1,100 | 1,060 | 1,010 | 960   | 910   |
| 5-9   | 1,600   | 1,520 | 1,350 | 1,190 | 1,150 | 1,110 | 1,080 | 1,030 | 980   |
| 10-14 | 1,540   | 1,570 | 1,470 | 1,340 | 1,200 | 1,150 | 1,120 | 1,080 | 1,030 |
| 15-19 | 1,310   | 1,420 | 1,420 | 1,270 | 1,150 | 1,020 | 970   | 930   | 890   |
| 20-24 | 1,320   | 1,090 | 1,090 | 1,090 | 980   | 870   | 780   | 730   | 690   |
| 25-29 | 1,370   | 1,250 | 1,030 | 1,090 | 1,070 | 980   | 890   | 810   | 770   |
| 30-34 | 1,570   | 1,350 | 1,290 | 1,090 | 1,130 | 1,110 | 1,030 | 940   | 870   |
| 35-39 | 1,620   | 1,570 | 1,320 | 1,310 | 1,140 | 1,160 | 1,130 | 1,060 | 980   |
| 40-44 | 1,460   | 1,590 | 1,560 | 1,350 | 1,340 | 1,180 | 1,190 | 1,160 | 1,100 |
| 45-49 | 1,420   | 1,430 | 1,580 | 1,530 | 1,340 | 1,320 | 1,170 | 1,180 | 1,150 |
| 50-54 | 1,210   | 1,490 | 1,440 | 1,580 | 1,540 | 1,360 | 1,330 | 1,200 | 1,210 |
| 55-59 | 960     | 1,280 | 1,490 | 1,470 | 1,590 | 1,550 | 1,390 | 1,370 | 1,240 |
| 60-64 | 830     | 970   | 1,300 | 1,510 | 1,490 | 1,610 | 1,580 | 1,430 | 1,400 |
| 65-69 | 770     | 840   | 970   | 1,250 | 1,450 | 1,450 | 1,560 | 1,530 | 1,400 |
| 70-74 | 700     | 730   | 750   | 910   | 1,170 | 1,370 | 1,370 | 1,480 | 1,460 |

Table 5: cont...

|                   |               |               |               |               |               |               |               |               |               |
|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 75-79             | 480           | 570           | 640           | 660           | 800           | 1,030         | 1,220         | 1,240         | 1,340         |
| 80-84             | 290           | 360           | 420           | 490           | 520           | 630           | 830           | 990           | 1,020         |
| 85+               | 190           | 220           | 320           | 380           | 460           | 520           | 630           | 820           | 1,030         |
| <b>Total</b>      | <b>20,200</b> | <b>20,600</b> | <b>20,600</b> | <b>20,600</b> | <b>20,600</b> | <b>20,500</b> | <b>20,300</b> | <b>19,900</b> | <b>19,500</b> |
| <b>Median Age</b> | <b>34</b>     | <b>37</b>     | <b>40</b>     | <b>42</b>     | <b>45</b>     | <b>47</b>     | <b>49</b>     | <b>50</b>     | <b>51</b>     |

Source: Department of Planning and Infrastructure Population Projections 2010 release.

In their preliminary release the Department of Planning and Infrastructure have revised their forecast population to 20,650 people in 2036 (preliminary 2013 projections for Lithgow LGA).

### 2.3 Economic Profile

Lithgow has a long history with mining and power generation and today the economic base of Lithgow is still recognised as being the energy and resources sector. These sectors are major employers and subsequently make a significant contribution to the overall financial and social economy via direct spending and employee participation in a range of social infrastructure and services such as education, entertainment, sporting, volunteering. Direct and indirect employment opportunities therefore occur across other sectors such as retail. Accommodation and food services and health care and social services sectors also provide a significant employment base. Table 6 lists the industry of employment for the LGA between 2001 and 2011.

Table 6: Industry of Employment (Lithgow LGA) 2001 - 2011

| Industry of Employment                          | Persons Employed |      |      |
|-------------------------------------------------|------------------|------|------|
|                                                 | 2001             | 2006 | 2011 |
| Agriculture, forestry and fishing               | 277              | 262  | 207  |
| Mining                                          | 682              | 773  | 987  |
| Manufacturing                                   | 626              | 623  | 549  |
| Electricity, gas, water and waste services      | 384              | 388  | 345  |
| Construction                                    | 450              | 458  | 468  |
| Wholesale trade                                 | 207              | 149  | 154  |
| Retail trade                                    | 795              | 864  | 797  |
| Accommodation and food services                 | 685              | 649  | 674  |
| Transport, postal and warehousing               | 473              | 409  | 465  |
| Information media and telecommunications        | 73               | 58   | 51   |
| Financial and insurance services                | 132              | 142  | 134  |
| Rental, hiring and real estate services         | 80               | 86   | 80   |
| Professional, scientific and technical services | 201              | 222  | 257  |
| Administrative and support services             | 190              | 239  | 274  |
| Public administration and safety                | 535              | 615  | 690  |
| Education and training                          | 435              | 461  | 491  |
| Health care and social assistance               | 618              | 748  | 884  |
| Arts and recreation services                    | 76               | 76   | 79   |
| Other services                                  | 251              | 264  | 295  |

The mining and energy sectors also present some challenges brought about by fluctuations in coal prices. However, the importance of the coal mining industry to the regional economy is clear in Lithgow City Council's Economic Development Strategy (EDS) 2010-2014. This is substantiated by the following material included in the EDS;

- "In 2006, the mining sector employed 10% of the total Lithgow resident\_workforce second only to the Retail sector at 11.2%".
- "The largest employer in Lithgow Local Government Area is mining".
- "only the mining sector had a greater percentage contribution to gross regional product (27%) than its share of employment (12%).

Gross Regional Product data analysis taken from the Lithgow Jobs Summit 2008 report highlights the following key indicators:

- In 2006-07 the gross regional product for Lithgow Local Government Area was estimated to be approximately \$723.8 million.
- The manufacturing sector contributed 7% of value added while health, utilities and the retail sector each contributed 6%.
- Of these, only the mining sector had a greater percentage contribution to gross regional product (27%) than its share of employment (12%).
- The retail sector's high share of employment.

The sustainability of the mining sector and its related employment is clearly vital to the broader economic wellbeing of the area.

#### **2.4 Emerging Industry Sectors - Tourism**

According to the Lithgow Economic and Development Strategy "tourism is becoming of increasing importance for economic growth and has caused governments and industry to engage in aggressive and intense promotional activities in order to develop and increase the effectiveness and quality of the sector". Lithgow LGA is a place endowed with significant natural and cultural resources that can capture the interests of visitors and therefore increased tourism investment. To achieve this, Lithgow will change its identity from a mining town to capitalise on the following assets:

- A diverse physical geography ranging from flat to gently undulating pastoral landscapes to rugged natural bushland dominated by sandstone cliffs and pagodas, majestic valleys and rare woodland forests, wetlands and ecological communities.
- A strong rail and road heritage associated with the crossing of the Blue Mountains.
- A strong and diverse built heritage within all three town centres, rural villages and hamlets.
- Places of Aboriginal Heritage and Significance.
- Access to a significant National Park and State Nature Reserves network boasting major Parks including:
  - Blue Mountains National Park;
  - Gardens of Stone National Park;
  - Wollemi National Park;
  - Turon National Park;
  - Capertee National Park;
  - Marrangaroo National Park;
  - Muggi Murrumban State Conservation Area;

- Evans Crown Nature Reserve; and
- access to a large and significant State Forest Estate.

This sector will be targeted for growth and via the business community could lead to a potential re-branding of the LGA via moving away from being identified as a ‘mining town’ to promoting the LGA as an area rich in significant natural features.

## 2.5 Lithgow Land Use Strategy

The current Lithgow Land Use Strategy 2010 – 2030 (LUS) has been prepared to inform the development of Lithgow’s Draft Local Environment Plan 2013 (LEP). The LUS is an important document that provides an overarching strategy for future population and land use planning into the future. It sets out the future directions of how land will be managed across the LGA and takes into account past planning strengths and challenges.

Land use conflict; increase residential living in rural areas (dispersed settlement); protection of the environment / scenic values and supporting strategies that assist in the diversification of the LGA’s economy (eg tourism) are all key components of the LUS which may potentially impact on Centennial Coal’s Western Operations, including Airly.

The principles of the LUS represent a shift towards consolidating residential settlement to established centers; away from Lithgow’s industrial traditions to create a more diverse economy via strategic land use planning principles supported by policy and other strategies such as marketing. Table 7 summarises factors that the LUS is attempting to address along with the potential impact for Centennial Coal.

**Table 7: Lithgow Land Use Strategy and Potential Areas of Impact for Centennial Coal.**

| Activities                                                                                  | Reason for Potential Impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There is an increased number of people living in rural areas                                | <ul style="list-style-type: none"> <li>• Landholders in rural areas not always resident of the LGA and migration to these areas generally by people from areas outside of the LGA.</li> <li>• Emergence of different values and connections to Lithgow – ie do not share the area’s mining history.</li> <li>• Small lifestyle farms meaning that land holders will actively protect water and other resources if they feel they are being threatened.</li> <li>• Fear in loss of land value.</li> </ul>                                                            |
| Addressing land use conflict, especially between industrial uses and residential land uses. | <ul style="list-style-type: none"> <li>• Number of examples across the LGA where co-existence of industry and community can be found. Land use conflict arises with the emergence of new settlements; expansion of industry where adverse impact on social amenity, lifestyle, threat to environment occurs.</li> <li>• Community will speak out against proposals that impact on their way of life / amenity.</li> </ul>                                                                                                                                           |
| Protection of sensitive environmental areas.                                                | <ul style="list-style-type: none"> <li>• Centennial Coal has a number of activities within identified sensitive environmental areas (eg Newnes Plateau).</li> <li>• There is an increasing move to protect these areas by a range of stakeholders which are not limited to Non-Government Organisations (eg Colong Foundation for Wilderness and Blue Mountains Conservation Society) but also include land holders who have moved into the area (eg the rural areas of Glen Alice / Glen Davis have experienced large population increases since 2001).</li> </ul> |

Table 7: cont...

|                                                             |                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Support and protection of other industries such as tourism. | <ul style="list-style-type: none"> <li>• There is a move to recognise and pursue other industry sectors that are not related to mining and power generation to broaden and stabilise the economic profile of the LGA. Tourism is one such sector.</li> <li>• Moves to protect key 'gateways' and scenic landscapes will potentially become a priority.</li> </ul> |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 2.6 Capertee Valley

Airly Mine is located approximately 4 kilometres northeast of Capertee on the Glen Davis Road on the western fringe of the Capertee Valley. Capertee, Glen Davis, Glen Alice and Bogee are all located within the Capertee Valley.

The Capertee Valley is known to have significant natural heritage value; it is the world's second largest canyon being 1 kilometre longer than the Grand Canyon, but not quite as deep. The area is characterised by sandstone cliffs and deep chasms and is known for its views and mountain landscapes.

Visitors come to the area for environmental tourism (eg bird watching), four wheel driving, camping, bushwalking, photography. Bird watching in particular is an important attraction to the Capertee Valley. The [bmbirding.com.au](http://bmbirding.com.au) website states the Capertee Valley is home to more species of birds, than anywhere else in the Southern Hemisphere.

*... Most importantly, the valley is blessed with a remarkable diversity of birds, especially species that can be difficult to find in other areas. It's a stronghold for declining woodland birds, those species which have suffered most as a result of extensive clearing for agriculture throughout inland south-eastern Australia. The best known example is the Regent Honeyeater, a beautiful and endangered bird whose most important breeding area anywhere is right here in the Capertee Valley. It's now estimated there may be only several hundred Regent Honeyeaters remaining in the wild. The valley is now regarded as "the centre of the universe" for this enigmatic species.*

*The valley was one of the first places in NSW to be nominated as an Important Bird Area (IBA) on the Register of Birdlife International.*

Visitors from around the world are attracted to the physical characteristics of the Capertee Valley. The Capertee Valley Alliance Inc. facilitates a community website and blog for the area, including the promotion of activities and community events (refer [caperteevalleyalliance.blogspot.com](http://caperteevalleyalliance.blogspot.com)). Statistics for the number of previews of the blog at 2.00pm, 20 August 2013 are shown in Table 8. The page views by country of origin shown in Table 9 demonstrate a far reaching interest in the area.

**Table 8: Capertee Valley Alliance Blog: Previews as at 20 August 2013**

| Previews: When   | Previews: Number |
|------------------|------------------|
| Today            | 61               |
| Yesterday        | 299              |
| Last Month       | 6,020            |
| All Time History | 120,318          |

**Table 9: Capertee Valley Alliance Blog: Page views by Country of Origin**

| Country        | Page-views |
|----------------|------------|
| United States  | 670        |
| Australia      | 254        |
| Russia         | 51         |
| France         | 32         |
| Brazil         | 27         |
| Germany        | 20         |
| India          | 15         |
| United Kingdom | 14         |
| China          | 13         |
| Indonesia      | 9          |

### **2.6.1 Settlement History**

The district was occupied by the Wiradjuri people prior to European settlement. The first European in the immediate vicinity was James Blackman who journeyed north from his depot at what is now Wallerawang towards Mudgee in 1821. Blackmans Flats and Blackmans Crown still bear his name. As they traversed the steep slope of the latter, the party would have seen the Capertee Valley stretched out below them.

Sir John Jamison, a wealthy grazier and entrepreneur, established a large cattle station known as 'Capita' in the 1820s. The Corlis and Gallagher families fled Ireland's potato famine and took up land in the valley in the late 1840s. Both established enormous sheep properties focused on wool-growing and exerted a great influence over the valley.

In 1851 a 48 kilogram gold nugget was discovered in the area and other finds were then made on the Turon River and nearby creeks. This greatly increased traffic on the Mudgee Road (now Castlereagh Highway) and inns began to appear. Capertee village sprang from one such inn - James Shervey's, which was known to be in existence at Capertee camp by 1870. A post office opened in 1875 though, by 1880, there were still no more than a dozen buildings in the village.

The railway arrived from Wallerawang in 1882, and then a pre-fabricated school building was established in 1883. The railway enabled the exploitation of the area's known mineral resources - coal, limestone and oil shale. The latter was discovered on the future site of Glen Davis in 1873. The first mining tunnel at that site was established in 1881 and other mines began to open around Capertee in the 1890s, including one on Blackmans Crown. Capertee benefited from the economic activity although there was little development other than the opening of a police station, lock-up and courthouse.

Two other small villages soon sprang up around the new mines; Airly Village, about 8 kilometres east of Capertee and Torbane which acquired a railway siding. By 1898 about 200 men were working on the Torbane project. It is estimated that between 1896 and 1903, 140,000 tons of oil shale were extracted. For shelter the miners used caves formed by erosion in the sandstone cliffs. Shale production went into decline around 1903 and closed in approximately 2013. During the Great Depression, refugees fleeing the high rents and unemployment of the cities built mud huts and camped along the Turon River. After the works at Newnes closed effectively down in 1928 agitation increased for a reopening of the Capertee works as it was the only source of oil in Australia.

The degree of government assistance and concessions indicate that the enterprise was to be of no great commercial success. The war may have increased desire for independent fuel resources but the proposed production levels were not that significant. Nonetheless, the works were opened in 1938 and a town of about 2,500 people quickly developed around the works which employed 1,600 people during their peak in the 1940s.

Supplies were already running out by 1949, and the end of Chifley's Labour government meant the end of heavy and ongoing assistance from the government. Costs were high, output was low and cheap crude oil was available from the Middle East. Consequently the works closed in 1952, and the machinery was stripped in 1953, leaving the ruins which remain today. Open-cut coalmines had also been established in the valley but these began to dwindle in the post-war years due to competition from continuous operation mining overseas. Nonetheless Capertee again survived. A heavy tax on road freight greatly benefited Capertee railway station. Furthermore, wool prices soared during the Korean War (1950-53) and changes in working hours for rail crews resulted in crew changes taking place at Capertee where many took up accommodation.

However, in the 1960s, wool prices declined, the introduction of diesel trains changed work patterns on the railways and local sheep farmers suffered from a new emphasis on cattle. Consequently the village diminished significantly.

### **2.6.2 Capertee**

Capertee is located 186 km north-west of Sydney and 44 kilometres north of Lithgow on the Castlereagh Highway and has a population of 180 people (Capertee State Suburb: 2011 ABS Census). Lithgow City Council undertook a consultation with the Capertee and surrounding community in March 2006 when preparation of the LUS which identified the following values and aspirations.

- Ensuring that the more remote areas still feel part of the LGA (not be so Lithgow town centric).
- Including political representation of remote areas within Lithgow LGA.
- Encouraging sustainable development that provides jobs without ruining the natural environment.
- Encouraging an entrepreneurial approach to the area, that respects local values, and at an appropriate scale.
- Improving infrastructure and services.
- Promoting the area for sustainable tourism/eco-tourism.

There are a small amount of facilities and services in Capertee (listed below), and there is an active progress association (Capertee and District Progress Association), the Capertee Valley Alliance, Glen Davis Environmental Group, Glen Alice Community Association and other localised tourist operators and businesses. Community and retail facilities include:

**Community facilities:** police and fire services; school; war memorial community hall; local park and play/rest area; Country Link bus stop.

**Retail and commercial facilities/services:** service station, includes general store selling incidental goods; hotel.



**Plate 4: The locality of Airly, Glen Davis Road (approx 3 kilometres from Capertee)**

### **2.6.3 Glen Davis and Glen Alice**

Glen Davis and Glen Alice are located along the Glen Davis Road. Glen Davis is located to the north-east of Capertee in the northern part of the LGA and is accessed by a partially unsealed road. This rural community is set in the Capertee Valley, surrounded by grazing and farming country under the backdrop of steep escarpment and ranges. There are no facilities or services apart from a camping ground and community hall.

Glen Davis is an old shale mining town on the Capertee River with the first mining tunnel being established in 1881. The town later became the basis of the major mining enterprise which opened in 1938. A town of some 2500 people developed around the mine, which was named Glen Davis after the Davis Gelatine interests who headed the mining consortium. The operation closed down in 1952 due to high costs and the increasingly small output. What remains today are crumbling furnace ruins, retorts and collapsed shafts.

Glen Davis has a picnic-barbecue-camping area with an amenities block and a privately run museum with displays relating to the town and shale mining history. It is usually only open on weekends and entry is free.

Glen Alice is located to the north-west of Glen Davis, in the northern part of the LGA. Development within Glen Alice consists of a public school, church and community hall. A public park, with tables, chairs and toilets is located adjacent to the community hall. The function of this rural community appears to be to cater for the surrounding agricultural and pastoral properties, as well as providing a stop-over point for travellers who may use this road as an alternate route between Capertee and Rylstone and Mudgee.

In the 1970s, 100 acre subdivisions commenced as a viable option for people wanting smaller yet productive farms. These landholders were referred to as 'blockies'. The appeal for this type of landholding was because the land was viable for limited agriculture / primary production and existing famers on larger properties had access to a supply of labour without having to establish

board / accommodation. For the 'blockie' landholder, this was a supplementary source of income. It is stated that in these early days many 'blockies' were from the surrounding region; access to cars meant that places like Capertee Valley were no longer isolated and travel to the major centres (ie Mudgee and Lithgow) was possible. Later the demand for these blocks shifted towards people seeking a tree change with land being used for hobby farms, limited agricultural pursuits and as lifestyle blocks (weekend / retirement retreats).

Evidence of subdivision is found throughout the Capertee Valley from Capertee through to Glen Davis, Glen Alice and Bogee. Today, landholders of this area include long standing residents (multi generation) some of whom use the land for agricultural purposes and have extensive knowledge of the area's history, land characteristics and features of the locality; land holders who live permanently on their properties for lifestyle, tourism and limited agricultural activities and some who are not permanent residents of the area who use their properties for weekend and holiday retreats.



**Plate 5: Royal Hotel, Capertee**

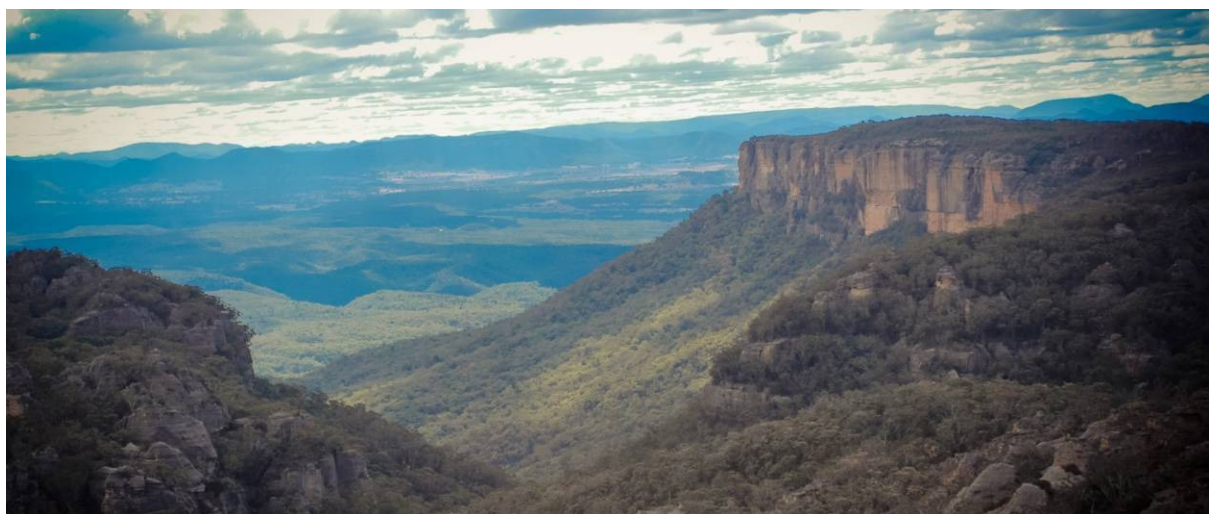


**Plate 6: Views Across The Capertee Valley**



**Plate 7: Rock Pagodas Mount Airly**



**Plate 8: Cliff Features**



**Plate 9: Genowlan Point**

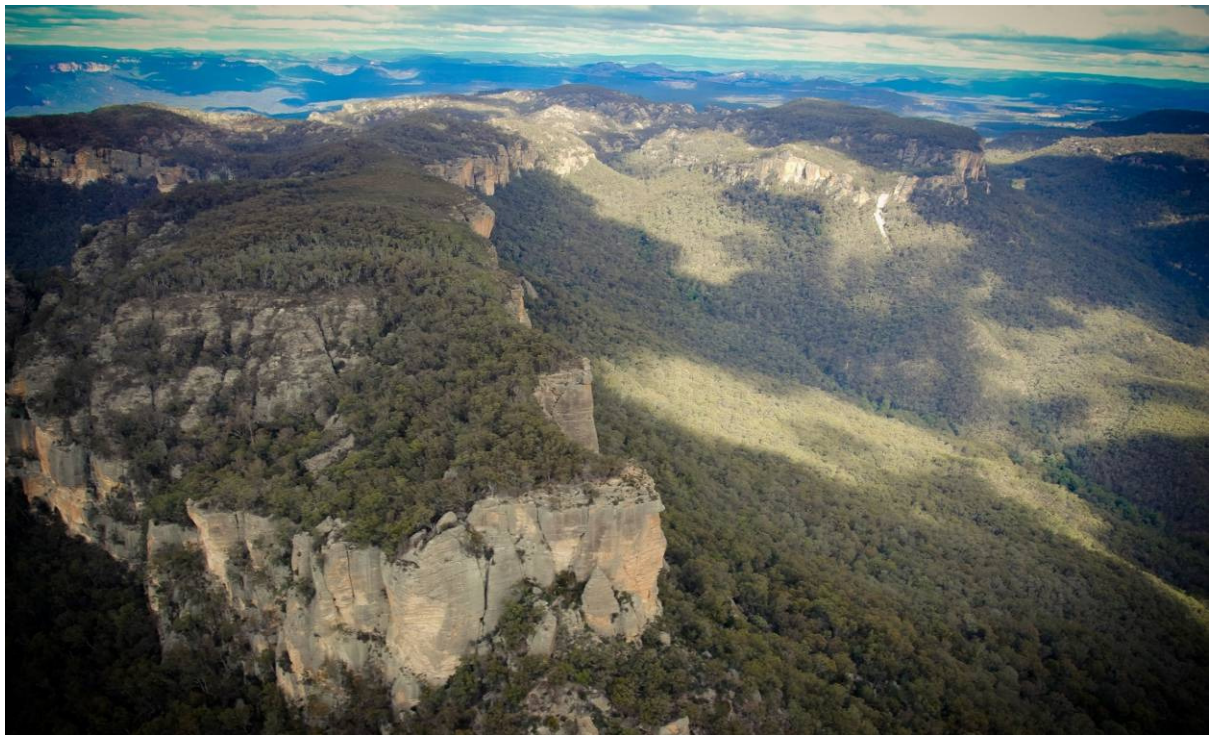


**Plate 10: Mount Airly**



**Plate 11: Disused Shop at Glen Davis**

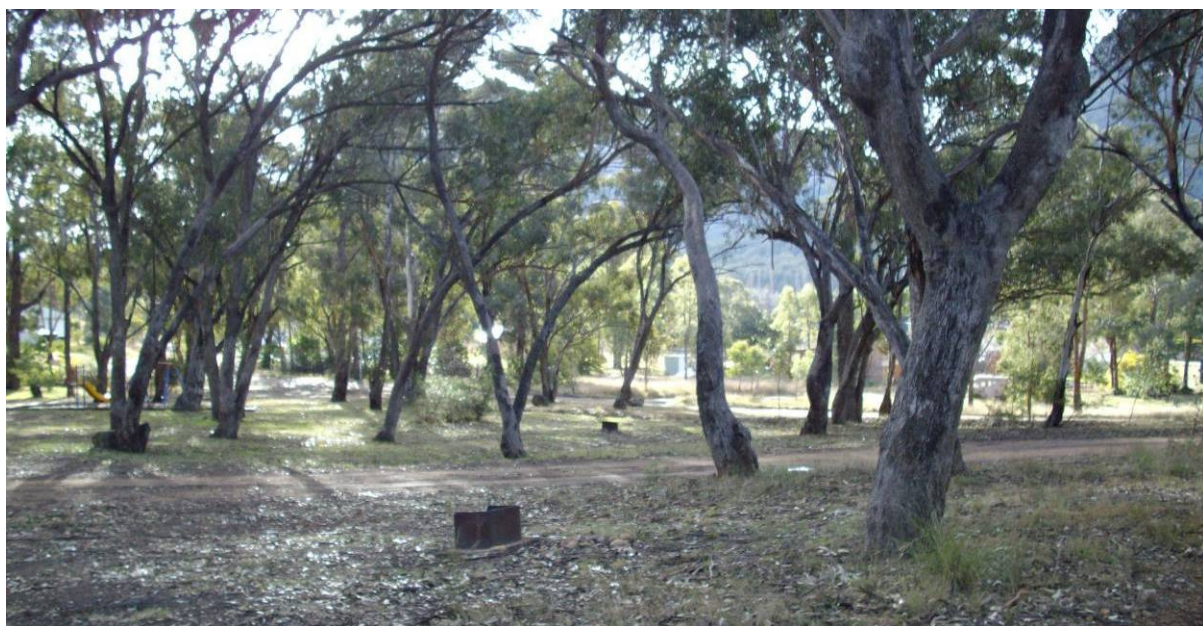


**Plate 12: Glen Davis Camp Ground**



**Plate 13: Evidence of small acre sub-division Glen Davis Road / Crown Station Road.**

## 2.7 Population Characteristics

Population characteristics are an important means of identifying who lives in a particular area and the socio-economic status. The information in the following tables is derived from the 2011 Census of Population and Housing. The State Suburb boundaries for Capertee and Glen Davis are shown in Figure 4.

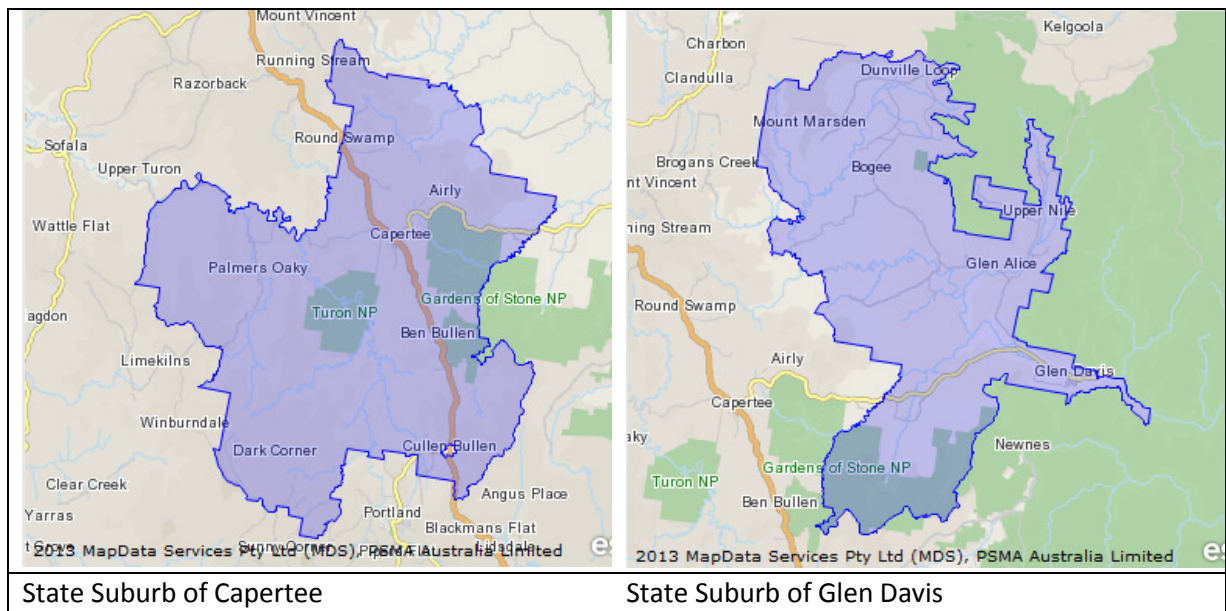


**Figure 4: State Suburb boundaries for Capertee and Glen Davis.**

Source: ABS Census 2011

**Table 10: Population Characteristics (Summary Data)**

| Person Characteristics | Lithgow LGA | Capertee | Glen Davis / Glen Alice |
|------------------------|-------------|----------|-------------------------|
| Total persons          | 20,160      | 372      | 288                     |
| Male                   | 51%         | 54.0%    | 51.4                    |
| Female                 | 49%         | 46.0%    | 48.6                    |
| Indigenous             | 4.5%        | 5.9%     | 3.1%                    |

Source: ABS Census 2011

**Table 11: Age Profile (Service Age Groups)**

| Age                   | Lithgow LGA % | Capertee % | Glen Davis / Glen Alice % |
|-----------------------|---------------|------------|---------------------------|
| 0-4 years             | 6.3           | 3.5        | 2.4                       |
| 5-14 years            | 12.4          | 12.9       | 12.8                      |
| 15-24 years           | 11.8          | 10.2       | 5.5                       |
| 25-54 years           | 37.3          | 35.7       | 33.4                      |
| 55-64 years           | 14.1          | 16.5       | 22.4                      |
| 65 years and over     | 18.1          | 21.1       | 23.4                      |
| Median age of persons | 42 years      | 48 years   | 51 years                  |

Source: ABS Census 2011

**Table 12: Education Attendance**

|                                            | Lithgow LGA % | Capertee % | Glen Davis / Glen Alice % |
|--------------------------------------------|---------------|------------|---------------------------|
| Education (attending at Census)            |               |            |                           |
| Pre-school                                 | 6.3           | 0.0        | 3.8                       |
| Primary - Government                       | 18.6          | 23.5       | 28.8                      |
| Primary - Catholic                         | 6.5           | 2.9        | 0.0                       |
| Primary - Other Non Government             | 0.8           | 0.0        | 3.8                       |
| Secondary - Government                     | 14.6          | 25.5       | 13.8                      |
| Secondary - Catholic                       | 5.3           | 0.0        | 0.0                       |
| Secondary - Other Non Government           | 1.1           | 4.9        | 0.0                       |
| Technical or further education institution | 9.0           | 8.8        | 7.5                       |
| University or tertiary institution         | 5.1           | 3.9        | 3.8                       |
| Other                                      | 1.3           | 0.0        | 0.0                       |
| Not Stated                                 | 31.3          | 30.4       | 38.8                      |

Source: ABS Census 2011

**Table 13: Employment Status**

|                       | Lithgow LGA | Capertee | Glen Davis / Glen Alice |
|-----------------------|-------------|----------|-------------------------|
| Worked full-time %    | 57.0        | 54.8     | 55.4                    |
| Worked part-time %    | 29.4        | 31.9     | 34.7                    |
| Away from work %      | 6.4         | 7.8      | 2.5                     |
| Unemployed %          | 7.2         | 5.4      | 7.4                     |
| Total in labour force | 8,683       | 166      | 121                     |

Source: ABS Census 2011

**Table 14: Occupation**

| Lithgow LGA %                          |      | Capertee %                             |      | Glen Davis / Glen Alice %              |      |
|----------------------------------------|------|----------------------------------------|------|----------------------------------------|------|
| Technicians and Trades Workers         | 17.7 | Managers                               | 18.8 | Managers                               | 33.0 |
| Machinery Operators And Drivers        | 14.2 | Technicians and Trades Workers         | 18.2 | Labourers                              | 15.2 |
| Clerical and Administrative Workers    | 13.2 | Labourers                              | 17.5 | Professionals                          | 14.3 |
| Professionals                          | 12.2 | Machinery Operators And Drivers        | 13.6 | Technicians and Trades Workers         | 10.7 |
| Community and Personal Service Workers | 11.9 | Community and Personal Service Workers | 10.4 | Community and Personal Service Workers | 9.8  |
| Labourers                              | 11.5 | Professionals                          | 6.5  | Machinery Operators And Drivers        | 8.0  |
| Managers                               | 9.4  | Clerical and Administrative Workers    | 6.5  | Clerical and Administrative Workers    | 6.2  |
| Sales Workers                          | 8.3  | Sales Workers                          | 3.2  | Sales Workers                          | 2.7  |

Source: ABS Census 2011

**Table 15: Industry of Employment**

| Lithgow LGA %                                 |      | Capertee %                           |      | Glen Davis / Glen Alice %                                |      |
|-----------------------------------------------|------|--------------------------------------|------|----------------------------------------------------------|------|
| Coal Mining                                   | 11.6 | Sheep, Beef Cattle and Grain Farming | 14.8 | Sheep, Beef Cattle and Grain Farming                     | 22.8 |
| School Education                              | 4.2  | Coal Mining                          | 12.9 | Coal Mining                                              | 6.1  |
| Cafes, Restaurants and Takeaway Food Services | 3.8  | Accommodation                        | 5.8  | School Education                                         | 5.3  |
| Public Order and Safety Services              | 3.5  | Building Installation Services       | 4.5  | Other Livestock Farming                                  | 2.6  |
| Supermarket and Grocery Stores                | 3.0  | Public Order and Safety Services     | 4.5  | Cement, Lime, Plaster and Concrete Product Manufacturing | 2.6  |

Source: ABS Census 2011

**Table 16: Dwellings and Tenure**

| Dwellings                      | Lithgow LGA | Capertee | Glen Davis / Glen Alice |
|--------------------------------|-------------|----------|-------------------------|
| Total Dwellings                | 9,425       | 269      | 277                     |
| Occupied Private Dwellings %   | 85.6        | 57.4     | 47.4                    |
| Unoccupied Private Dwellings % | 14.4        | 42.6     | 52.6                    |
| Owned outright %               | 40.2        | 54.4     | 97.6                    |
| Owned with a mortgage %        | 31.2        | 24.5     | 0.0                     |
| Rented %                       | 24.3        | 15.6     | 0.0                     |
| Average people per household   | 2.3         | 2.1      | 2.3                     |

Table 16: cont...

|                                     |         |         |         |
|-------------------------------------|---------|---------|---------|
| Median weekly household income      | \$896   | \$715   | \$636   |
| Median monthly mortgage repayments  | \$1,452 | \$1,153 | \$1,205 |
| Median weekly rent                  | \$170   | \$100   | \$0     |
| Average motor vehicles per dwelling | 1.7     | 2.3     | 1.9     |

Source: ABS Census 2011

Population and demographic data for the State Suburbs of Capertee and Glen Davis indicate:

- The population of the area has a high median age when compared with the Lithgow LGA. The median age for the LGA is projected to be 51 years by 2036. The median age would potentially be much higher for Capertee and Glen Davis / Glen Alice given that the current median age is 48 years and 51 years respectively.
- There are a higher number of people who work in agriculture and farming.
- There are a significant number of unoccupied private dwellings. It is noted that an increasing number of landholdings are owned by people not resident in the locality. These landholdings may be used as weekend and holiday retreats. Consultation with local residents found that the 'quoted' population figure fluctuates however is much higher than what is recorded by the ABS Census. Therefore the above population characteristics may not necessarily reflect the entire profile of community stakeholders who are landholders in the area and therefore may have an interest in the Project.
- There is a lower than average weekly family income than that of the LGA.
- Mortgage and rental repayments are substantially lower than that of the LGA.
- A high proportion of people who either own outright or are purchasing their home.

### 2.7.1 Centennial Airly – Employee Profile

Understanding the area where employees live will assist determine the local impact; benefit or otherwise that may be generated by the Project. Prior to being placed in Care and Maintenance there were 94 people employed at Airly. Approximately 80% of these employees lived in the Lithgow LGA. Of those who lived in the LGA, the majority of employees; 38% lived in the Lithgow urban area, followed by Portland (9.6%) and Wallerawang and Marrangaroo (both 7.5%). Approximately 5% of the total employees lived in the local communities of Capertee and Glen Davis.

Airly recommenced mining operations in March 2014 with 58 employees. Some of Charbon Colliery's employees were transferred to Airly when Charbon Colliery's underground operations ceased early 2014.

Due to the potential small number of employees living in the immediate area of Capertee, Glen Davis and Glen Alice, opportunities for a direct positive 'pay packet effect' are limited, other than via incidental spending. The pay packet effect is the financial benefit that communities receive from direct spending. Benefit also comes about via participation in local services, activities and events

such as attendance at the local school, volunteering in the local bush fire service and participation in locally organised events.

However, employment at Airly will result in financial and non financial benefit to the region. The Economic Assessment has reported that over the life of the Project approximately \$87.8 million will be allocated in employee wages, \$14.3 million for contractor related positions and \$0.5 million for contractors during construction.

## **2.8 Surrounding Land Ownership and Use**

Centennial Coal owns a substantial buffer zone (approximately 2,000 hectares) around the pit top. The majority of the PAA is Crown Land and classified as State Conservation Area. This land is managed by National Parks and Wildlife Service. Centennial own land around the pit-top in order to provide a substantial buffer to private landholders from the mines operations. Centennial Coal also own a parcel of land on the southern boundary which allows access to Genowlan Mountain and Genowlan Point. There are private land holdings bordering the PAA along with the Capertee National Park and Garden of Stones National Park boundaries. This buffer helps reduce the impact of the Project (in particular pit top activities) to the surrounding community.

# **3. Stakeholder Engagement**

## **3.1 Stakeholder Engagement Plan**

The Project has undertaken consultation via the Airly Mine Special Monitoring Committee (SMC) and facilitated broader community consultation by the way of technical sessions throughout and prior to the completion and lodgement of the EIS. Additional consultation has also been undertaken outside of the SMC via other established forums such as the Capertee and District Progress Association and directly with landholders as and when required. Newsletters have also been prepared and distributed to land holders, via the web site and via other community organisations (refer [www.centennialcoal.com.au/operations/airly](http://www.centennialcoal.com.au/operations/airly)).

## **3.2 Technical Sessions**

Four technical sessions have been facilitated by the Project for the purpose of providing the community an opportunity to understand the environmental assessment process, key studies undertaken, methodology and findings. The dates and topics outlined are listed below:

### **3.2.1 Community Information Session 1: Airly Mine 13 October 2013:**

Topics: Mine design; Subsidence Impact Assessment and Ground and Surface Water Assessment.

Areas of discussion included:

- The impact of subsidence on ground and surface water within the Project Application Area and surrounding properties.
- The stability of the mine workings post mining and the long term impact of subsidence.
- Water in-flow into mine workings post mining and the impact on the surrounding catchment.
- The use of water on site and the impact on the surrounding catchment.

Questions and answers from Session 1 are listed below.

| Question                                                                                                                                                                                                                                                | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <p>With reference to the location and management of the Reject Emplacement Area (REA), how is water prevented from flowing into Airly Creek and has a potential 1:100 year flood event been considered in its design and water management strategy?</p> | <p>The location of the proposed REA is near the coal handling facilities at the pit top. Factors that determine the location include minimising its potential visual impact; reduced impact on flora and fauna and water management.</p> <p>Water management is undertaken on site to prevent any water run-off into the surrounding environment. Pollution control dams and re-use of water are all considered in the site's environmental management system.</p> <p>Yes, a 1:100 year flood event has been taken into account in the REA water management strategy.</p>                                                                                                                                                                                                                      |
| <p>Water will eventually flow into the mine workings. It is understood that this water will eventually flow back into the catchment. How will outflow be treated?</p>                                                                                   | <p>Water will flow into mine workings approximately 2 years into the mine's life until the conclusion of mining. This water will be collected for use by the mine, reducing our requirement to draw water from licensed bores. Water from the mine would be used as a first priority before water is drawn from the licensed bore.</p> <p>The water balance indicates that all the water from the underground mine will be used on site and not require to be discharged. Should mine water need to be discharged, it will be settled in a specifically built dam to remove any sediment prior to moving into the clean water dam and discharged into Airly Creek.</p>                                                                                                                         |
| <p>What information is used to base surface and groundwater predictions on?</p>                                                                                                                                                                         | <p>A range of data is collected, including the outcome of the water monitoring bores to identify where aquifers are located, flow of water and quality. Rainfall input data is also collected as well as stream flow and quality.</p> <p>Some of this data comes from regional surface and ground water studies. Other data dates back 80 years (for example rainfall from Bureau of Meteorology sites) and some data have been obtained since the time of Airly becoming operational until now (for example, stream flow and ground water data). Monitoring is ongoing and all data collected is used to update the data set. A summary of this information will be made available in the surface and groundwater impact assessments which will go on public exhibition to the community.</p> |
| <p>Will information be available on the quality of water or will the community have to obtain this via Freedom of Information?</p>                                                                                                                      | <p>Information collected on water quality is reported in the Annual Environmental Management Report. This report is available on the Centennial website.</p> <p>Some Government agencies put reported data on their websites, but this is not consistent.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Question                                                                                                                                                                      | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| It is understood that Airly has been granted a license to take additional water and the community was not made aware of this?                                                 | The water available is set out under the Water Management Act 2000, which allows an application to be made for a water access licence. There was a media release by the NSW Office of Water regarding the controlled allocation order. A total of 920ML was made available from the Sydney Basin North Groundwater Source and under an open tender process Airly applied for, and received 120ML. Airly does not know of who else applied for or received water under this allocation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Has the impact of climate change been taken into account in the ground and surface water impact assessment?                                                                   | The impact of climate change is very difficult to predict. The use of existing and ongoing data collected from the site and region will be used to determine any changes in both surface and groundwater and the potential causes for any changes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| It is stated that the deep aquifer will not be affected. Can you also guarantee that if you require additional water you will not bore into that aquifer?                     | The water modelling has shown that we will have no impact on this aquifer. According to the NSW Aquifer Interference Policy, proponents of a mining project seeking development consent must provide estimates of all quantities of water that are likely to be taken from any water source during and following cessation of the activity and all predicted impacts associated with the activity. In the event that Airly requires water from the deep aquifer (below the current bore), government approval would be required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Where does the water go once it is used by the mine and how long does it take for pressure in the aquifers to return to normal. I have heard this could take up to 200 years? | <p>Around 85% of the water that is used by the mine leaves the site by evaporation, is used in dust suppression, leaves as product moisture or is retained in rejects emplacement. The remainder would be discharged into Airly creek.</p> <p>All surface water from disturbed areas is collected in sediment dams. Some water is recycled meaning that we minimise the amount of water we draw from our licensed bore. Water is held in our dam and only clean water is returned to the catchment. Regular monitoring is undertaken to ensure water quality is maintained. Most of the water leaves the site as evaporation, in the coal product, or is returned underground for dust suppression.</p> <p>Re-pressurisation of aquifers can take many years depending on the mining method; how much water is contained in the aquifer and other impacts outside of the mine project area effect the recharge rate (for example rainfall). In the case of Airly, predicted impacts inside the Project Application Area are up to 3% loss of ground water base flow of existing conditions and the likely recovery period is up to 70 years. Predicted impacts outside the Project Application Area are up to are up to 1% loss of ground water base flow of existing conditions and the likely recovery period is up to 20 years.</p> |

| Question                                                                                                                                                                                        | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| It has been previously stated that Airly will undertake flow tests on surrounding bores – ie bores that are outside of the lease area on private land. Does Centennial still intend to do this? | Current management at Airly is not aware of this commitment being made. The claim will be investigated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Why is Airly planning to only take 2.8m – 2.9m of the coal seam when the seam is 4.5m – 4.9m?                                                                                                   | The quality of the coal is the key determining factor in this. The overlying Lidsdale seam is very high in ash and not saleable. By removing the lower 2.8m – 2.9m of the coal seam the ash content is reduced making the product more viable for sale.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| How long does it take for the impact of subsidence to be effected?                                                                                                                              | <p>The amount of subsidence nominally predicted at 100mm but not exceeding 125mm in areas with a depth of cover greater than 160m. Subsidence in areas with a depth of cover less than 160m is predicted to be between 10mm to 80mm.</p> <p>The effects of subsidence are:</p> <ul style="list-style-type: none"> <li>▪ 80% in the first 2 months; and</li> <li>▪ 20% over the next two years.</li> </ul>                                                                                                                                                                                                                                                                     |
| It is stated that the impact of the mine will result in negligible impact. How is negligible defined and how is this determined over the next 20 years of the life of the mine?                 | <p>“Negligible” means not noticeably different from pre-existing conditions and natural variations.</p> <p>Strict environmental monitoring is undertaken to ensure predicted targets are met. If there is any variation is detected outside of these predictions, management must undertake to ensure that this is corrected. A Trigger Action Response Plan (TARP) is to be developed, which sets out the performance criteria for each mining method used and management strategies if these criteria are not met. The mining systems are flexible enough to allow for changes to be made to bring the mine quickly back into compliance with the performance criteria.</p> |

| Question                                                                                                                                                                                               | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <p>The mine method involves leaving pillars of coal to keep the roof of the mine and strata above workings stable. What is the likelihood of the pillars failing and additional impacts resulting?</p> | <p>The model used and subsequent predictions are based on extensive Australian and South African experience. Several methods were used to determine the appropriate size of the pillars and each method correlated well. The mine has been designed so that long term stability is achieved. If, however, there is spalling (i.e compression causing cracking and crumbling of the roadway edges) the centre of the pillar is left intact and this is what supports the strata above. If, in the unlikely event that a pillar failure does occur, it would be isolated because the pillars next to it are large enough to receive the extra load. All the pillar systems designed have a probability of failure of 1 in 1000 or better.</p> <p>The mining method is conservative enough that any performance failure would be detected at levels below those that would cause significant impacts. Also, the mining systems that have been designed are flexible enough to respond to any issues encountered with underground pillars and prevent a situation from progressing to the point of causing adverse impacts on the surface.</p> <p>The design includes the use of pillars with a width to height ratio of &gt;10 in the panel and pillar areas. There have been no recorded failures of pillars of this size anywhere in the world.</p> |
| <p>If the area was to experience an earthquake, would the mine workings be stable – e.g.at a magnitude of 9?</p>                                                                                       | <p>There is no evidence of earthquakes of that magnitude in this area. Some minor tremors have occurred, but the geological environment is not conducive to large earthquakes.</p> <p>There have been tremors under areas of coal mining in Lithgow, the area around Appin and in the Newcastle area (during the 1989 earthquake). None of these tremors have resulted in pillar failures to date. The Newcastle earthquake resulted in very little impact to underground mines and certainly no known pillar collapses. There was evidence of some impact due to collapse of underground roadway intersections, but these were isolated in very old workings under the city. The pillars remained intact.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Question                                                                                                                                                                                                                                 | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| The mine is in care and maintenance. Why pursue an extension of consent and mine in additional areas if it is not economically viable?                                                                                                   | While it is true that mining at Airly is currently uneconomic, this is unlikely to be the case forever as the world economies' demand for energy continue o grow. Before any recommencement of mining, a detailed financial feasibility study will be undertaken to ensure that the mine can operate in an economically viable manner. The feasibility study takes into account a range of factors, which include fluctuations in the market.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Will information about the mine's operations, including annual environmental management reports be available to the community? Do such requests have to come via the Special Monitoring Committee (SMC)? Will this include past reports? | Information provided in the annual environmental management report is freely available on Centennial's website. Additional information can be requested directly of the mine via the SMC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Who are the government agencies responsible for the assessment of the project?                                                                                                                                                           | The final Environmental Impact Statement (EIS), together with all specialist consultants' reports, are submitted and assessed at both a state and federal level. The state government agency is the Department of Planning and Infrastructure and the federal government is the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| It is understood that Airly is to resubmit its application to SEWPaC. When will this occur?                                                                                                                                              | The resubmission relates to the water trigger requirements and the definition of the area of the proposed action. The application will be resubmitted early November 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Notification of such meetings needs to be undertaken in a timely manner as some residents received information with only a few days notice. Is more timely promotion of such events possible?                                            | Airly makes notification of such meetings in a number of ways. For example, we update our website and via newspaper advertising in the Lithgow Mercury and Mudgee Guardian. We also prepare a newsletter, which is distributed throughout the community. Direct consultation, and participation in community meetings, including the Special Monitoring Committee Meetings is also undertaken to provide notification of upcoming events. It is understood that some residents may not received the newsletter, despite our efforts to cover all landholders. Accordingly, we also seek assistance from community groups who through their own websites promote what is happening at Airly by posting newsletters on their website, minutes of meetings and any other updates. If anyone is aware that a landholder is not receiving information, then please let the staff at Airly know so we can rectify any issue. |
| Will information from today's presentation be available for review at a later date?                                                                                                                                                      | Yes, information will be placed on Centennial's website. Also specialist reports, maps and plans of the proposed mine and other technical data will be available for review at Airly mine. Please contact the mine to organise a time to review the information and also speak to one of the project team if you have specific questions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### **3.2.2 Community Information Session 2: Glen Alice Hall 10 November 2013:**

Specialist consultants presented their findings in relation to Aquatic Ecology; Biodiversity – Flora and Fauna; and Cultural Heritage Assessment.

Key areas of discussion included:

- A review of aquatic ecology studies carried out to date and the likely impacts from mining on aquatic ecology. Impacts from subsidence, and mine discharge were discussed.
- Impacts on flora and fauna systems from mining activities.
- Presentation of the findings of the cultural heritage studies and the likely impacts from mining on European and Aboriginal heritage.
- Sharing of local knowledge regarding flora and fauna and Aboriginal and European cultural heritage sites.
- Ongoing monitoring of aquatic ecology; biodiversity and cultural heritage sites during the life of the mine.

Questions and answers from Session 2 are listed below.

| Question                                                                                                                           | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <p>What will be the impact of water discharge into Airly Creek?<br/>What will be the impact in 100 years time?</p>                 | <p>Surface water will be contained on site and managed to ensure there is no dirty water discharge into the catchment. The majority of water will be lost in evaporation, sent off site with the coal product or used to manage dust.</p> <p>The water will be contained in settling dams, allowing for any sediment to settle. The water is monitored and will only discharge during high rainfall events. Whilst the water on the site is not expected to be significantly different from the receiving water in Airly Creek, the effect of rainfall would cause further dilution in any water discharged i.e. will not have an adverse impact on the stream water quality or aquatic ecology.</p> |
| <p>Will the release of water into Airly Creek encourage the spread of introduced fish (e.g. Mosquito Fish)?</p>                    | <p>No. Fish species such as Mosquito Fish are common in the survey area and discharge of water will not have an impact on these or other fish types. The presence of these types of fish is due to other factors such as the presence of animals or deliberate spread by humans.</p>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Post mining it is understood that the mine will eventually flood. Will this water flow out of the workings into the valley.</p> | <p>Dewatering will be undertaken when the mine is in operation. Once mining has finished water will flow into, and flood the mine workings. Mining will be 'down dip' meaning that the mine operations will follow the Lithgow seam which slopes down from the pit top. The water will therefore follow the existing path of travel through the strata as it does now.</p> <p>The mine is not expected to fill up after completion and overflow at the pit top access points. The groundwater will flow away back into the strata before the mine will fill completely.</p>                                                                                                                          |

| Question                                                                                                                                                                                                                      | Response                                                                                                                                                                                                                                                                                                                                                                                    |
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| Has the flora and fauna assessment considered the presence of a species of Grevillia?                                                                                                                                         | Yes. The species of Grevillia has been identified and assessed. The presentation did not cover all plant species assessed in the flora and fauna report. If there is any specific plant species that you have questions about please forward to Airly who can then liaise with the Biodiversity consultant.                                                                                 |
| There is a species of snail found in the southern side of the Capertee River known as the Capertee Snail. It is understood that the snail's shell 'scrolls' follow the opposite direction than usual. Has this been assessed? | Not aware of the species of snail called the Capertee Snail. If there is any information relating to the snail please forward to Airly who can then liaise with the Biodiversity consultant.                                                                                                                                                                                                |
| Will the findings of the Heritage Study be published and made available?                                                                                                                                                      | <p>Yes. The Heritage Study will form part of the Environmental Impact Statement (EIS) and the full report contained in the appendices of the EIS.</p> <p>Furthermore, the Aboriginal Heritage Information Management System (AHIMS) data base has been updated to include the heritage items found when completing the Study.</p>                                                           |
| Was the Lithgow Heritage Study used as a reference in the Heritage Study?                                                                                                                                                     | Yes. All records available at the LCC were used.                                                                                                                                                                                                                                                                                                                                            |
| Did the Heritage Study examine sub-surface heritage items, such as those that may be present in the old shale mine workings?                                                                                                  | The study did not access the underground workings of the shale mine due to safety concerns. The study did however examine the mining methods used and mine layout.                                                                                                                                                                                                                          |
| Was the Heritage Study able to assess the travel routes of Aboriginal people?                                                                                                                                                 | A regional assessment was not undertaken so a detailed understanding of the travel routes outside of the Project Application Area is not specifically understood in the context of this report. Aboriginal people would access and remain in the area while the resources that were needed were present. Mountains such as Genowlan Mountain were also significant for ceremonial purposes. |

| Question                                                                                                                                   | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| There are some cave drawings in the area. Were these identified and assessed?                                                              | An extensive audit of the area was undertaken. If the community are aware of specific sites please forward the information to Airly Mine so it can be reviewed by the consultant.                                                                                                                                                                                                                                                                                                                                |
| Was the Aboriginal presence of the area compared with other key sites such as Black Fellows Hands?                                         | A regional comparison was not undertaken as there was no requirement for it as per the DGR's.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Did the Heritage Study consider the early settlement of the area and the social fabric that emerged as a result of occupation of the area? | The Heritage Study relates mainly to the Project Application Area however it does take into account some of the broader influences that brought people to the area. For example the shale mine as part of the immigration theme, farming / agriculture and some aspects of family history in the area such as the Gallagher family.                                                                                                                                                                              |
| Will monitoring be undertaken to establish if there are any changes to the base line information and findings of these studies?            | <p>Yes. Monitoring will be required as part of the conditions of consent and be undertaken throughout the life of the mine and post mining. The findings of our monitoring program are reported to our regulators and will be required to be placed on our website.</p> <p>Monitoring results are fed into an adaptive management framework where these results inform the mine's performance against design expectations and define what action is to be undertaken if the criteria identified are not met.</p> |
| How do the studies that are undertaken now compare with what was undertaken prior to the mines 1993 consent?                               | The specialist studies that have been undertaken are now much more substantial than what was undertaken prior to the 1993 consent. Furthermore, the proposed mine design will have significantly less impact than the impacts that were predicted in 1993.                                                                                                                                                                                                                                                       |

| Question                                                                                                                                                                                                                                                 | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Is there an opportunity for rare / threatened plants to be propagated and reproduced like the Wollemi Pine                                                                                                                                               | As with the Wollemi Pine, the propagation of rare/threatened species is a matter for the National Parks and Wildlife Service.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Was the presence of feral animals considered in the Fauna Assessment?                                                                                                                                                                                    | Yes. All species found have been documented. With respect to feral animals Airly will work NPWS to manage them.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| File sizes for information are large and some residents find them difficult to download. Can large documents be compressed further (i.e. 1mg)?                                                                                                           | <p>Airly will work to ensure documents are compressed to a size that will ensure easy access, with consideration of minimum file size requirements by the Department of Planning and Infrastructure and the Department of Environment (both 2MB).</p> <p>Copies of the presentations as well as other information regarding the specialist studies are available at Airly Mine and residents are welcome to contact the mine and make an appointment to ask questions and review documents.</p>                                                                                                                                                                                                                                                                                                                                       |
| <p>There are two Aboriginal cultural heritage items in the PAA.</p> <ol style="list-style-type: none"> <li>1. Charcoal drawings</li> <li>2. Boomerang outline on cave near to Genowlan Point.</li> </ol> <p>Have these been identified and recorded?</p> | <p>The charcoal drawings were located above the Gap. It was decided by the community and field team that the motifs could not be ascribed strictly to be Aboriginal in origin and therefore they have not been registered as a site. The Aboriginal community was present and independently came to the same conclusion. These items are also quite close to some other “European” graffiti.</p> <p>The “boomerang” is assumed to be the motif on the rock face ascending the track up to Genowlan point. Not all motifs were shown in the presentation because the community has not provided any comment as yet and to publish these details/locations might be premature. Also, the motif might be ‘boomerangish’ however we try not to ascertain shapes when not clear as that conveys meaning to which we have no knowledge.</p> |

| Question                                                                                                                       | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <p>There are what seems to be worked large quartzite pebbles near the trig station on Genowlan. Are these of significance?</p> | <p>The community and field team did review the area in the location of the Trig Station. The quartz itself is very small and generally not regarded to have been worked or of a suitable quality for knapping purposes. Additional evidence is that the artefacts we did find up at Genowlan were largely Tuff, not quartz. The quartz tends to appear in upper slopes and valleys, around creeks and so on. Hence if the quartz did turn out to be of cultural origin it would likely have had to have been carried up there in order to knap and work it, which is unlikely. One other consideration here is that we know for certain groups quartz was considered to be a men's toolmaking material (upper Hunter valley for example – Wiradjuri); the community made no comment on gender specific areas on Mt Genowlan.</p> <p>Finally, of the stone raw materials worked, quartz is the most difficult to work with and does not often fracture in a predictable manner, so it is unlikely again that that material would have been selected over and above more readily suitable material such as tuff; unless it was ceremonial in nature and they really needed to use it because of custom.</p> |

| Question                                                                                                                             | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <p>The Lithgow City Council Heritage undertaken by Barbara Hickson provides information relating to Airly. Was this referred to?</p> | <p>The report by Barbara Hickson was not specifically referred to and it is doubted if it would add to the overall knowledge base for the area.</p> <p>It is understood that Barbara Hickson was not commissioned to write a report on the heritage of the Airly site however was commissioned to update the heritage inventory sheets held by LCC for the Airly and Torbane sites which included comments around the identification of each building and its significance to the site. There was no report issued and no report is on record with the LCC.</p> <p>The cultural heritage consultants were not engaged to write a general history of Airly, (first district settlers and so on) and therefore some information will not be included in the report as it is not implicitly relevant to identifying material historical items and formulation of mitigation strategies inside the PAA.</p> |
| <p>Questions were raised regarding the presence / understanding of a range of flora species within the PAA.</p>                      | <p>Notable flora species:</p> <p><b>Acacia asparagoides:</b> This species seems to be most prevalent on eastern half of Mount Airly. It was also however recorded on Genowlan Mountain.</p> <p><b>Banksia penicillata:</b> So far we have only recorded this species in the Genowlan Point Heathland.</p> <p><b>Epacris muelleri:</b> This species was commonly encountered on Black Mountain, Mount Airly and Mount Genowlan. A large population seems to be present in the area.</p> <p><b>Phebalium bifidum:</b> This species is listed as vulnerable under the TSC Act. It was gazetted in 1995. Earlier in the year I visited the area of a possible</p>                                                                                                                                                                                                                                           |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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|  | <p>population of this species near Bogee. The location I visited also had records for <i>Acacia bynoeana</i> and <i>Grevillea obtusiflora</i>, which are also listed species. Only the <i>Grevillea</i> I could find, however I only had access to the road side vegetation. All three of these listed species have been determined to have potential to occur within the Airly Project area and are being assessed on that basis.</p> <p><b>Pseudanthus divaricatissimus, Gonocarpus longifolius and Astrotricha obovata:</b> These species have not been recorded during our work.</p> <p>Notable fauna species:</p> <p><b>Capertee Valley snail:</b> As this has been brought to our attention, we are now documenting any snails that we come across. It is found that the impact on invertebrates, including snails, has been assessed and found to be negligible.</p> <p><b>Tiger Quoll:</b> One individual has been recorded near the Grotto using a motion detection camera.</p> <p><b>Powerful Owl:</b> This species has been recorded through calls and a roost site was also discovered by University of Queensland.</p> <p><b>Peregrine Falcon:</b> We have not recorded this species, however there is certainly potential habitat present.</p> <p><b>Bandicoots:</b> We have not recorded any species of Bandicoot as yet. They usually shy away from traps. I would expect that at least the common Long-nosed bandicoot would be present.</p> <p><b>Regent Honeyeater:</b> Whilst we haven't recorded this species, we have treated its potential occurrence as highly likely.</p> <p><b>Broad headed snake:</b> Not recorded, however potential habitat occurs.</p> <p><b>Glossy black cockatoo:</b> This species has been recorded. The habitats surrounding the old trig station on Genowlan Mountain have an abundance of foraging habitat and shows signs of feeding by this species.</p> <p><b>Rosenberg's Goanna:</b> A good description of the identifiable features that will assist in distinguishing them from Lace Monitors, plus photos can be found at: <a href="http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10826">http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10826</a>.</p> |
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### **3.2.3 Community Information Session 3: Capertee Hall 8 December 2013:**

Specialist consultants presented their findings in relation to Visual Amenity; Air Quality; Noise and Vibration and Final Landform (rehabilitation).

Key areas of discussion included:

- The accuracy of predictions made in the specialist reports.
- Has the impact of dust into the Capertee Valley due to westerly winds been fully considered?
- Potential noise impact from the operation of the mine.

Questions and answers from Session 3 are listed below.

| Question                                                                                                    | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Where does the water come from for dust suppression?                                                        | <p>Water used at the mine primarily comes from three sources:</p> <ol style="list-style-type: none"> <li>1. Surface water dams</li> <li>2. Groundwater from underground workings</li> <li>3. Registered bore</li> </ol> <p>The use of water by Airly to support its operations will primarily come from the surface water dams and from underground workings with pumping from the bore being minimised whenever possible. It is anticipated that these sources will provide enough water for day to day operations of the mine.</p>                                                                              |
| Can you provide an understanding of the groundwater system and how this will be impacted on via Airly Mine? | <p>The Ground and Surface Water assessment was presented in the first session held 13 October at Airly Mine. The presentation along with questions and answers is available on Centennials website. The complete Ground and Surface Water Impact Assessment will be available with the Environmental Impact Statement.</p> <p>Data used to inform aspects of the assessment was sourced from the Bureau of Meteorology Ilford (Warragunyah) weather station to consider the long-term wet and dry conditions of the Project. Data available from local sources regarding rainfall can be used to cross check.</p> |
| What happens to the rehabilitation strategy if the company goes bankrupt?                                   | <p>There are regulations governing this issue. As part of the mining lease, funds are held in a security bond which covers the cost of rehabilitation. The value of the bond is determined by the final land use that is proposed and is set by the regulators. If the company goes bankrupt, the regulator will use the money kept in bond to carry out the rehabilitation works.</p>                                                                                                                                                                                                                            |

| Question                                                                                                                                                                                                 | Response                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| When rehabilitation is completed, what will be the quality of the water in the dams?                                                                                                                     | The quality of water, post mining, will need to reflect the quality required to support the final land use and be compatible with local waterways.                                                                                                                                                                                                                                                                                        |
| What is the size of the Reject Emplacement Area (REA) and has the model used to determine the visual impact taken into account the REA and Coal Handling and Preparation Plant (CHPP)?                   | The footprint of the REA is approximately 33 hectares and has a capacity of 5 million tonnes. The Visual Impact Assessment has taken both the REA and CHPP into account. Two locations for the REA have been assessed however approval will be sought for only one option. The largest extent of the footprint and the highest point of the REA has been used as the basis for the visual assessment.                                     |
| Could post mining use of the site include use of the administration buildings and if so, could it be set aside for community benefit such as a university outreach campus?                               | Use of infrastructure such as the administration buildings would need to be permissible as per the land use zoning. Whilst other uses for the site have been investigated, they would need to be the subject of a separate development consent at the time of closure. Centennial has no other uses for the site once mining is completed, hence the company is proposing a return to a combination of natural bush land or grazing land. |
| In the Capertee Valley, winds primarily come from the west. Has this been taken into account and what will the impact be on the Capertee Valley? Would Airly consider monitoring further into the Valley | The monitors are located at sensitive receptors to the east and south-west of the Airly pit top. Further detail and analysis will be presented in the Air Quality Impact Assessment re the extent of potential air quality / dust impacts. A review of this report will be undertaken to determine if monitoring is required in other areas.                                                                                              |

| Question                                                                                                                                                                                                                                                                                                                                                                                                                                    | Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>If the data used in the reports is not relevant (ie using data from Bathurst and Ilford) and the subsequent findings are wrong, where does the community stand?</p> <p>Consultants are not landholders in this area and are not impacted upon by incorrect findings however the community is left with the impact. Will Airly and its consultants prepare a legal document that will bind them to paying the community compensation?</p> | <p>The scope of the various studies is set out in the Director Generals Requirements and data used to inform these studies is accepted as being technically correct. If approved, Airly will be required to operate in the manner in which it says it will operate. Ongoing monitoring and a set of Trigger Response Action Plans (TARP) are established to specify action that needs to be taken to address any potential risk of harm should there be risk of the mine operating outside of its performance criteria. For Airly, these triggers have been set well below levels of impact so as to allow response before a negative impact occurs.</p> <p>If the mine does not perform as consented it will be held to account and legal action against the company can and will be undertaken by the regulators.</p>                         |
| <p>Noise criteria are set at 35 decibels. Is this too high? There have been noise impacts from the mine at areas such as Cameron's Road and Excelsior Road. Has monitoring been undertaken in these areas?</p>                                                                                                                                                                                                                              | <p>Noise criteria are derived from the NSW Industrial Noise Policy which is what Airly has to comply with. The Airly Noise Impact Assessment is using the lowest noise impact value set in the policy as well as very conservative meteorological inputs as the basis for assessment. Modelling under even the most unfavourable conditions has not shown an exceedence of the noise impact criteria at the nearest residences. Noise levels decrease with distance, so the impact will only decrease further past the nearest residences. Ongoing monitoring will be required to ensure that the mine complies with the noise levels that are set out in the conditions of consent.</p> <p>Airly has not undertaken monitoring at Cameron's Road and Excelsior Road as results indicate that noise impacts will not extend to these areas.</p> |

| Question                                                                                                                                                                                                   | Response                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Is there analysis of vibration impacts on houses? There have been reports of vibrations being felt from mining equipment and there is a concern about the impact on houses as well as animals in the area? | Yes the impact assessment covers impacts from vibration due to the activities on the mine site. Due to the separation distance between mining operations and the nearest potentially affected residential locations vibration levels from the project are not predicted to be an issue of concern Mining activities to date have not caused noticeable vibrations at the nearest residences.                                               |
| Is Airly planning to establish an area for environmental off-sets?                                                                                                                                         | Centennials Biodiversity Strategy is to avoid and mitigate impacts in the first instance. State and Federal government requirements were taken into account in the assessment of the two areas identified as options for an REA. An off-set area will be required if REA option 1 is developed. An off-set area will not be required if REA option 2 is developed. If an off-set area is required the location will need to be determined. |
| Is there a difference in the shape, size and health impact of coal dust and limestone dust?                                                                                                                | Not aware of the specific details of the health impacts and shape of limestone. The air quality impact assessment is primarily concerned with size of the particulate matter as smaller particles have greater potential health impacts. Limestone dust contains some silica dust. This has far higher potential for health impacts than coal dust.                                                                                        |
| Will rail loading be undertaken at night?                                                                                                                                                                  | Night time loading is not preferred however will need to be undertaken. Timing of rail loading is determined by external rail traffic control and Centennial does not determine this. We also have very strict external timeframes in which to load trains and cannot let them wait until day time before loading it. The noise impact assessment assumes train loading at night in determining the worst case noise levels.               |

#### **3.2.4 Community Information Session 4: Airly Mine 16 February 2014**

The fourth information session:

1. Provided an overview of the Airly Mine Extension Project, specialist consultants topics presented to date through the community information sessions and, how feedback has been considered and incorporated into the EIS.
2. Presented information relating to the Social and Economic Impact Assessment.

Questions and answers from Session 4 are listed below.

| Question                                                                                                                                                     | Response                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Does the Social Impact Assessment consider land values as the community are really concerned about a drop in land values?                                    | As the impact assessments have determined that the impacts of the Project do not go beyond the boundary of the Project Application Area it was concluded that therefore there would be no impact on land values.                                                                                                                                                                          |
| How can the community be assured that adequate assessments have been completed for the Project?                                                              | The Director General Requirements prescribe what information must be provided in the impact assessments.                                                                                                                                                                                                                                                                                  |
| How can the community be assured that an adequate assessment has been conducted on Gap Creek because the mine has not been operating for the past 12 months? | The Groundwater Impact Assessment has included a Hydrogeological Model that has been developed based on approximately 100 years of meteorological data. The assessment considers the permeability of the strata and makes predictions on the draw-down of aquifers. Centennial is proposing to have the Hydrogeological Model peer reviewed.                                              |
| Will the results of future water monitoring be available to the community?                                                                                   | In the future the results of water monitoring will be made available through the Community Consultative Committee at Airly Mine.                                                                                                                                                                                                                                                          |
| Will there be any impacts to local creeks, how does Centennial know what and where impacts will occur to Airly Creek, Dog Trap Creek and Coco Creek?         | The Surface Water Impact Assessment has identified that Airly Creek is very salty and has a high concentration of metals. Centennial is not expecting to regularly discharge water from the mine. If the mine was to discharge water Centennial would expect the concentration of salts and metals in the discharged water to be lower than the natural background levels in Airly Creek. |
| What are the approximate dimensions of the proposed underground mining area?                                                                                 | The underground mine workings will be approximately 8.5 km long east to west and approximately 2.5 km long north to south                                                                                                                                                                                                                                                                 |

| Question                                                                                                                                                 | Response                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| When will Airly Mine return to coal production?                                                                                                          | Centennial is awaiting a decision from the major shareholder                                                                                                                                                                                                                                                                                                                                           |
| Can Centennial include groundwater bores on surrounding properties in the area in the groundwater monitoring program at Airly Mine?                      | Airly Mine has undertaken some groundwater monitoring on a neighbouring property however Centennial is yet to decide on an appropriate monitoring program for the future Airly Mine Extension Project.                                                                                                                                                                                                 |
| Has Centennial assessed the potential impacts from lighting on residents along Camerons Road ?                                                           | The Visual Impact Assessment discussed mitigation measures such as designing lighting requirements to avoid the direct line of sight from neighbouring residences where possible, lighting of large areas to only occur if required for emergency lighting or for maintenance activities and lighting required for security will be designed to minimise the spill of light into the surrounding area. |
| Will information from today's presentation be available for review at a later date?                                                                      | Yes, information will be placed on Centennial's website. Specialist reports, maps and plans of the proposed mine and other technical data are also available for review at Airly mine.                                                                                                                                                                                                                 |
| Is there any system that allows compensation to the community if predictions are incorrect such as a prediction for the loss of water flow in Gap Creek? | The government will monitor the performance of Airly Mine to ensure the mine operates within defined limits and regulation. Adaptive management at Airly Mine using mechanisms like Trigger Action Response Plans will allow the mine to modify the mining activities to mitigate the impact on the environment.                                                                                       |
| Where will the groundwater come from that is proposed to be extracted under the Centennial Airly Water Access Licence?                                   | The groundwater will be extracted from the strata in the underground mine workings.                                                                                                                                                                                                                                                                                                                    |

### **3.3 SIA Specific Stakeholder Engagement**

The SIA process has followed a long-term approach to stakeholder engagement and consultation in relation to the Project and mining in the region generally. Specific activities included:

- Direct engagement with residents / landholders to identify individual and collective values of the area.
- Consultation with specialist consultants.
- Numerous site visits.
- Participation and observation of Centennials own stakeholder engagement strategies to understand who is engaged in the process, why and key areas of enquiry. This includes observing the SMC and attendance at the four community information sessions.

Consultation has been undertaken to understand the values that landholders have in relation to the area. This has been undertaken via meeting with individual landholders to explore and understand the following general themes: how they came to live in the area; what they like about the area; and what factors would adversely impact on their lifestyle. These conversations provide an opportunity to hear the communities knowledge of the valley and its people.

There are a range of reasons as to why people have come to live in and around the Capertee Valley; many have chosen to live here because of its high scenic and conservation value. To some, the Capertee Valley was a specific destination and to others it satisfied personal criteria that had been established when looking for a property (usually 2 – 3 hours travel time from their place of usual residence).

Some landholders have established businesses in the area that aim to capitalise on the tourist potential (bed and breakfasts), some have established small income producing activities such as live stock breeding and others utilise their property as a lifestyle block. There are numerous productive farms in the Glen Davis, Glen Alice and Bogee areas.

It is clearly evident that there is a strong neighbouring process; demonstrated for example, via membership in local bush fire brigades; involvement in social events; willingness to assist if assistance is required and undertaking activities that aim to preserve and protect the environmental value of the area.

Conversations were sometimes interrupted by the landholder wanting to make specific reference to an important feature that has personal value. For example, the changing character of the cliffs due to the position of the sun, or walking around the property to describe a particular view across the Capertee Valley.

There is a genuine connection to area and people, regardless of the reason that lead people to live in the Capertee valley and what activities they do on their land.

Many residents can be described as being custodians of the land. This is evident via a number of examples and include; planting of native vegetation to create green corridors and foster bird habitats in areas that have been cleared; gaining general knowledge simply by walking throughout the area; documenting the place via painting and photography; providing water and food in areas where there is a lack of wildlife; recording bird and insect noises and publishing reports on their findings; hosting events and activities to generate social cohesion; providing opportunities to promote the area to others through tourism. These examples are common.

It is also evident that many of the landholders in this area do not identify with the Lithgow LGA; the traditions of mining and power generation; do not shop in Lithgow; question the services (or lack of) they receive from Lithgow City Council. The community in this area generally has differing values to the Lithgow LGA.

There is widespread concern about the Project which are summarised below:

- Surface and groundwater impacts have been raised as a key area of concern from surrounding landholders, especially in the Glen Davis and Glen Alice, Bogee areas. It has been often stated that water in these areas is scarce and there is fear that the limited access to groundwater will be threatened (quality and quantity) by the Project which will in-turn have an adverse impact on the areas agriculture
- Impact of subsidence on surface features on the area, for example cliff lines and items of cultural heritage value.
- Loss of rural amenity due to noise, deposited dust, visual impacts, lights and traffic.
- Adverse impact on the areas tourism.
- Adverse impact on flora and fauna.
- Loss of property values.
- The potential for irreversible damage to the environment if the mine does not perform as it is intended (ie polluted water discharge into Airly Creek; damage to surface features such as cliffs due to subsidence; loss of groundwater).
- The lack of benefit for the broader community as the project will not employ local people and will therefore not generate local spending; participation in social / community activities, contribute to the school population etc.
- The risk to the environment due to the perceived lack of financial viability of the Project.
- The area has high conservation value and the community with an interest in the Project are not limited to landholders.

There is also support for the Project. Some landholders who live in the Capertee Valley do not see the mine as having any adverse impact on people's lifestyle or on the environment. Some of these

residents are long term landholders and some came to the area more recently. Issues and concerns around loss of ground and surface water; adverse air quality; noise etc are dismissed and what is discussed is the need to create employment and that the proposed mine design can be undertaken without having an adverse impact on the environment or on people's way of life.

### **3.4 Summary of Those Potentially Affected by the Project**

From the consultation and profiling that has been undertaken in the preparation of the SIA, six primary stakeholder 'groups' have been identified:

1. Supportive of the project due to the potential for employment of local residents.
2. Approach the project with caution as there are concerns regarding the potential environmental impacts. These stakeholders request information to satisfy their concerns and are open to this feedback.
3. Oppose the Project and mining generally due to potential environmental impacts; impacts on required resources (in particular water) which will have an adverse impact on agricultural viability and land value.
4. Oppose the Project as their social values and connection to the area is lost or threatened due to the mine regardless of actual impacts.
5. Visitors and tourists.
6. Employees of Airly.

Knowledge of the land ownership surrounding the Project is also important to understand and to identify if there are potential amenity impacts arising from the Project. Taking into account land ownership, site visits and feedback from consultation the following is to be taken into account:

- Near neighbours can be affected by noise, dust, visual, light, traffic impacts and any other factor of the mine's operation which adversely impacts on residential social amenity.
- Environmental impacts of the mine (ie ground and surface water) may extend beyond the Project Application Area and adversely affect the economic viability of agricultural land uses.
- Residents living on major transport routes may be impacted upon by employee traffic at various times (aligning with shifts).
- Any requirement to purchase property may cause existing residents to relocate. Therefore social networks and social fabric of the area may be adversely affected.
- The impacts of the mine may extend to other users of the area. For example this area has high tourist value which may be adversely impacted upon.

## **4. Social Impact**

### **4.1 Mine Design**

The mine design is the means in which changes to the environmental, economic and social conditions are determined. With regards to the social impact, the likelihood and extent of these

changes are key factors in determining the scale of social impact. The mine design chosen for the Project is the most viable and preferred option, taking into consideration that the project is within a State Conservation Area with varying constraints of geology (seam split and ash content), geotechnics (structural zones), the environment (cliffs, pagodas and archaeological features).

The outcome of detailed mine planning and design reduces the occurrence of subsidence effects beyond predictions, without compromising the viability of the business. While the environmental impacts are reduced, the mine design results in increased development costs and the sterilisation of coal reserves. The potential environmental impacts of the Project have been minimised through obtaining a detailed understanding of the key environmental issues. The multi-disciplinary assessment and consultation has been to a level of detail commensurate with the scale of the Project, industry standards and the legislative framework under which the Project is considered.

The use of various partial extraction mining methods will manage subsidence to not exceed 125mm in previously unmined areas and minimise further potential subsidence impacts in areas where the historical New Hartley Shale Mine has already impacted the environment. The mine has been designed to ensure there is negligible impact, meaning the changes to the environment are no greater than what would occur under natural conditions. Mining zones have been identified to ensure that the mining methods employed meet the mine criteria. Design challenges include:

- Wide variation in depth of cover.
- Weak rock strata in immediate roof.
- Sensitive surface features.
- Surface and groundwater down-stream users.
- Changing community expectations.
- State Conservation Area.
- Safety, productivity and profitability.

In order to assess the potential for social impact the findings of the various specialist consultants have been reviewed against key areas of concern raised by the community to assess if any change to the social conditions of the area is likely. If there is a likelihood of change a further assessment of the specialist consultant's reports has been undertaken to determine the extent of change.

#### **4.2 Assessment of Potential Change**

As stated above, the assessment of potential change has been undertaken via review of specialist consultant's reports to understand the scale of change if any as a result of the Project. This assessment has been undertaken using a bow-tie analysis in order to understand the potential initiating event, adequacy of both proactive and reactive controls that have been put in place to mitigate potential impacts. This assessment is outlined in Tables 17 – 23.

**Table 17: Damage to Cliffs**

| Causes     | Proactive Controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Initiating Event                          | Mitigation / Reactive Controls                                                                                                                                                                             | Consequence                                                                                                                                                                                                                                                             |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Subsidence | <p>Proven mine design criteria based on Clarence Colliery.</p> <p>Mine criteria limiting tilt and strain and subsidence to no greater than 125mm</p> <p>Tailored mine methodology to suit depth of cover.</p> <p>Establish mine zones each of which have had the mine methodology applied (refer Figure 5)</p> <p>Utilize conservative partial extraction methods according to all internal and external cliff zones.</p> <p>Establish 30 meter set backs from cliffs.</p> <p>Increase set back in shale mine interaction zone.</p> | Damage to cliffs (external and internal). | <p>Trigger Response Action Plan (TARP).</p> <p>Avoidance via established mine zones.</p> <p>Conservative performance criteria allowing adaptive mine design should there be a risk of non-performance.</p> | <p>If mine performance criteria is not met:</p> <p>Safety risk to public.</p> <p>Adverse visual amenity.</p> <p>Loss of biodiversity habitats.</p> <p>Impact on Aboriginal sites and European heritage items such as shale mine interaction zone and Airly Village.</p> |

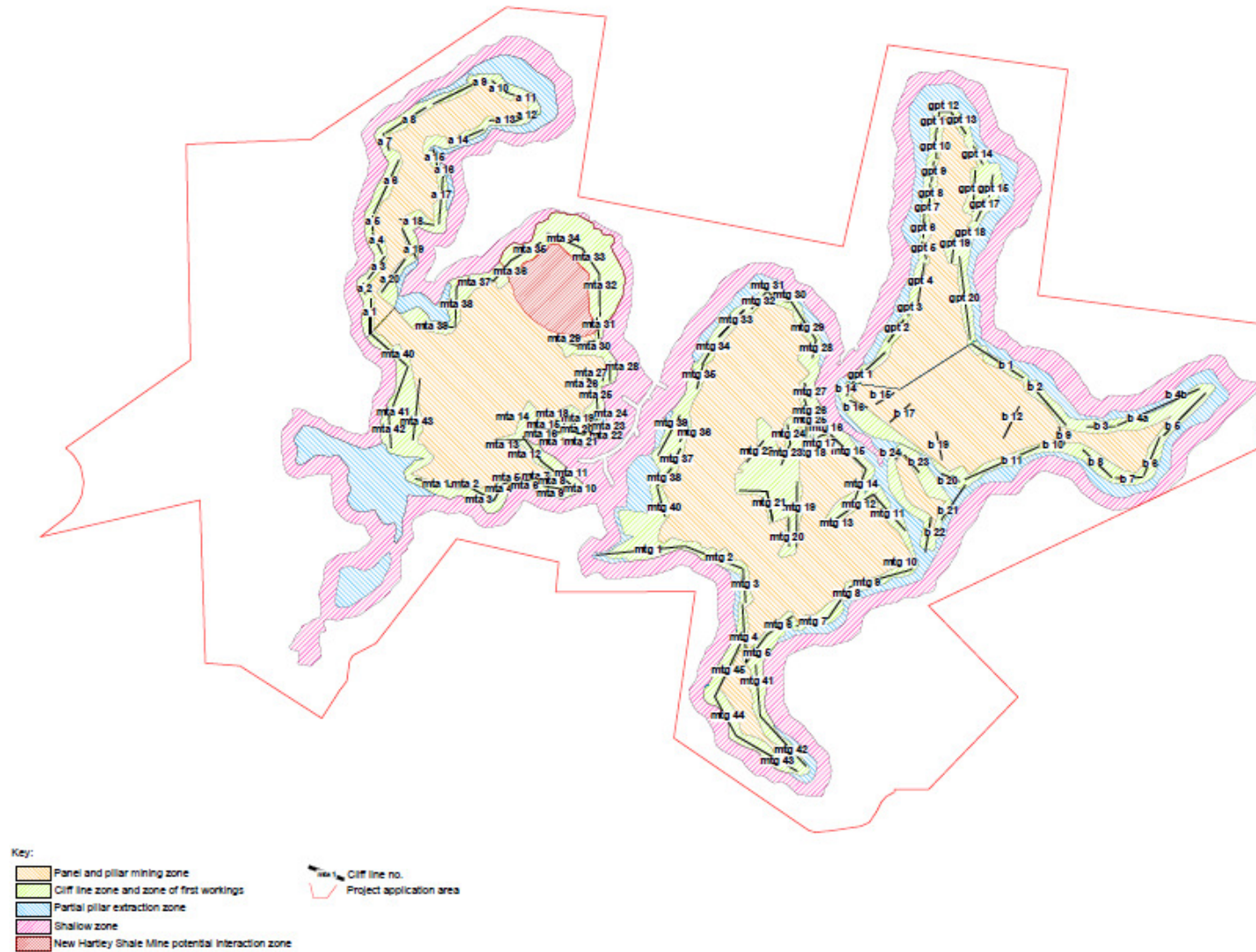


Figure 5: Airly Mine Proposed Mining Zones

**Table 18: Ground Water**

| Causes                                                                                                                                                                                    | Proactive Controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Initiating Event                                  | Mitigation / Reactive Controls                                                                                                                                                                                   | Consequence                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Subsidence (refer table 17).</p> <p>Increased fracturing of overburden.</p> <p>Large voids resulting in fracturing into the floor.</p> <p>Ground water resource entering the mine.</p> | <p>Mine design to limit height of fracturing.</p> <p>Understanding of underground geological features and rock strata.</p> <p>Mining system designed to limit impact on Permian Strata and no impact on Triassic Strata meaning that:</p> <ul style="list-style-type: none"> <li>• Groundwater drawdown is expected to be minor and localised within the PAA.</li> <li>• No effect to groundwater supplies or groundwater dependent ecosystems on neighbouring properties.</li> </ul> | <p>Loss of groundwater (quality and quantity)</p> | <p>Avoid and minimize impact via mine design.</p> <p>Ongoing monitoring of bores to ensure mine operates according to predictions and improve understanding of the regional groundwater system.</p> <p>TARP.</p> | <p>Increase in salinity - remove.</p> <p>Significant loss of base water flow to Genowlan Creek and Gap Creek.</p> <p>Adverse impact on groundwater dependent eco systems</p> <p>Potential loss of water in bores down-stream of the mine.</p> |

**Table 19: Surface Water**

| Causes                                                                                                                                                              | Proactive Controls                                                                                                                                                                                                                                                                                                                                                                                                                                         | Initiating Event                                    | Mitigation / Reactive Controls                                                                                                                       | Consequence                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Loss of water flow into creeks</p> <p>Surface cracking as a result of fracturing of the overburden.</p> <p>Discharge of poor quality water into Airly Creek.</p> | <p>Mine design.</p> <p>Adequate sized water control dams on site.</p> <p>Water management plan including recycling of onsite water.</p> <p>Primary and secondary water filtering to improve water quality.</p> <p>Site water balance to assist to understand water flow.</p> <p>Site water balance is water negative.</p> <p>Adequate on-site water control dams in place.</p> <p>Existing monitoring of Genowlan and Gap Creeks regarding water flow.</p> | <p>Loss of surface water (quality and quantity)</p> | <p>On site water control dams.</p> <p>On-site recycling.</p> <p>Water management plan.</p> <p>Environment Protection License (EPL).</p> <p>TARP.</p> | <p>Loss of creek flow.</p> <p>Adverse impact on flora and fauna and ecology in Airly Creek.</p> <p>Increase water flow into workings due to fracturing will result in loss of surface water into Genowlan and Gap Creeks.</p> |

**Table 20: Visual Impact**

| Causes                                                                                                                         | Proactive Controls                                                                                                                                                                                                                                                                                                                                                           | Initiating Event | Mitigation / Reactive Controls                                                                           | Consequence                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Surface facilities.</p> <p>Reject Emplacement Area (REA).</p> <p>Coal Handling Preparation Plant (CHPP).</p> <p>Lights.</p> | <p>Option analysis undertaken for siting of REA to include Visual Impact Assessment and understanding of Zone of Visual Influence (ZVI) show limited impact.</p> <p>Small foot print of REA and mine surface facilities.</p> <p>Lighting design and on-site management of light use.</p> <p>Colour treatment of CHPP to minimize contrast with the existing environment.</p> | Visual Impact    | <p>Siting of REA.</p> <p>Limit use of lights – determined by use, safety.</p> <p>Vegetation buffers.</p> | <p>Potential impact to Cameron Road residents.</p> <p>Adverse visual amenity to community /landholders.</p> <p>Complaints from community.</p> <p>Increased risk of light impact during night time operation.</p> |

**Table 21: Air Quality**

| Causes                                                                                                                                                                                                    | Proactive Controls                                                                                                                          | Initiating Event | Mitigation / Reactive Controls                                                                                                                                                      | Consequence                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <p>Ventilation fan.</p> <p>Wind erosion of coal stock pile.</p> <p>Wind erosion of REA.</p> <p>Coal transport and handling.</p> <p>Coal reject handling.</p> <p>Wheel generated dust (from vehicles).</p> | <p>Small on-site facility.</p> <p>Significant buffer around site.</p> <p>Low production underground mine.</p> <p>Moisture of coal (8%).</p> | Air quality      | <p>Water spraying of coal stockpile and REA.</p> <p>Enclosed equipment (eg CHPP, conveyors).</p> <p>Progressive rehabilitation of site.</p> <p>Use of loading bin.</p> <p>TARP.</p> | <p>Adverse impact on sensitive receptors / residential amenity.</p> <p>Complaints.</p> |

**Table 22: Noise and Vibration**

| Causes                                                                                                                                                             | Proactive Controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Initiating Event     | Mitigation / Reactive Controls                                                                             | Consequence                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <p>Fixed plant such as conveyors, crushers and fan.</p> <p>Mobile Plant such as trains, dozers (utilised on REA and coal stockpile).</p> <p>Employee vehicles.</p> | <p>Significant buffer around the surface facility.</p> <p>Enclosed coal preparation plant and conveyors.</p> <p>Small plant requirement and minimized use of plant (ie one dozer and one truck).</p> <p>Slow movement of trains (5kmph).</p> <p>Underground plant on surface for only short periods of time.</p> <p>Noise predictions under 35 dba at nearest receptor (ie within compliance at R2).</p> <p>Nil vibration through strata.</p> <p>Mine design is partial extraction so no large scale strata collapse.</p> | Noise and Vibration. | <p>Adopt mitigation controls as per Noise Impact Assessment (ie control noise at source).</p> <p>TARP.</p> | <p>Adverse impact on sensitive receptors / residential amenity.</p> <p>Complaints.</p> |

**Table 23: Flora and Fauna**

| Causes                                                                                                                             | Proactive Controls                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Initiating Event                          | Mitigation / Reactive Controls                                      | Consequence                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Subsidence.</p> <p>Loss of surface and groundwater (quality and quantity).</p> <p>Siting of surface infrastructure and REA.</p> | <p>Mine design.</p> <p>Siting of REA to avoid EEC.</p> <p>Surface and groundwater impact assessments have predicted:</p> <ul style="list-style-type: none"> <li>• Mining system designed to limit impact to minor and localised reductions in total average flow in Gap and Genowlan Creeks (&lt;3%) are expected.</li> <li>• Negligible impact to surface water supplies on neighbouring properties.</li> <li>• Groundwater drawdown is expected to be minor and localised within the Project Application Area.</li> <li>• No effect to groundwater supplies or groundwater dependent ecosystems on neighbouring properties.</li> <li>• Negligible impacts to water quality or stream condition are expected.</li> <li>• Monitoring on Mount Airly is already underway.</li> </ul> | <p>Adverse impact on Flora and Fauna.</p> | <p>Overall mine monitoring and management systems.</p> <p>TARP.</p> | <p>Dirty water discharge to Airly Creek resulting in impact on flora and fauna.</p> <p>Increase water flow into workings due to fracturing will result in loss of surface water into Genowlan and Gap Creeks.</p> |

#### **4.3 Findings of the Environmental Impact Assessment**

The Project has adopted a conservative mine design that limits impacts to the surrounding community demonstrated by the adoption of proactive controls and minimal reliance on reactive controls listed in Tables 18 to 24. In essence the potential impacts have been managed to largely remain within the PAA. The potential impacts that exceed the PAA are limited to:

- Very minor and localised reductions in total average flow in Gap and Genowlan Creeks (< 3%) are expected resulting in negligible impact to surface water supplies on neighbouring properties.
- Limited visual impact on surface infrastructure and the REA primarily from Camerons Road and when travelling along Glen Davis Road.
- Water discharge to Airly Creek.
- Noise and air quality impact that exceeds the PAA however is within compliance.

The potential for a change in social amenity arising from the Project is identified to be around the pit top area and relates to noise and dust. These impacts are illustrated in Figures 6 – 10 below however no exceedence of criteria at any private residence is predicted.

That said, the operation of the mines surface facility will be audible to the nearest sensitive receptors.

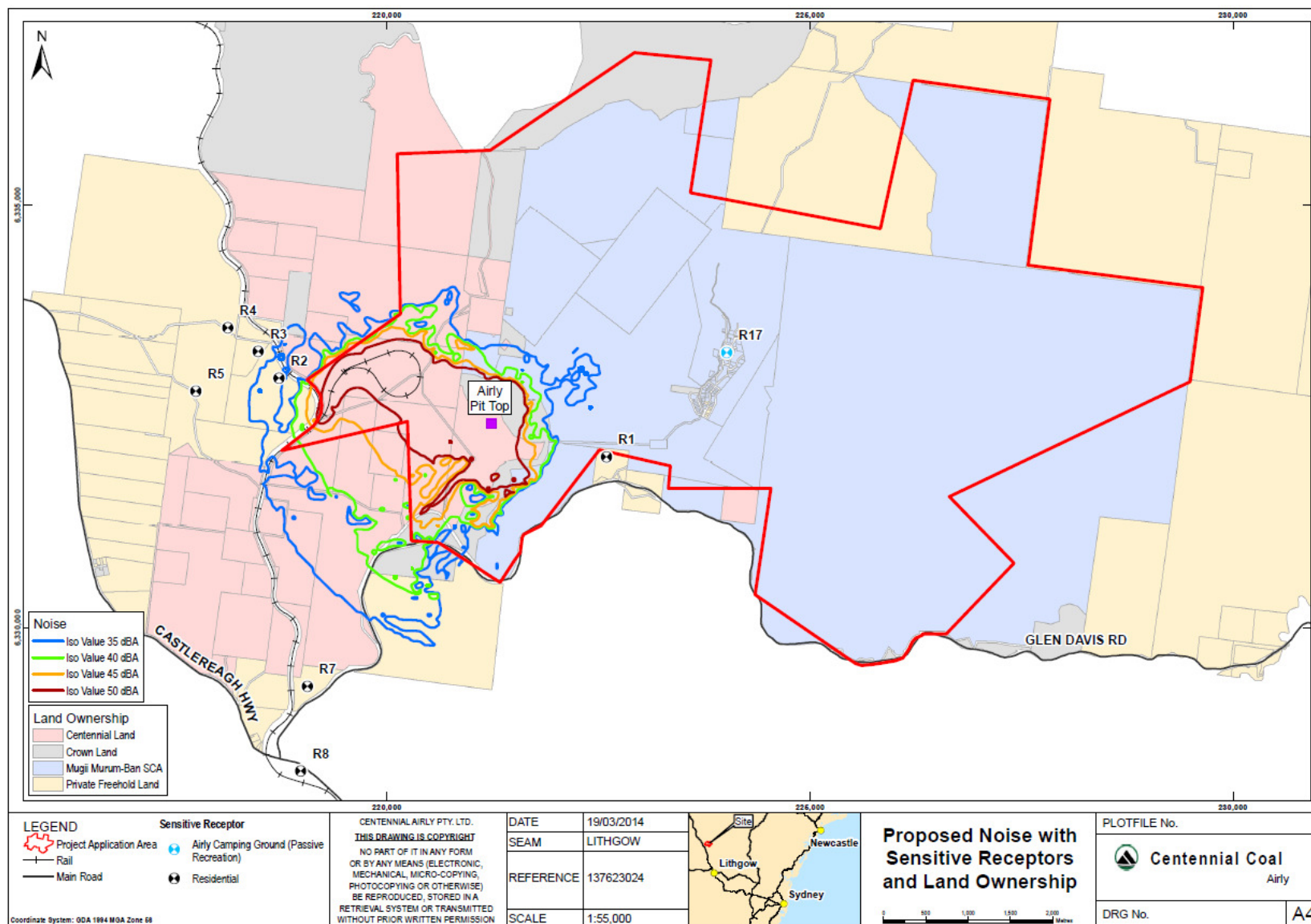


Figure 6: Proposed Noise with Sensitive Receptors and Land Ownership

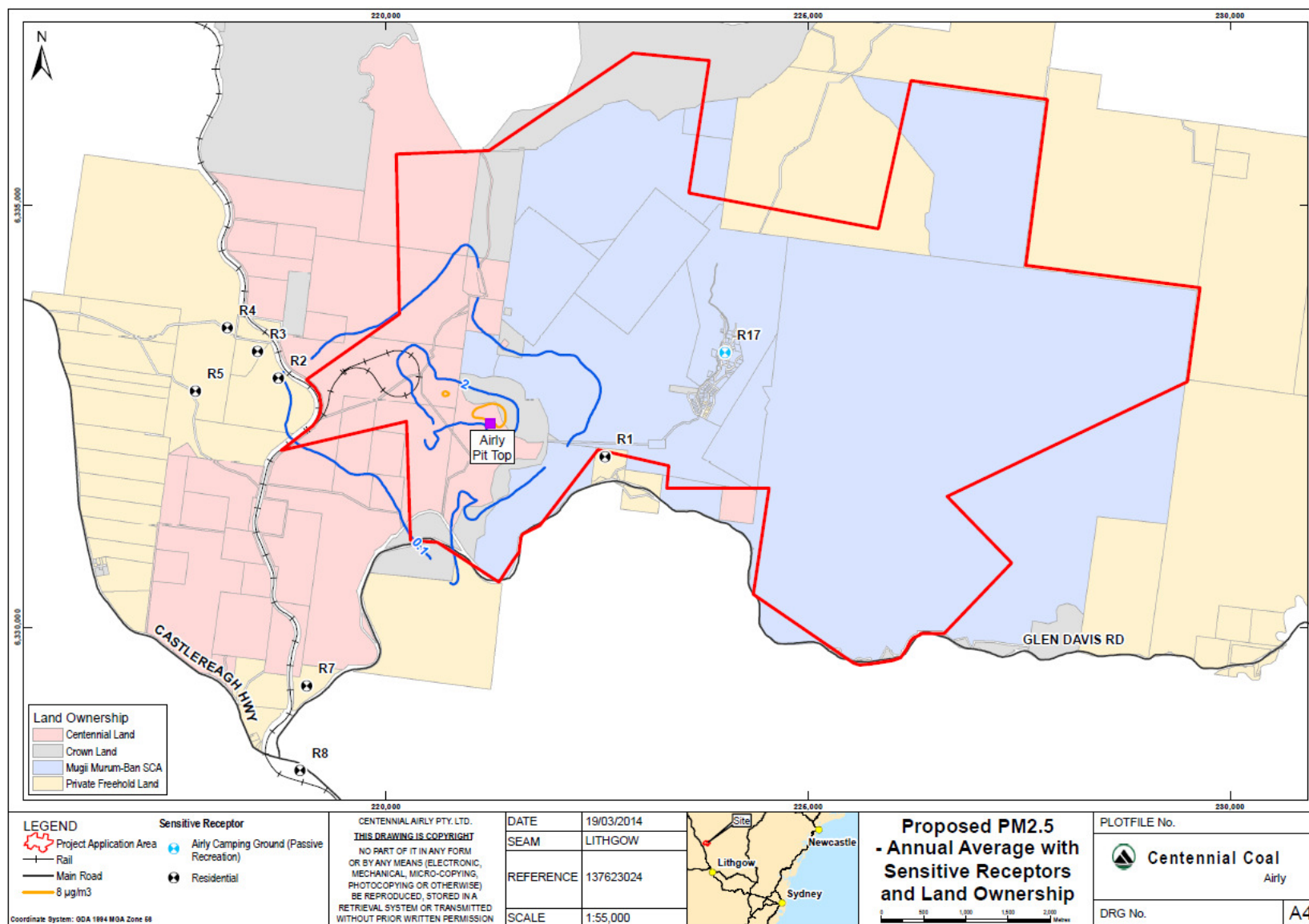


Figure 7: Proposed PM 2.5 (Annual Average) with Sensitive Receptors and Land Ownership

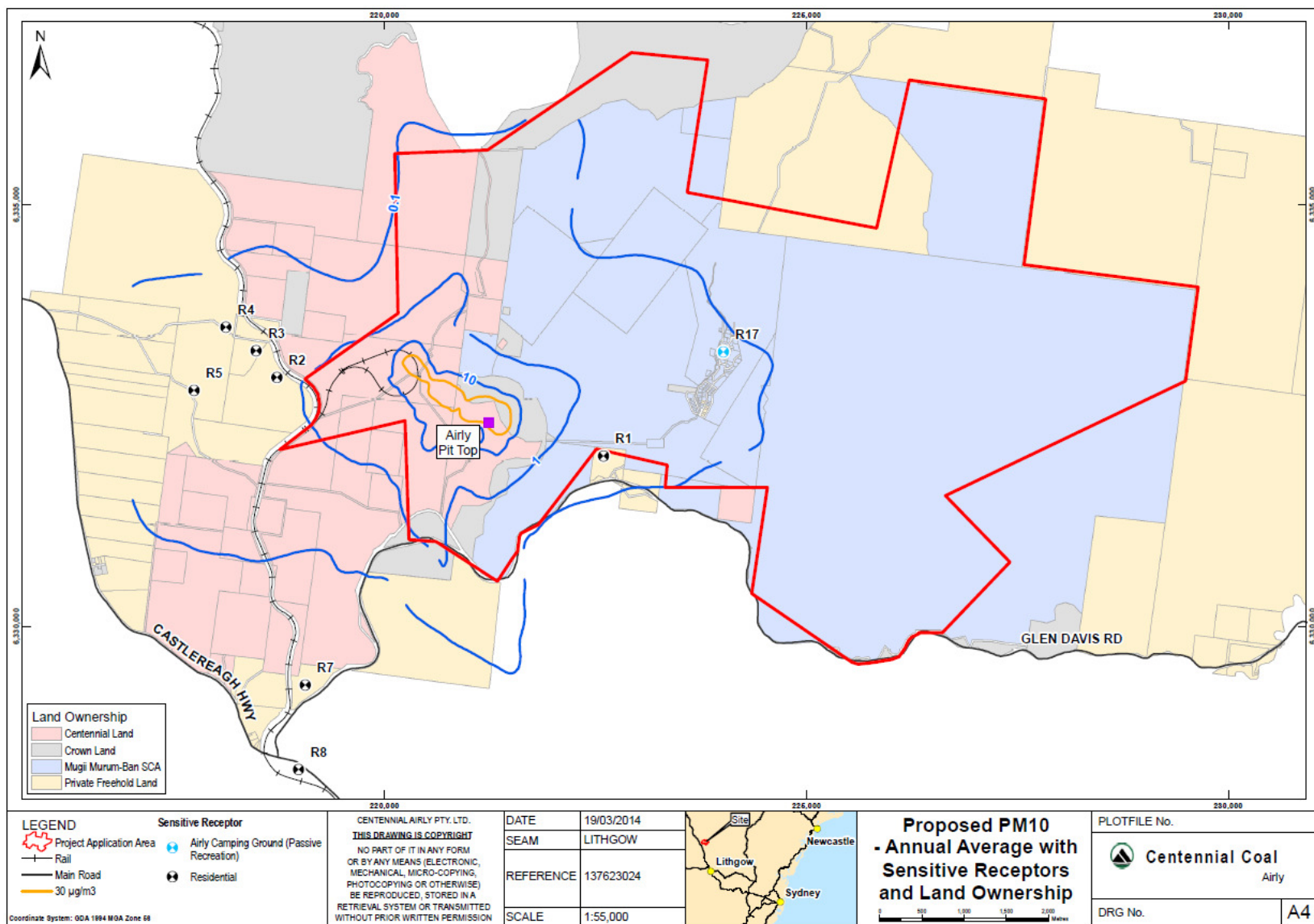


Figure 8: Proposed PM 10 (Annual Average) with Sensitive Receptors and Land Ownership

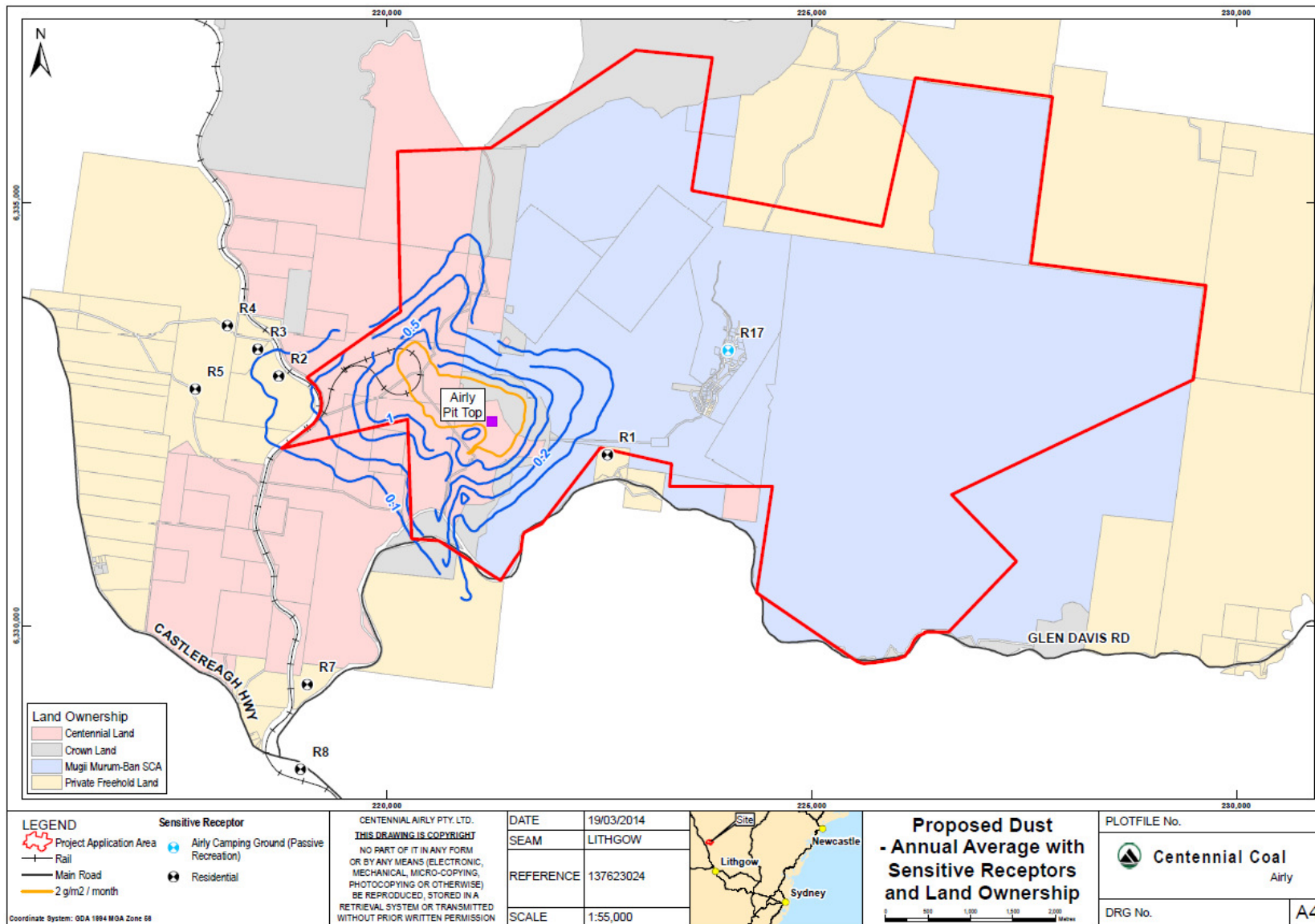


Figure 9: Proposed Dust (Annual Average) with Sensitive Receptors and Land Ownership

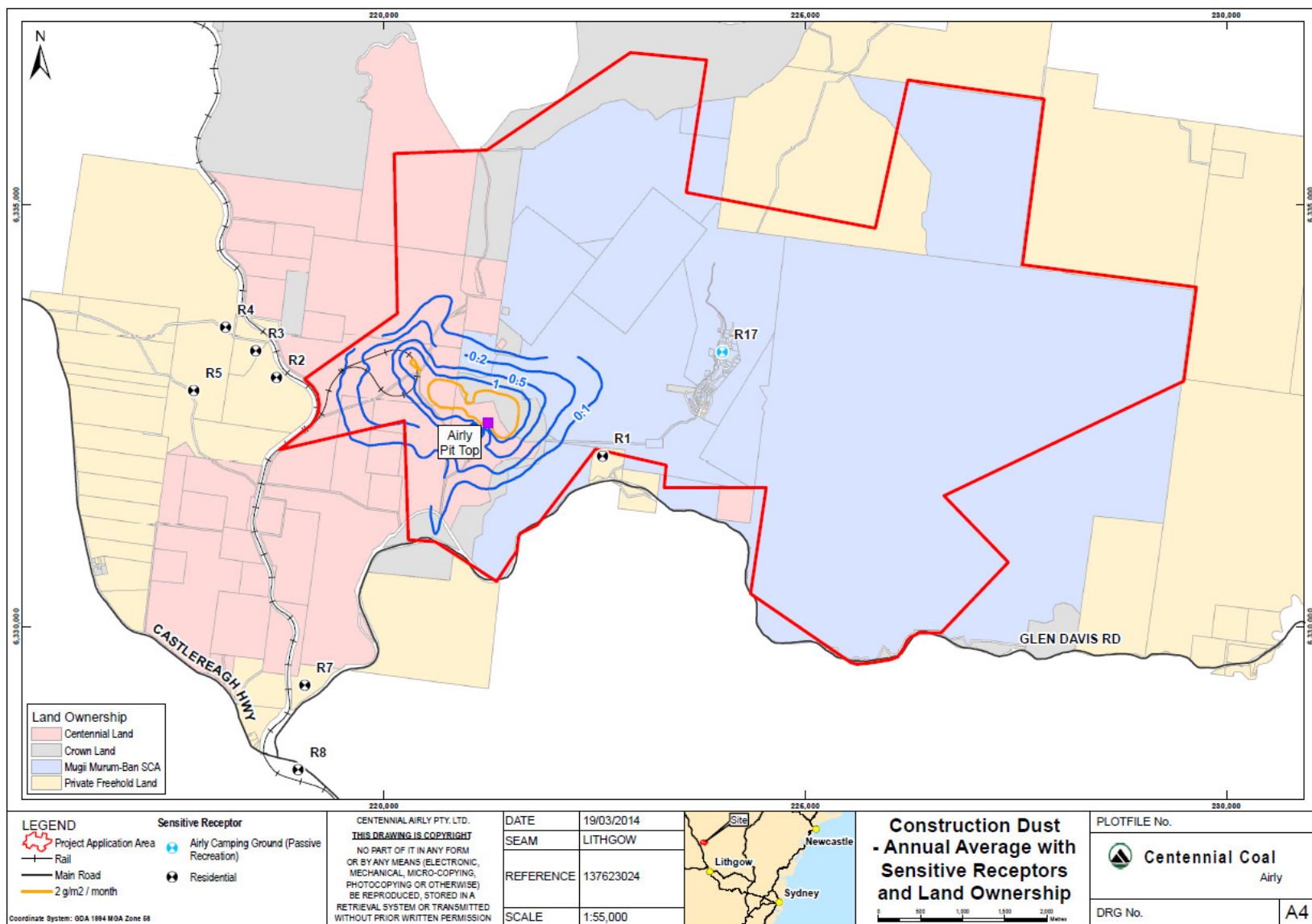


Figure 10: Construction Dust (Annual Average) with Sensitive Receptors and Land Ownership

From the assessment it is found that the Project results in:

- No requirement to purchase property as a means of managing impact on social amenity.
- No impact on surrounding land use or viability of agricultural production.
- No significant change to the economic profile of the community except for the potential for incidental economic benefit via localised spending.
- No change to the social fabric of the area.
- No change to how residents or visitors utilise the area.

#### **4.4 Community Impacts**

As stated above the Project results in minimal change to the existing character of the area. However the Project has resulted in a degree of angst across the community, evident from the consultation process and feedback arising from the community technical sessions. Despite there being no identified adverse impact to the social amenity within and surrounding the PAA, it is expected that these concerns will continue.

The key social impact arising from the Project relates to the high regard the surrounding community have for the environment. The presence of the Project, regardless of the actual physical change represents a loss of the connection to the environment which the community hold in high regard. This is because many landholders have become the new custodians of the land demonstrated by their knowledge of, and connection to, the area.

This impact relates to the intrinsic value that landholders have of the area and is sometimes called solastalgia; a term used by academic Glenn Albrecht to explain the psychological damage that is done when people's connection to the land they are connected to is at risk or is broken (ie caused by displacement). It is described as "... a form of homesickness one gets when one is still at 'home'".

There is no solution to this impact other than the Project not proceeding. The mine must therefore perform in the manner it says it will perform.

#### **4.5 Comment of Social Impacts Relating To DGRs**

Given the information above further comments can be made against the DGRs that relate specifically to this SIA.

##### **4.5.1 Assessment of potential impacts on local and regional communities, including:**

- 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.

The mine has been previously operational and no demand for local and regional infrastructure and services was identified. The SIA has found that there will be no increased demand for local and regional infrastructure and services as an outcome for this Project. The Project will employ a workforce that is likely to come from the surrounding region. Employment will provide a positive contribution to the social and financial economy. It is found however that there will be little direct contribution to the immediate surrounding community other than an incidental contribution / spending.

As stated in 4.3 the Project will result in limited changes to areas inside and outside of the PAA. This is due to the conservative mine design; small foot print of surface infrastructure and the significant buffer that exists around the pit top. Relevant changes to social amenity are again summarised below.

- Limited visual impact on surface infrastructure and the REA primarily from Cameron's Road and when travelling along Glen Davis Road.
- Noise impact that exceeds the boundary of the PAA however is within compliance.
- Insignificant changes to air quality.
- Minor changes to ground and surface water flow that will not impact on surrounding properties.

#### **4.5.2 Measures to Minimise Impacts**

The mine design, limited footprint of Airly, size of the buffer and relative low coal production are the measures that have been implemented to minimise the adverse social impacts. The Project will not result in changes to the existing community, change the way in which residents or visitors will utilise the area or change the characteristics of any surrounding landholdings (ie agricultural production). Adaptive mine methods will allow for correction to be undertaken before any adverse impacts result.

#### **4.5.3 Assessment of the costs and benefits of the development as a whole, and whether it would result in a net benefit for the NSW community.**

The Project will result in overall benefit to the region and NSW economy. This is achieved via:

- The value of wages is estimated to be \$87.8 million based on sustained employment over the life of the project and \$14.3 million for mine related contract employment. A further \$0.5 million is estimated for the construction phase.
- The Airly Mine Extension Project will also provide ongoing revenue streams to Federal (e.g. corporate income taxes), State (e.g. royalties, payroll tax) and Local (e.g. rates) governments over the period of operation.
- The proposed mine plan has been developed to maximise resource recovery while minimising the potential for impacts to the PAA and surrounding community. Therefore coal production can be achieved without adverse impact on social amenity, tourism and agricultural productivity.
- The Economic Impact Assessment has found that the estimated net benefit / cost are forecast to be \$259 million over the Project forecast period to 2034. In proposing the preferred mining option, Centennial Airly has opted to reduce the total of the resource to be recovered, resulting in some foregone economic benefit for the State and local/regional communities. However, this action was necessary to ensure that impacts were minimised.

## **5. Conclusion**

James Marshall and Co has been commissioned by Centennial Airly to undertake a SIA of the proposed Airly Mine Extension Project. The Project involves the continuation of mining operations

the existing Mining Lease ML1331 and extension of mining into the Authorisation 232 (A232) area at Airly Mine.

The proposed mine design is the means in which changes to the environmental, economic and social conditions are determined. With regards to the social impact, the likelihood and extent of these changes are key factors in determining the scale of social impact. While the mine design chosen for the Project is the most viable and preferred option it has taken into consideration that the Project is within a State Conservation Area with varying constraints of geology (seam split and ash content), geotechnics (structural zones), the environment (cliffs, pagodas and archaeological features).

The potential environmental impacts of the Project have been minimised via the use of various partial extraction mining methods that will manage subsidence to not exceed 125mm in previously unmined areas and minimise further potential subsidence impacts in areas where the historical New Hartley Shale Mine has already impacted the environment.

Therefore the mine has been designed to ensure there is negligible impact, meaning the changes to the environment are no greater than what would occur under natural conditions. Therefore no change to the land use will occur within the PAA.

The potential impacts that exceed the PAA are limited to:

- Very minor and localised reductions in total average flow in Gap and Genowlan Creeks (< 3%) are expected resulting in negligible impact to surface water supplies on neighbouring properties.
- Limited visual impact on surface infrastructure and the REA primarily from Camerons Road and when travelling along Glen Davis Road.
- Controlled water discharge to Airly Creek.
- Noise and air quality impact that exceeds the PAA however is within compliance.

The noise and air quality assessments have been undertaken using a conservative methodology and modelled on all equipment being utilised and in adverse meteorological conditions. The likelihood of that scenario being reached when operational is stated to be unlikely. However under the conditions are used in the assessment modelling, the pit top facility will be audible at the nearest sensitive receptors (eg R3 and R4).

The impact to the social amenity arising from the Project is minimal. The mine design along with limited coal production and small surface facilities area mean that there is:

- No requirement to purchase property as a means of managing impact on social amenity.
- No impact on surrounding land use or viability of agricultural production.
- No significant change to the economic profile of the community except for the potential for incidental economic benefit via localised spending.
- No change to the social fabric of the area.
- No change to how residents or visitors utilise the area.

The economic assessment (Aigis; 2014) has identified the economic benefits and costs. No additional demand for additional infrastructure has been determined. Furthermore, while the

economic benefit to the region will be positive, the benefit to the immediate local community will be limited due to the potential small employment pool coming from that area. It is likely that the local economy will return to the position prior to the mine being placed in care and maintenance.

The SIA has found a strong connection to the area and environment by local landholders; who can be described as being custodians of the land. The neighbouring process, activities to preserve and protect the environment is both strong and a major focus of the community. The intrinsic values that are collectively held by the community are stated to be under threat by the very presence of the mine. With that in mind and while the Project, as assessed, is stated to result in negligible change, the mine must perform in the manner in which it states it will perform in order to maintain the social amenity of the area.