

p r o p o s e d

# Mt Arthur

UNDERGROUND PROJECT

## Appendix 3



## Socio-economic Impact Assessment



# **Mt Arthur Underground Project**

## **Socio-Economic Assessment**

*Prepared for*

**Hunter Valley Energy Coal  
BHP Billiton**

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## Executive Summary

### **Background**

Mt Arthur Coal Pty Ltd (hereafter referred to as Mt Arthur Coal), a wholly owned subsidiary of BHP Billiton Hunter Valley Energy Coal, proposes to establish an underground coal mine at the existing Mt Arthur Coal site, south of Muswellbrook in the Upper Hunter Valley. The proposed underground mine will be located within the existing Bayswater No. 3 Mining Lease area and adjacent Exploration Licence area. This project is known as the Mt Arthur Underground Project. This report details the Socio-Economic Impact Assessment and community consultation process undertaken as part of the project.

The social assessment program employed a range of consultative and assessment mechanisms to identify potential project impacts and obtain the views and perceptions of stakeholders in and around the proposed project site and the broader community.

### **Key Assessment Findings**

The following points summarise the predicted project related impacts and key issues that have emerged during the social assessment process.

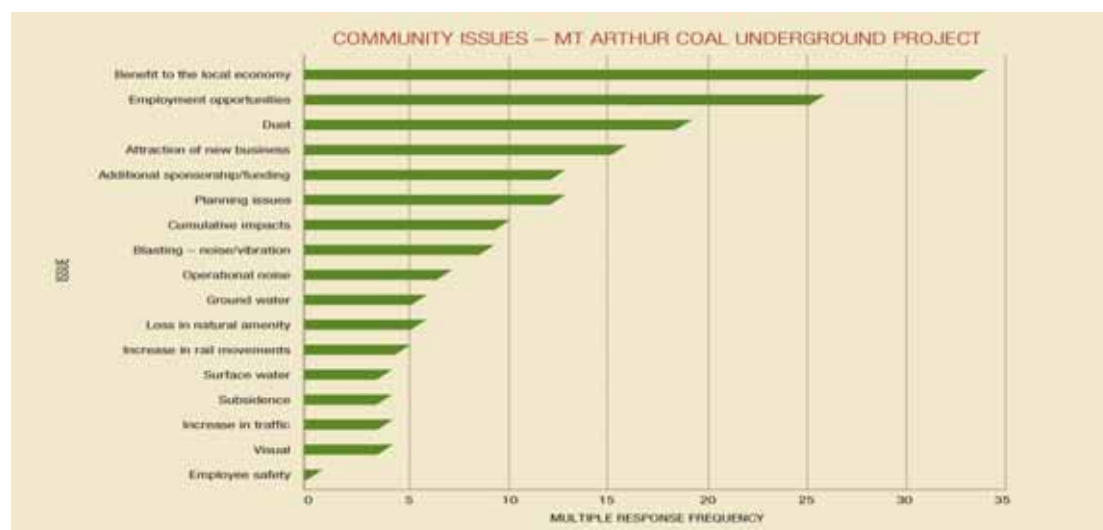
#### *Population Impacts*

The social assessment has predicted the following potential impacts of the project on the local population:

- The peak predicted workforce during the construction phase is estimated to be 470 employees, of these, it is projected that 80% (or 376) will be sourced from outside the Shire of Muswellbrook.
- Of the peak operational workforce (estimated to be 300 employees), it is projected that 240 employees will potentially relocate into the area, with approximately 103 of these workers locating to the Shire of Muswellbrook.
- Based on projections, it is anticipated that the family size impacts of the operational workforce for the Underground Project equate to approximately 840 new family members in total. The main population impacts are expected to be experienced in the Shire of Muswellbrook with a potential influx of approximately 361 new community members to the townships of Muswellbrook and Denman.

#### *Stakeholder Issues and Perceived Impacts*

Consultation activities with stakeholders identified a range of issue themes. These included an increase in dust levels; the potential for cumulative impacts with other mines; blasting - noise/vibration; noise from operations; impacts of subsidence; and the potential loss of the area's natural features. The economic benefits of the project, employment opportunities and flow on effects to the local economy, were also frequently cited.



### Economic Benefits

The key benefits of the project include the significant economic benefit to the state and region associated with job creation, capital expenditure, ongoing operational expenditure, and contributions to community enhancement programs. The project will also have a number of environmental and social benefits.

During the construction phase, the project will employ a peak workforce of approximately 470 people and will have an initial capital cost of approximately \$300 million. During operation, the project will employ a peak workforce of approximately 300 people and will have a total operational expenditure of approximately \$3 billion over the life of the project. Some of the key economic contributions of the project are outlined in the table below.

### Summary of Predicted Key Project Economic Contributions<sup>1</sup>

|                               |                                          | Direct Project-Related Economic Contribution             |                                                         | Multiplied Flow-on Economic Contribution from Project <sup>b</sup> |
|-------------------------------|------------------------------------------|----------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------|
| Area of Economic Contribution | Source of Economic Contribution          | Average Annual Economic Contribution (A\$M) <sup>a</sup> | Total Economic Contribution over Life of Project (A\$M) | Total Economic Contribution over Life of Project (A\$M)            |
| Muswellbrook                  | Employee expenditure                     | 8                                                        | 176                                                     | 273                                                                |
|                               | Operating expenditure (excluding labour) | 12                                                       | 277                                                     | 341                                                                |
| Hunter Region                 | Employee expenditure                     | 20                                                       | 456                                                     | 781                                                                |
|                               | Operating expenditure (excluding labour) | 76                                                       | 1,757                                                   | 2,533                                                              |
| NSW                           | Employee expenditure                     | 20                                                       | 456                                                     | 1,017                                                              |
|                               | Operating expenditure (excluding labour) | 81                                                       | 1,862                                                   | 3,356                                                              |
| NSW Government                | Royalties on coal                        |                                                          | 415                                                     |                                                                    |
|                               | Payroll tax                              |                                                          | 37                                                      |                                                                    |

<sup>1</sup> Economic benefits have been rounded to the nearest A\$M.

|                         |                                                   |  |       |       |
|-------------------------|---------------------------------------------------|--|-------|-------|
| Commonwealth Government | Employee personal income tax and Medicare payment |  | 156   |       |
|                         | Company tax                                       |  | 450   |       |
| NSW GDP                 | Contribution to NSW GDP                           |  | 2,318 | 4,374 |

NB: <sup>a</sup> Averaged over both the project's construction and operational phases.  
<sup>b</sup> Multiplied economic contributions include both the initial direct contribution and flow-on /indirect benefits.

### *Community Infrastructure*

The project's potential population impacts will most likely result in changes to community infrastructure, particularly in relation to the provision of health services. The social assessment has identified that the health sector was the over-riding area of concern for residents and community groups in terms of community need. It was also shown to be the sector currently at or beyond capacity in terms of service provision. Therefore it was predicted that this sector may be unable to absorb projected population impacts associated with the project. Mt Arthur Coal is committed to paying a financial contribution which is intended to contribute to the cost of additional local services that may be required as a result of an increase in population associated with the project.

Other sectors such as education and housing appear able to absorb any population impacts associated with the project's construction and operational workforce and associated family members.

### **Impact Mitigation and Monitoring**

Mt Arthur Coal has identified a number of mitigation and amelioration strategies that could be employed to address social impacts and community concerns.

With respect to the environmental issues raised during consultation, these have been subject to specific specialist assessment as part of the Environmental Assessment (EA) and the mitigation strategies developed to address specific environmental issues are outlined in each of the relevant sections of the EA.

In addition to these strategies, since the development of the Mt Arthur Coal open cut operation in 2001, the company has committed considerable resources to its community relations and social investment programs. It is anticipated that many of these existing programs will be maintained during the life of the Underground Project.

Furthermore, the company will make contributions to the community, pursuant to S94 of the *Environmental Planning and Assessment Act, 1979*. This will provide opportunities for the community to benefit from the Underground Project in a manner that is consistent with the assessment of community needs, as identified through consultation with service providers and local residents.

Mt Arthur Coal also has a number of stakeholder engagement and monitoring mechanisms in place as a part of the existing operations and is committed to continuing these programs for the Underground Project as part of the company's ongoing community relations program. Social monitoring will be central to maintaining an ongoing dialogue with local residents and to enable the company to address the issues of relevance and concern to the community through the construction and operational phases of the project.

# **1 Introduction**

## **1.1 Background**

Mt Arthur Coal is owned and managed by Hunter Valley Energy Coal, a wholly-owned subsidiary of BHP Billiton. In order to meet increased demand for coal, Mt Arthur Coal is seeking approval for an underground coal mining operation in the area known as Bayswater No.3 and to the west, in the adjacent Exploration Licence area. Approval for the project is required from the NSW Minister for Planning (facilitated through the Department of Planning) under the Environmental Planning and Assessment Act 1979. A detailed Environmental Assessment is being prepared by Umwelt (Australia) Pty Limited, environmental consultants, as a part of this process. This socio-economic assessment forms part of the Environmental Assessment for the project.

The current Mt Arthur Coal operation includes the Mount Arthur North mine and the Bayswater Colliery. The former Bayswater Colliery has been operating in the community since 1956 when the original Bayswater No.2 underground mine commenced operation, later becoming an open cut in 1964. The Bayswater No.3 open cut mining area started operations in 1995 to progressively replace the No.2 mine, which ceased operations in 1998. Mount Arthur North commenced coal production in 2002.

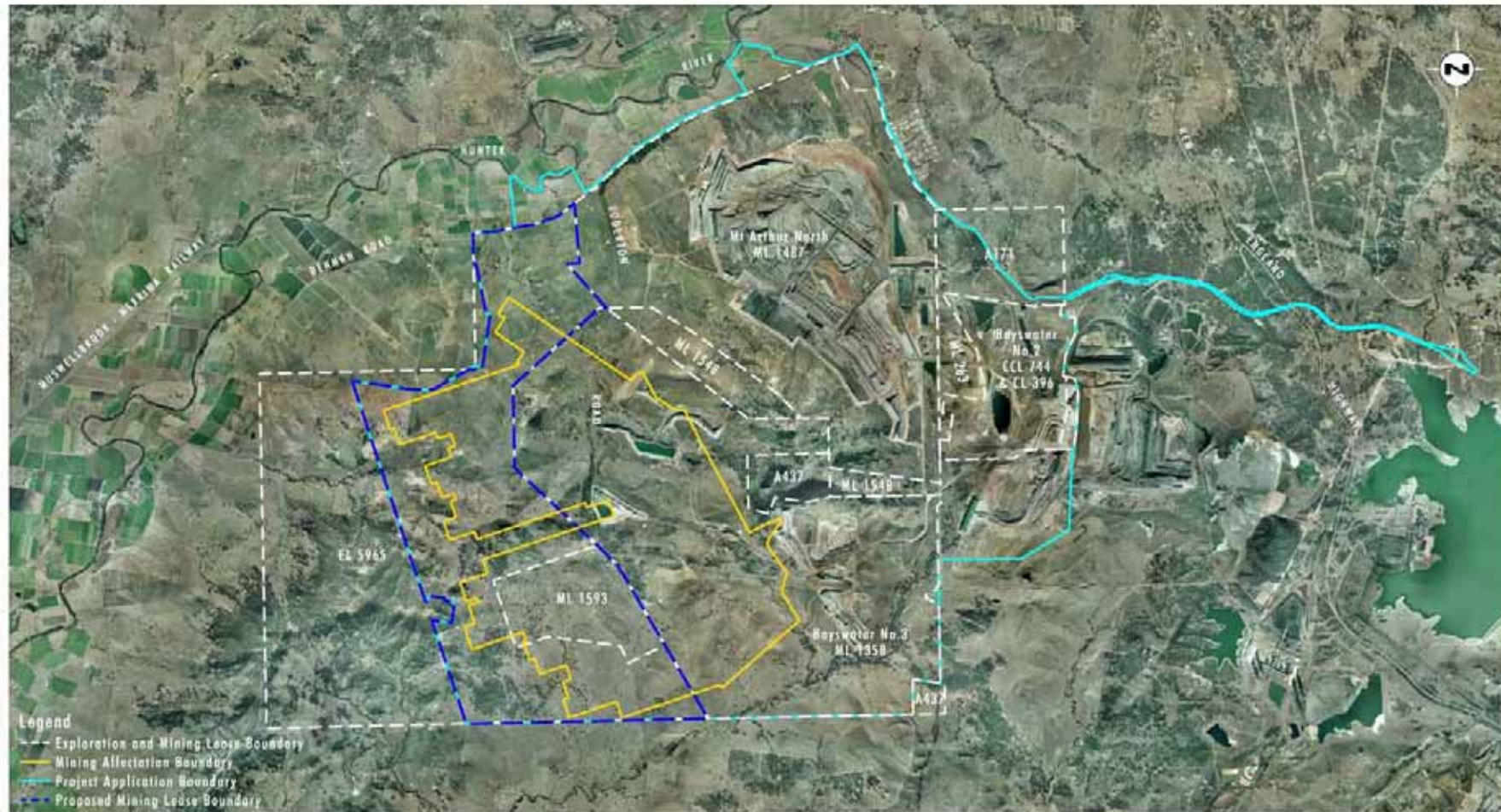
## **1.2 Project Description**

In order to meet increased demand for coal, Mt Arthur Coal is seeking approval for underground mining in an area known as Bayswater No.3 and to the west, in the adjacent Exploration Licence area.

The proposed underground operations would increase production by approximately 8 Mtpa ROM and could potentially employ up to 300 additional people, when fully operational.

The proposed underground mine would use Mt Arthur Coal's existing infrastructure, such as the coal preparation plant and the rail loading facilities. Access to the underground mine would be through existing and approved Bayswater No.3 open cut pits.

### Figure 1.1. Project Area and Existing Operations



## **2 Methodology**

### **2.1 Overview**

Socio-economic assessment is concerned with assessing and predicting the likely consequences of a proposed action in both social and economic terms. While economic assessment emphasises the monetary effects of an action or proposal, social impact assessment is concerned with assessing benefits and costs in non-monetary terms. This involves understanding impacts from the perspectives of those involved in a personal, community, social or cultural sense. Social and economic assessment processes work together to provide a complete picture of impacts and their meaning.

### **2.2 Social Impact Assessment**

Social impact assessment is a tool used to predict the future effects of a particular proposal on people, that is their way of life (how they live, work and interact with each other); their culture (norms and traditions); and their community (institutions and structures) (Armour 1990).

Vanclay (2003), building on Armour's categorisation, has identified social impacts as changes to one or more of the following:

- People's way of life – that is, how they live, work and play and interact with one another on a day to day basis;
- Their culture – that is, their shared beliefs, customs, values and language or dialect;
- Their community – its cohesion, stability, character, services and facilities;
- Their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose;
- Their environment – the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources;
- Their health and wellbeing – where 'health' is understood in a manner similar to the World Health Organisation (WHO) definition: 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity';
- Their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties;
- Their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

The social impact assessment process has a number of phases, as illustrated in Figure 2.1. These include:

- Profiling to better understand the community and obtain baseline information;
- Scoping to identify stakeholder issues associated with the proposal;
- Assessment of potential issues/impacts, and prediction of the likely socio-economic effects associated with the proposal;
- Mitigation, that is working with the community to develop appropriate strategies to address the issues raised; and
- Monitoring and management of the issues through the life of the project.



**Figure 2.1. The Social Impact Assessment Process**

As is the case with any type of change, some individuals or groups within the community may benefit, while others may experience negative impacts. If negative impacts are predicted, it is the role of social impact assessment to determine how such impacts may be managed effectively to produce the minimum degree of social disruption to those affected.

Monitoring is also a key component of the social impact assessment process and a program should be developed to identify deviations from the proposed action and to document any unanticipated positive or negative impacts that may arise in the implementation/operational phase.

## 2.2.1 Social Assessment Methods

Community involvement is an integral part of any social assessment process, and there is a range of different ways of involving the community and collecting relevant information to inform the assessment process.

In the current assessment, stakeholders were identified through previous SIA work undertaken in the area and through a community networking approach to ensure a representation of stakeholder views associated with the project. This technique involves a process called 'snowball sampling' where stakeholders are identified through a review of secondary data sources e.g. Community Service directories, title searches and community involvement. The full range of methods and mechanisms used to collect, communicate and disseminate information about the proposal are summarised in Table 2.1.

**Table 2.1. Social Assessment Methods Adopted for the Mt Arthur Underground Project**

| Method                                                  | Description                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Documentary analysis                                    | Collation, examination and review of relevant reports and studies relating to the assessment area.                                                                                                                                                                                  |
| Social indicators analysis                              | Examination of census data (1991, 1996, 2001) and other community data sets to develop detailed profiles of relevant townships and rural settlements, namely Muswellbrook LGA, Singleton and Scone.                                                                                 |
| Media review                                            | Extensive monitoring and review of local, regional and State media to identify community issues associated with mining in the area.                                                                                                                                                 |
| Personal Interviews                                     | Semi-structured interviews with Stakeholder groups across the community e.g. local landholders/residents, local government, community and environmental groups, to identify salient community issues, obtain baseline information and assess likely impacts of the proposal.        |
| Community Presentations                                 | Presentations to local community and environmental groups at various stages of the assessment process to provide information and obtain feedback on the project.                                                                                                                    |
| Service Provision Review and Community Needs Assessment | Interviews with local service providers to assess the likely impact of the project on service delivery within the region and identify areas of community need.                                                                                                                      |
| Service Provider Forum                                  | Interactive session with local service providers to feedback the outcomes of population projections and the community needs assessment and validate information collected during the service provision review.                                                                      |
| Information Evening                                     | Information session for local residents and landholders in proximity to the project area to feedback the outcomes of the environmental assessments studies and provide an opportunity for community feedback on proposed suggested strategies for impact management and monitoring. |
| Community Information Sheets (CIS)                      | Production and distribution of Information sheets at significant stages of the social assessment process to provide information on the proposal and summarise outputs of the social and environmental assessment studies.                                                           |
| Community Consultative Committee (CCC)                  | Regular meetings with the established CCC for the project to provide information and receive feedback relating to the project, the approvals process and the assessment studies and outputs.                                                                                        |

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Where possible, data/information has been collected using a range of methods and techniques. This approach referred to as 'triangulation' has been used to account for some of the problems inherent in the use of single methods, and assists in addressing issues associated with data reliability and validity.

As identified in Figure 2.1, stakeholder consultation took place at two key stages of the SIA (Phases 2 and 4) which included:

- Initial presentation of project information (which commenced in late 2005 and continued during 2006) to identify potential project impacts (both positive and negative) and to obtain the views and perceptions

of stakeholders in and around the proposed project site and the broader community; and

- Presenting the findings of the impact assessment for feedback and comment (during July 2007).

The Information Evening specifically communicated back the outcomes of the environmental assessment and other relevant studies conducted, to provide local residents with the opportunity to have informal discussions with the company and environmental experts around issues of particular concern, and to provide an opportunity for input and feedback on suggested strategies for impact management and monitoring.

The evening included presentation of a DVD of the proposed project operations, a number of aerial photos and site plans and a storyboard of 15 posters outlining:

- details of the proposal;
- site selection;
- the visual appearance of the proposed site, including a mining schematic to illustrate the sectoral process of underground mining;
- the approvals process;
- a timeline for both regulatory process and community involvement;
- detail of the community engagement process;
- an overview of community feedback from consultation;
- environmental assessment and other assessment posters incorporating both community issues and concerns, results of the assessments and proposed management strategies namely:
  - dust
  - noise
  - subsidence
  - surface water and groundwater impacts
  - greenhouse gas emissions
  - flora and fauna
  - Aboriginal heritage
  - cumulative impacts
  - visual amenity
- next steps, both regulatory process and community involvement program.

Mt Arthur Coal staff were in attendance to answer questions regarding planning and operational issues and the session was also attended by consultants who conducted the environmental and social assessment. The information evening was attended by 6 residents and one representative of the local equine industry who spent considerable time discussing issues with both company personnel and the environmental experts. Follow up discussions were also held with a number of local

residents who could not attend the information evening but expressed an interest in being updated personally on the assessment outcomes.

Further details of the consultation activities undertaken with community members and service providers are provided in Section 4 of this report.

### **2.3 Economic Impact Assessment**

To determine the economic contribution of the project, an economic assessment has been undertaken of the potential economic impacts of the construction and operational phases of the project at the local, regional, state and national level.

At the local level survey analysis has been used to develop a profile of the existing Mt Arthur Coal operation and its employees in the region, including an assessment of residential and expenditure patterns.

In 1999, Coakes Consulting conducted a Mine Industry and Employee Survey which involved the participation of a number of mining operations and their employees within the Muswellbrook area. To our knowledge no further assessment of this kind has been undertaken across the industry in the Muswellbrook area.

For the purpose of the current assessment, the 1999 survey has been updated with additional survey information obtained from employees of the Mt Arthur Coal operation to further define residential and expenditure patterns.

This work, along with existing business expenditure patterns at the open cut mine, has been used to assist in predicting impacts associated with the influx of a project workforce to the area and to predict likely economic impacts resulting from the Underground Project.

Operations and maintenance expenditure will result in an increase in production from local firms, and create increased incomes to be spent in part in the region, and these will have ripple effects through the economy. Therefore to support the above micro economic assessment, multiplier analysis has been used to assess the flow-on effects of Project-related income, investment and employment in a regional/macro economic assessment. This has been undertaken to provide an estimate of the regional benefits resulting from investment expenditure and ongoing expenditure on operations.

In completing this analysis, input-output analyses undertaken by the Australian Bureau of Statistics (ABS), by the Hunter Valley Research Foundation and by the Illawarra Regional Information Service (University of Wollongong) have been drawn upon. Each of these organisations have developed input output tables and industry multipliers for the construction and coal industries. As a basis for comparison and a form of reality check, multipliers developed for the mining and construction sectors in Western Australia have also been used. The size of the multiplier ratio used depends on several factors including the ability of the economy to supply the goods needed. For example, if a large proportion of goods are imported, the multiplier will be lower.

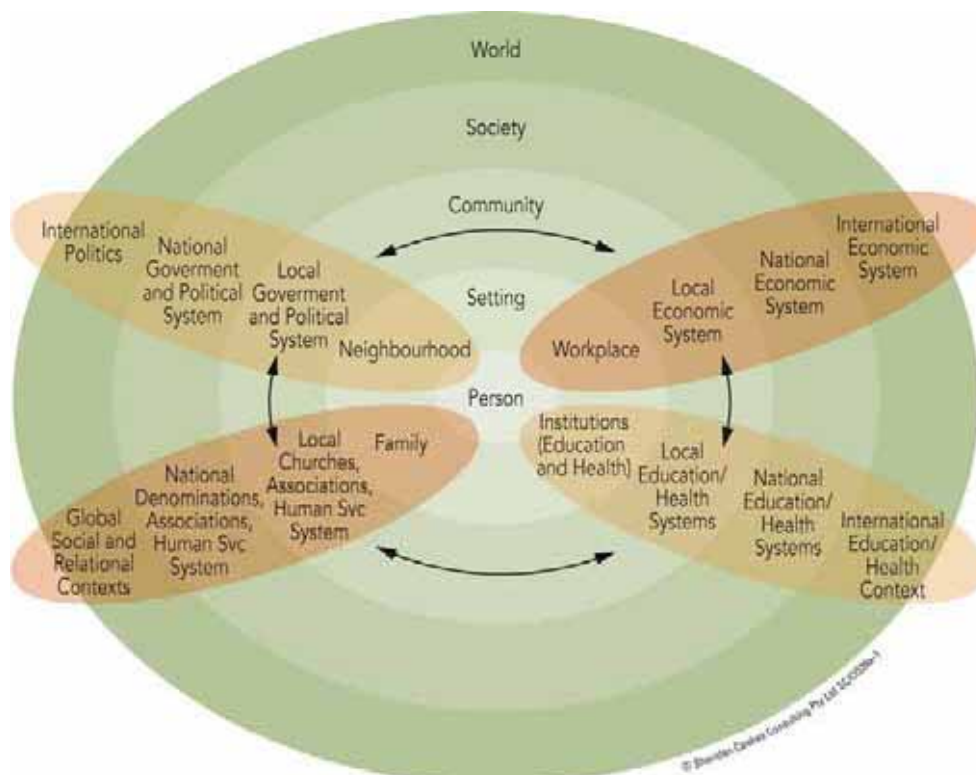
### 3 Social Profile (Phase 1)

#### 3.1 Overview

This section of the report provides an overview of the social context in which the Mt Arthur Coal operations are based. The social profile is an important part of the social assessment as it provides an ability to consider the key attributes of an area and its communities; to identify key stakeholders who may have an interest in the project; and to identify relevant issues that can be further explored in the scoping phase of the social assessment program.

The profiling phase involves the necessary preparatory work to develop a detailed understanding of the project context. This work is necessary to provide a baseline from which potential impacts can be predicted and measured. The profile is based on an analysis of relevant Census data (time-series), media analysis, Mt Arthur Coal employee survey data and other secondary data sources.

The way in which communities respond to change is driven by elements of the social context in which individual members collectively live, work and play. The behaviour of individual people is shaped by the setting or social context in which they function. Social context is best conceptualised as a series of interacting social systems, such as families, neighbourhoods, workplaces, and institutions (health and education) that mutually influence one another. Changes in social systems influence other social systems.



Given this interaction, community impacts associated with the Mt Arthur Coal Project are likely to be driven by the functional and affective relationship that the community has with the area. The functional relationship that the community has with the area is

related to land uses, recreation, employment opportunities and any functions or activities that take place.

The affective relationship on the other hand is related to perceptions, attitudes and emotions. Whilst the affective relationship may appear intangible, changes in perceptions, attitudes and emotions relating to development of any kind represent very real impacts; and the affective relationship that individuals have with the area in which they live can influence their behaviour. Anxiety, stress and decrements in feelings of attachment and belonging are themselves significant impacts, and also represent processes to other higher order impacts, such as changes in family and neighbourhood relations, health behaviours etc.

To gauge the functional and affective relationship that the community has with the area it is important to have an understanding of the community's current function as well as its history. Consequently the profiling phase involves understanding the nature of the community and communities of interest within which a project is based: historical and contemporary issues; land uses; organizations and leadership; knowledge of and attitudes towards development; and characteristics of the Mt Arthur Coal workforce.

This section of the report contains the following subsections:

- Geographical Location
- Local History
- Socio Economic Characteristics
- Governance
- Infrastructure and Services
- Community Issues
- Project Implications

The report focuses on the Local Government Area (LGA) of Muswellbrook in which the townships of Muswellbrook and Denman are located. However as Mt Arthur Coal employees are also likely to reside in neighbouring areas such as Singleton and Scone it is necessary to establish a baseline of these areas also.

The profile utilises data collected at the time of the last Census (2006) and is compared with 2001 and 1996 data where appropriate. Trends, projections and regional information are based primarily from the Hunter Valley Research Foundation reports and statistical database.<sup>2</sup>

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<sup>2</sup> Hunter Valley Research Foundation (2003) Newcastle and Hunter Region 2002-2003 Newcastle and Hunter Valley Research Foundation (2005) Hunter Region Economic Forecast 2004-2005

### 3.2 Local Government Boundaries

The Muswellbrook LGA and the townships of Scone and Singleton are all located in the Hunter Valley of NSW. The Hunter Valley is approximately 160 kilometres north of Sydney and is defined by the Hunter River which is one of the major eastwards-flowing rivers of South-Eastern Australia.

Economic activity in the Hunter Valley region is characterised by coal-mining, wine growing, power generation, dairy farming and cattle farming. The Hunter Valley is undergoing significant growth both economically and culturally with new residential areas developing to house people attracted to the area by employment opportunities and affordable housing prices.

#### 3.2.1 Muswellbrook Local Government Area

The Mt Arthur Coal operation lies within the Local Government Area (LGA) of Muswellbrook which is centrally located in the Upper Hunter Valley and covers an area of approximately 3400 square kilometres.

Muswellbrook Shire is bisected by the Hunter River and is part of the Hunter Valley catchment, which covers an area of 22,400 square kilometres. The Hunter River springs primarily in the Barrington Tops area and is joined by the Goulburn River continuing in an easterly direction toward the coast at Newcastle - 130 kilometres south east of the Muswellbrook Shire.

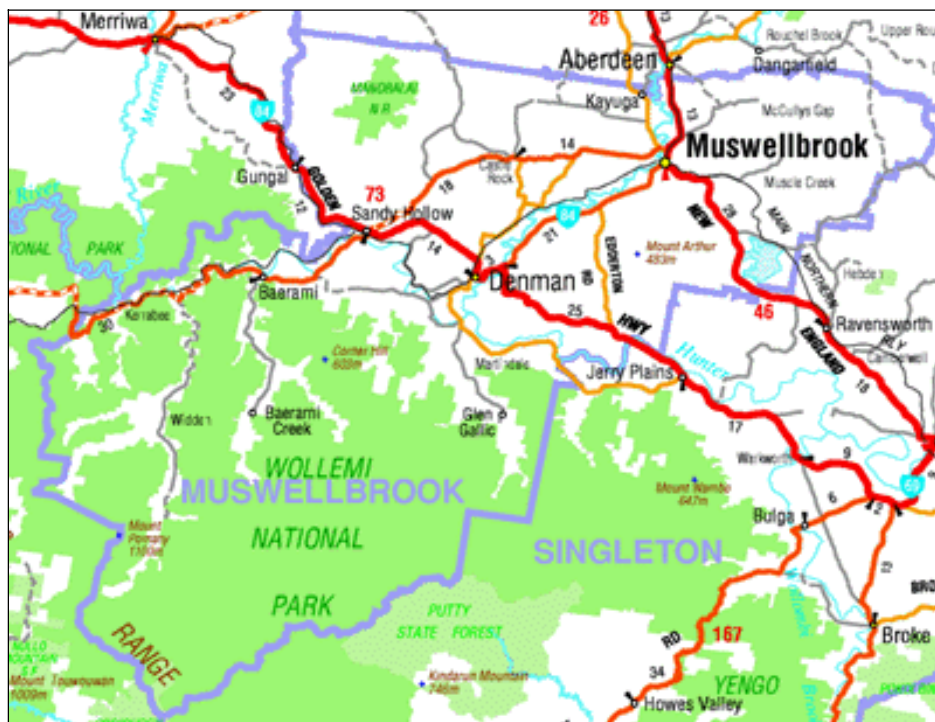


**Figure 3.1: Local Government Boundaries of Muswellbrook**

Source: NSW Department of Local Government retrieved from [http://www.dlg.nsw.gov.au/DLG/DLGHome/dlg\\_Regions.asp?regiontype=2&slacode=5650&region=HT](http://www.dlg.nsw.gov.au/DLG/DLGHome/dlg_Regions.asp?regiontype=2&slacode=5650&region=HT)

The main residential and commercial centre of the Shire is the Muswellbrook Township. Denman and Sandy Hollow are the two other significant areas of settlement among a number of small outlying rural communities. Other localities<sup>3</sup> in the Muswellbrook Shire include those presented in Table 3.1.

**Table 3.1. Localities within the Shire of Muswellbrook**

|                |                    |                    |              |
|----------------|--------------------|--------------------|--------------|
| Alcheringa     | Antiene            | Arrowfield         | Baerami      |
| Baerami Creek  | Baerami South      | Bengalla           | Bureen       |
| Castle Rock    | Coxs Gap           | Dalswinton         | Dangar       |
| Dartmouth      | Denman             | Dunbars Creek      | Edderton     |
| Edinglassie    | Esdai              | Giants Creek       | Glen Gallic  |
| Grass Tree     | Hollydeen          | Horseshoe          | Horton Park  |
| Jerrys Plains  | Kayuga             | Kerrabee           | Koolbury     |
| Liddell        | Mangoola           | Manobalai          | Marketown    |
| Martindale     | McCullys Gap       | Mount Dangar       | Mount Rest   |
| Muscle Creek   | Muswellbrook North | Muswellbrook South | Myambat      |
| Oakleigh Stud  | Old Yarrowa        | Pickering          | Piercefield  |
| Richmond Grove | Rosemount          | Roxburgh           | Sandy Hollow |
| The Horseshoe  | Widden             | Widden Valley      | Wybong       |
| Yarrowa        |                    |                    |              |

### 3.2.2 Singleton Local Government Area

Singleton is a town and a Local Government Area (LGA) located in the centre of the Hunter Valley region, 200 kilometres north-west of Sydney and 80 kilometres inland from Newcastle. The Singleton LGA is 4893 square kilometres in size making it the largest local government area in the Hunter Councils Region.

The Singleton LGA is bounded by Upper Hunter Shire in the north, Dungog Shire and Maitland City in the east, Cessnock and Hawkesbury Cities in the south, the City of Lithgow in the south west and Muswellbrook Shire in the west.

<sup>3</sup> A locality is defined by the ABS as a population cluster of between 200 and 999 people.



**Figure 3.2. Local Government Boundaries of Singleton**

Source: NSW Department of Local Government retrieved from [http://www.dlg.nsw.gov.au/DLG/DLGHome/dlg\\_Regions.asp?regiontype=2&slacode=7000&region=HT](http://www.dlg.nsw.gov.au/DLG/DLGHome/dlg_Regions.asp?regiontype=2&slacode=7000&region=HT)

Major natural features of Singleton include Wollemi National Park, Yengo National Park, Lake St Clair and the Hunter River. Localities in the Shire of Singleton are presented in Table 3.2.

**Table 3.2. Localities within the Shire of Singleton**

|                    |                 |                    |                   |
|--------------------|-----------------|--------------------|-------------------|
| Appletree Clearing | Appletree Flat  | Archerfield Estate | Baxter Junction   |
| Belford            | Big Ridge       | Bowmans Creek      | Box Tree Clearing |
| Branxton           | Bridgman        | Broke              | Bulga             |
| Camberwell         | Carrowbrook     | Caswell            | Clydesdale        |
| Combo              | Comleroi        | Dalwood            | Darlington        |
| Dawsons Hill       | Dellhurst       | Dights Crossing    | Doyles Creek      |
| Dunolly            | Dural           | Dyrring            | Elderslie         |
| Falbrook           | Fern Gully      | Fern Hill          | Frodwich          |
| Garland Valley     | Glendon         | Glendon Brook      | Glennies Creek    |
| Glenridding        | Goorangoola     | Gouldsville        | Gowrie            |
| Greenland          | Gum Tree Hole   | Hambledon Hill     | Hebden            |
| Howes Valley       | Howick          | Huntermview        | Ingar             |
| Jerrys Plains      | King Junction   | Kings Cross        | Lambs Creek       |
| Lambs Valley       | Leconfield      | Lemington          | Liddell           |
| Loders Creek       | Long Point      | Lower Belford      | Lucernia          |
| Maison Dieu        | Mcdougalls Hill | Middle Falbrook    | Mibrodale         |
| Mlnimbah           | Mlrannie        | Mitchells Flat     | Mount Olive       |
| Mount Pleasant     | Mount Royal     | Mount Thorley      | Nundah            |
| Obanvale           | Owendale        | Paynes Crossing    | Pokolbin          |

|               |                   |                         |                 |
|---------------|-------------------|-------------------------|-----------------|
| Putty         | Radfordslea       | Raspberry Clear         | Ravesworth      |
| Redbournberry | Redmanvale        | Reedy Creek             | Rixs Creek      |
| Rothbury      | Roughit           | Scotts Flat             | Sedgefield      |
| Singleton     | Singleton Heights | Singleton Military Camp | Singleton South |
| St Clair      | Stanhope          | Three Ways              | Wambo           |
| Wambo South   | Warkworth         | Wattle Ponds            | Westbrook       |
| Whittingham   | Wollemi           | Wylies                  |                 |

N.B. The suburbs of Jerrys Plains and Liddell are across both the shires of Muswellbrook and Singleton.

### 3.2.3 Upper Hunter Local Government Area

The town of Scone is located approximately 23 kilometres north of Muswellbrook, 13 kilometres north of Aberdeen, and 280 kilometres north of Sydney. The Scone locality covers an area of 4027 square kilometres and has a population of approximately 9,700 people spread over the two major urban centres of Scone and Aberdeen.

In 2004, the Scone Shire Council was integrated with the former Murrurundi and Merriwa Shire Councils to form the Upper Hunter Shire Council. Upper Hunter Shire now spans 8,060 square kilometres with a population of almost 14,000 and is bounded by Liverpool Plains Shire and the Tamworth Regional Council area in the north, Gloucester and Dungog Shires in the east, the Singleton Council area and Muswellbrook Shire in the south and the Mid-Western Regional Council area in the west.

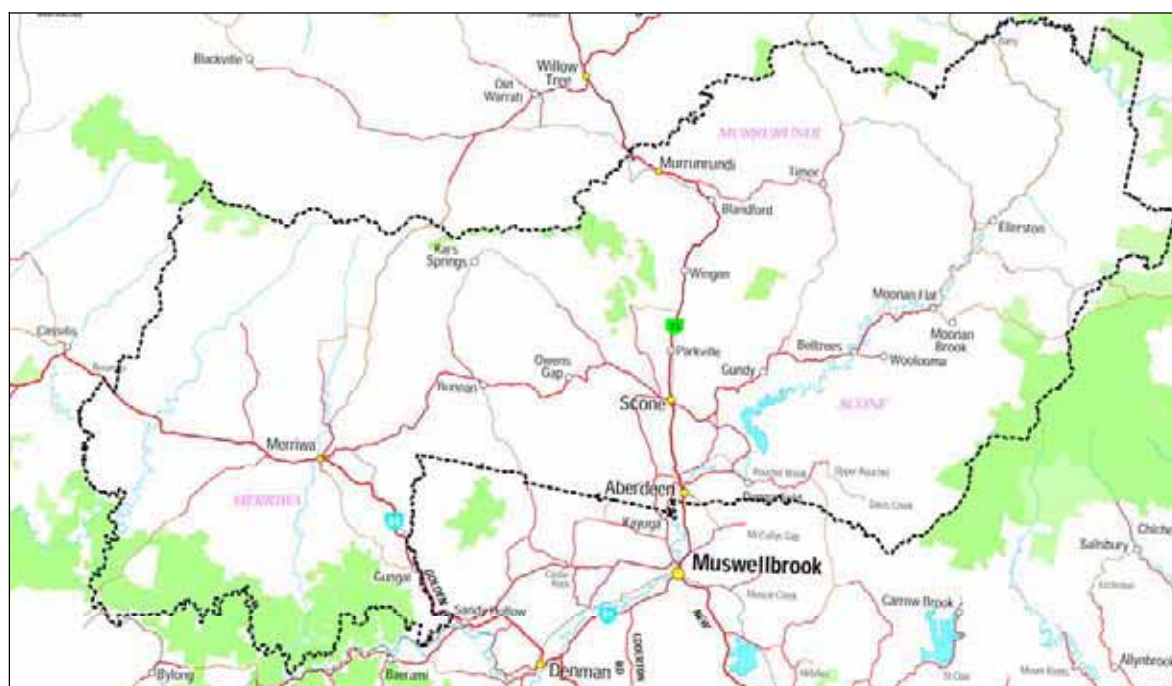


**Figure 3.3. New Upper Hunter Shire LGA Boundary**

Source: Department of Lands retrieved from

[http://www.dlg.nsw.gov.au/DLG/DLGHome/documents/CommissionsTribunals/BC\\_UHS\\_Map.pdf](http://www.dlg.nsw.gov.au/DLG/DLGHome/documents/CommissionsTribunals/BC_UHS_Map.pdf)

The former Scone Shire was bounded by the Shires of Nundle, Murrurundi and Merriwa to the north and west, Gloucester and Dungog to the east, and Muswellbrook and Singleton to the south. The former Scone Shire is a sparsely settled rural area (with the exception of Scone and Aberdeen townships) with modest levels of industrial activity. Localities in the Upper Hunter Shire are presented in Table 3.3.

**Table 3.3. Localities within the Upper Hunter Shire**

|                 |               |                 |                |
|-----------------|---------------|-----------------|----------------|
| Aberdeen        | Belltrees     | Blairmore       | Blandford      |
| Bow             | Brawboy       | Brushy Hill     | Bunnan         |
| Cassilis        | Cliftlands    | Crawney         | Cuan           |
| Dangarfield     | Dartbrook     | Dartbrook Upper | Dry Creek      |
| Ellerston       | Glenbawn      | Glenbawn Dam    | Glenrock       |
| Green Creek     | Gunndibri     | Gundy           | Hunter Springs |
| Kars Springs    | Kingdom Ponds | Lake Glenbawn   | Merriwa        |
| Middlebrook     | Moobi         | Moonan Brook    | Moonan Flat    |
| Murrurundi      | Murulla       | Murulla North   | Niangala       |
| Omadale         | Omadale Brook | Owens Gap       | Pages Creek    |
| Pages River     | Parkville     | Red Bank        | Ridgeland      |
| Rossgole        | Rouchel       | Rouchel Brook   | Sandy Creek    |
| Satur           | Scone         | Scotts Creek    | Segenhoe       |
| Sparks Creek    | St Aubins     | Stewarts Brook  | Stirling Vale  |
| Thompsons Creek | Thornthwaite  | Timor           | Tinagroo       |
| Togar           | Tomalla       | Tooloogan       | Turanville     |
| Turill          | Upper Rouchel | Waverley        | Waverly        |
| Wingen          | Woolooma      | Yarramoo        |                |

### 3.3 Political Boundaries

#### 3.3.1 State Electorates

The Muswellbrook LGA and the townships of Singleton and Scone lie within the Upper Hunter State Electorate which is 30,287 kilometres square and comprises the local governments of: Dungog, Gloucester, Muswellbrook and Upper Hunter and parts of Cessnock, Great Lakes, Liverpool Plains, Mid-Western Regional and Singleton.

The Member for the Upper Hunter State Electoral district is George Souris of the National Party who has held the seat since 1988. Figure 3.4 outlines the electorate boundaries.



**Figure 3.4. Upper Hunter State Electoral District.**

Source: [http://www.elections.nsw.gov.au/\\_data/assets/pdf\\_file/33414/Upper\\_Hunter.pdf](http://www.elections.nsw.gov.au/_data/assets/pdf_file/33414/Upper_Hunter.pdf)

### 3.3.2 Federal Electorates

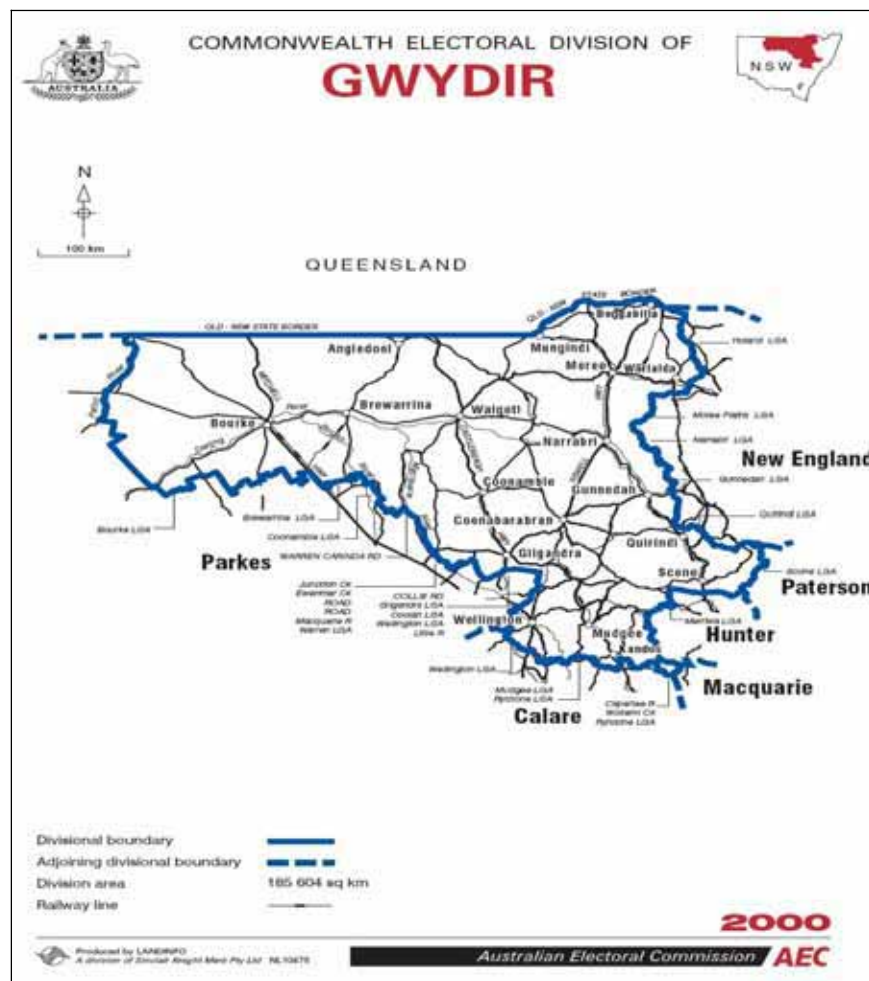
Both the Shires of Muswellbrook and Singleton are located in the Federal electorate of Hunter which is 10,593 square kilometres in size and is also comprised of the main towns of Cessnock, Denman, Branxton, Maitland, and Kurri Kurri.

The Hunter has been represented by Joel Fitzgibbon of the Australian Labor Party since 1996. The electorate's economic base is diverse and comprises agriculture and heavy industry, such as coal mining, aluminium smelting and electricity generation at Liddell and Bayswater Power stations; as well as vineyards and beef cattle grazing areas.

[illegible]

<http://www.abc.net.au/elections/federal/2004/guide/maps/hunter.pdf>

Scone is currently located within the federal electoral division of Gwydir which covers an area of approximately 185,604 square kilometres. The member for Gwydir is John Anderson of the National Party who has held the seat since 1989. In June 2006 the New South Wales redistribution commissioners proposed that the Division of Gwydir be abolished and merged with The Division of Parkes. As a result of the electoral redistribution (September 2006) Gwydir was abolished and will cease to exist following the next general election, expected to be held in late 2007.

**Figure 3.6. Gwydir Federal Electorate Boundaries**

Source: ABC News Online: Retrieved from  
<http://www.abc.net.au/elections/federal/2004/guide/maps/gwydir.pdf>

### 3.4 Land Uses

The Hunter Valley contains a diverse range of land uses. These include residential areas (large suburban areas, towns and villages), electricity generation, water supply catchment areas, agricultural land, state recreational areas and industry. The area also includes major infrastructure including gas pipelines, power lines, highways, railway lines, roads and bridges which service NSW and other states.

Land use in the Muswellbrook area is predominantly rural, with intensive agricultural production on the alluvial floodplains. Muswellbrook has many rural industries including viticulture, dairying, olive growing, horse breeding and wine making industries. Extensive coal deposits under or near the alluvial floodplains means that major coal mining activities are undertaken here.

The Hunter Valley Research Foundation reported in their 2005-2006 Yearbook that recoverable coal reserves in NSW at that time amounted to around 9,500 million tonnes, with Hunter reserves (including both the Hunter and Newcastle Coalfields)

accounting for approximately 63 % (6,011 million tonnes) of the State total (Hunter Valley Research Foundation, 2005).

Figure 3.7 provides an illustration of the extent of coal mining developments and exploration activities in the Hunter Valley.

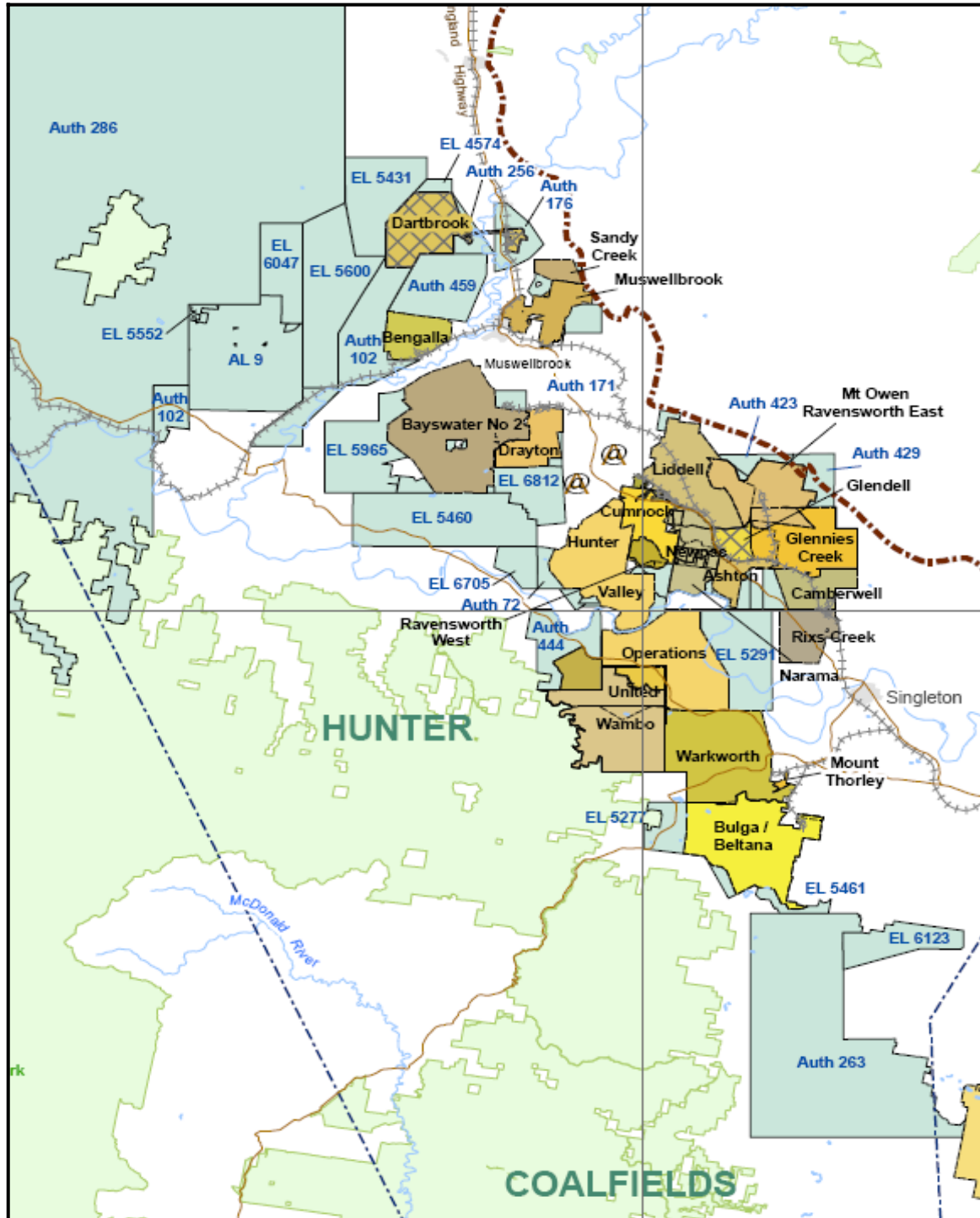


**Figure 3.7. Hunter Coal Field**

Source: NSW Department of Primary Industries, 2007

The proximity of good quality coal has ensured that the power generation industry is strong in the Hunter Valley, with Liddell and Bayswater coal-fired power stations generating 40% electricity for New South Wales (Macquarie Generation website at <http://www.macgen.com.au/>).

In addition to coal, the Hunter Valley also contains a range of other land uses, as shown in Table 3.4, including the significant conservation zones of the Wollemi and Goulburn River National Parks and several other nature reserves.

**Table 3.4. Area and Percent of Land Use Categories in Muswellbrook Shire**

| Use                                                                        | Area (Hectares) | % of Total Shire |
|----------------------------------------------------------------------------|-----------------|------------------|
| National Parks                                                             | 145, 550        | 43               |
| Nature Reserves                                                            | 3, 500          | 1                |
| Power Stations                                                             | 13, 000         | 3.7              |
| Coal Mine Leases (including open cut, underground and project mine leases) | 16, 517         | 4.8              |
| Prime Agricultural Land                                                    | 20, 690         | 6.1              |
| Vacant and Grazing                                                         | 140, 333        | 41.1             |
| Urban Areas (approx)                                                       | 950             | 0.3              |
| Total Shire                                                                | 340, 540        | 100              |

Source: Muswellbrook Shire Council, 2003

Within the Valley, the town of Singleton is described as a cosmopolitan commercial and urban centre. Land use in the Singleton LGA is predominantly rural with a proportion of land also used for industry, the Lone Pine Army Barracks, National Parks and State Forests.

Singleton is considered one of the wealthiest town's per capita in Australia due to the 18 coal mines that operate in the area. Singleton has a strong industrial sector based on coal mining and power generation, but is also supported by dairy and beef farming, horse breeding, wine production and tourism.

Similarly, Scone is also an agricultural area and is particularly noted for horse training and breeding. A variety of industries co-exist in the area which boasts a diverse economy comprised of coal mining, dairy, beef, pigs, sheep, cropping in addition to specialist equine breeders.

## 3.5 Local History

### 3.5.1 Aboriginal History

The Shire of Muswellbrook has a significant Aboriginal history. The Wanaruah ("people of the hills and plains") are the traditional inhabitants of the Hunter Valley area, occupying the area for at least 30,000 years. The territory of the Wanaruah Aboriginal people extended north to the Liverpool Range, south to Broke, and east to the Barrington Range and west to the Merriwa Plateau.

Aboriginal history and the archaeological features of the area are discussed at the Aboriginal Archaeology Assessment accompanying the Environmental Assessment at Appendix 7 to the EA.

In recognition of the strong ties that Indigenous people have to the Muswellbrook and broader Hunter Valley region, as well as the spiritual, physical and cultural detriment to these peoples resulting from colonisation a series of community initiatives have been put in place. These initiatives have been summarised below.

Muswellbrook Council has an established Aboriginal Reconciliation Committee. The Committee consists of local Aboriginal Community representatives, representatives from Wanaruah Local Aboriginal Land Council, Hunter Valley Aboriginal Corporation, Aboriginal Health Liaison Officer, NSW Police Service, Ministers Fraternal<sup>4</sup> and elected Councillors and Council's Staff Liaison Officers.

In 2005 the Muswellbrook 'Hot Wheels' Shared Responsibility Agreement (SRA) was developed to assist young Indigenous people gain local jobs, and develop mechanical skills. The SRA was made by the local Indigenous community, the Commonwealth Government, the Hunter Valley Aboriginal Corporation, the Wanaruah Local Aboriginal Land Council, local Police Citizens Youth Club and Hunter Institute of TAFE. The Commonwealth Government has committed \$90,000 to fund a youth officer to assist in linking young people to mainstream employment services.

Features of the 'Hot Wheels' initiative include:

- Driver training to assist participants to gain driving licences
- Mechanical skills to fix and use second-hand vehicles
- The placement of youth support officers in Muswellbrook
- Linkages to private-sector job opportunities.
- The local TAFE offering career counselling and mechanical training
- Young participants committing to 'no alcohol, no drugs'
- Upon completion participants have the opportunities to become mentors

The Federal Department of Industry, Tourism and Resources (DITR) conducted a two day 'Working in Partnership' workshop in Muswellbrook in mid 2005 under its Indigenous Partnership Program. Program objectives focus on strengthening relationships between indigenous communities and the minerals industry to promote sustainable partnerships. Outcomes of the workshop include the development of an Aboriginal Liaison Committee which meets on a periodic basis and is made up of representatives of the indigenous community, mining companies and relevant government agencies to identify partnership opportunities and priority training and employment and other projects to access government funds. Mt Arthur Coal is a member of this Committee.

The Upper Hunter Aboriginal Cultural Heritage Trust, established in 2001 from funds provided by mining companies is an example of such partnerships. The Trust is managed by representatives from NSW Government Departments of Aboriginal Affairs, Planning and the Public Trustee. The Trust is supported by coal mines in the region, an Advisory Group of the Upper Hunter Wonnarua Council, Wanaruah Local Aboriginal Land Council, and the NSW Minerals Council and State government departments. Objectives of the Trust include: community capacity building and betterment; development of a Regional Aboriginal Heritage Study in the Upper Hunter Valley region as well as an Aboriginal cultural heritage management framework.

### 3.5.2 European History

In regard to European settlement, Muswellbrook was discovered by Chief Constable John Howe in 1819. It was officially gazetted as a township in 1833, and known at that time as 'Musclebrook'. The spelling of the town name has varied over the years and was officially changed to Muswellbrook in 1939.

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<sup>4</sup> A religious group.

Singleton gains its name from a member of the first European party to discover the area, Benjamin Singleton. European settlement of the area commenced in 1820 when John Howe led an expedition to the fertile valley of St Patrick's Plains, the original name for the area. Large and valuable land grants to notable citizens resulted in the area developing relative socioeconomic advantage and an aristocracy, reflected by numerous old mansions in the area.

Agricultural production characterised the economic base of the Singleton area for the first hundred years of settlement, until the discovery of vast coal resources transformed the area into the State's largest producer of coal.

Further details on the European history of the local area and the significance of its heritage are provided in the Historical Heritage Assessment at Appendix 8 to the EA.

### 3.5.3 Mining History

The mining of coal was first recorded in the area in the late nineteenth century at Kayuga, although large-scale coal mining didn't get under way until more recently. In proximity to the Mt Arthur Coal operation, there are four mines that operate in the Muswellbrook Shire, within a few kilometres of the township. These include Mt Arthur Coal, Bengalla Mining Company, Muswellbrook Coal and Anglo Coal Drayton. The nearby Anglo Coal Dartbrook Mine has ceased coal production and was placed under 'Care and Maintenance' due to geological difficulties in May 2006.

Rio Tinto Coal has obtained regulatory approval to establish a new mine at Mt Pleasant, adjoining the current Bengalla operation, which is yet to commence construction. Centennial Coal has also received approval for its Anvil Hill Project, an open cut mine, which will be located to the west of Muswellbrook with coal production anticipated to commence in 2009 (Centennial Coal sold the Anvil Hill project to Xstrata Coal in September 2007). In addition to the Mt Arthur Underground Project (the current project), there are a number of other mining projects that are yet to formally seek or receive approval namely: Castlerock, and Saddlers Creek. Both Bengalla (co-owned by Rio Tinto Coal and Wesfarmers) and Mt Arthur Coal's existing operation can be viewed from the town. As previously highlighted, numerous mines also operate within the Singleton LGA.

Within the Hunter Valley, community attitudes and expectations of the mining industry have changed over recent years. Operational activity is more closely monitored by the Muswellbrook community due to increased environmental awareness and focus on sustainability. As such there is a greater community requirement for information and the town now has seven industry related enquiry/complaints lines as listed in Table 3.5.

**Table 3.5. Muswellbrook Mine Enquiries/Complaints Lines**

|                   |                                                   |
|-------------------|---------------------------------------------------|
| Mt Arthur Coal    | 1800 882 044                                      |
| Bengalla          | 1800 656 892                                      |
| Dartbrook         | 1300 131 058                                      |
| Drayton           | 1800 814 195                                      |
| Liddell           | 6570 9939 (after hours) 65709923 (business hours) |
| Muswellbrook Coal | 1800 772 799                                      |
| Muswellbrook Coal | 1800 772 799 (Blasting information)               |

Source: Muswellbrook Shire Environment Guide 2006

## 3.6 Governance

### 3.6.1 Muswellbrook Shire Council

Muswellbrook Shire Council is a member of the Hunter Regional Organisation of Councils, which is a representative organization comprised of Mayors and Councillors from member councils. The Hunter Councils provides a platform for advocacy and service provision on behalf of local government in the Hunter. However, community opposition to the notion of a 'super council' has been documented in local media. Members of the Hunter Councils include:

- Cessnock
- Dungog
- Gloucester
- Great Lakes
- Greater Taree
- Lake Macquarie
- Maitland
- Newcastle
- Port Stephens
- Singleton
- Upper Hunter

The Muswellbrook Shire Council, as it is today, was formed in 1979 following an amalgamation of the Shire of Denman and the Municipality of Muswellbrook. At present the Muswellbrook Shire's Mayor is Cr John Colvin (Mayor) with Cr Trevor Elks in the position of Deputy Mayor.

The Muswellbrook Shire Council is responsible for local service provision within the Muswellbrook LGA, including: floodplain management, road construction and maintenance, car parking, traffic management and cycleway facilities; water and sewerage services; environment and heritage approvals and planning programs; environmental assessment programs; health and regulation programs; and waste management services.

A central focus of the Muswellbrook Strategic Plan (2005-2008) is directed towards supporting and sustaining a diversified and expanding economy. This may be achieved by increasing the skills level and employment opportunities for residents to reflect the changing demands of the local economy. It is hoped that relationships between business and industry communities will be strengthened through partnerships facilitated by the 'Making Muswellbrook' Shire Committee. The Shire is also promoting and developing as a short stay tourist destination which supports local tourist businesses and regional events.

Six key strategy areas have been outlined in the strategic plan. These include:

- 1) Industry and business development plans involving expansion and diversification of industry and complementary businesses. The Council aims to promote the area, build networks and gain greater assistance from business organisations and government. This involves liaison with Business Support and Network groups such as Chambers of Commerce and the Denman and Districts Development Association.
- 2) Community perception strategies that involve Council support of local events and beautification of the Shire through stakeholder and industry support group consultation and partnership.

- 3) Population, infrastructure and provision of services strategies focused on sustaining and increasing the region's population. This is dependent on enhancing community infrastructure, health facilities and educational provision, as well as attracting medical practitioners. The Council aims to better market benefits of living and working in the Shire in order to encourage relocation to the Shire
- 4) Employment and education strategies that have an immediate, short-term, long-term and ongoing focus. The Council's immediate plans involve assessing employment needs and labour shortages. Short-term plans focus on Council consultation and relationship with training organisations in order to develop industry specific skills within the Shire and attract new residents. Long-term plans on the other hand are intended to develop prevocational, and apprenticeship programs with training organisations. They also involve generating industry support for such programs and promoting industry job opportunities. Ongoing Council plans are focused on supporting Upper Hunter cooperative learning and sustainable business and industry development.
- 5) Project management strategies which centre on developing and distributing promotional materials for utilisation at country week, with the primary intention of attracting new residents to the Muswellbrook Shire to address skill shortages. These plans also include enhancing Council assistance with applications for project funding and grants.
- 6) Tourism and promotion strategies that involve support for existing and new regional events, tourism associations and tourist facilities. This includes signage and informational bay improvements. Council support has been expressed for the coal rail heritage centre, renewal of the railway station and Muswellbrook visitor information centre.

### **3.6.2 Singleton Council**

Singleton Council has produced Community Social plans for the period 2004/05 to 2009/10 which are the result of consultation with service providers, target groups and the general community. The plan outlines community and target group issues, as well as key aims and objectives to address these issues.

Strategic aims and objectives to address community issues include:

- 1) Transport - to improve access to public transport for residents by advocating for increased availability within the LGA, Hunter region and for connections from Sydney. As well as developing footpaths and cycleways to promote lower levels of car dependency.
- 2) Health - to ensure access to high quality health services and lobby for expanded services and improved access to health specialists. As well as promoting healthy lifestyles.
- 3) Further Education - to ensure that young adults and older people have greater access to local tertiary education and training by developing partnerships with Universities and TAFE and encouraging local business to take on trainees. Enhanced tertiary education opportunities are seen as a means of retaining young people in the area.

- 4) Access to Services - to ensure that the community is aware of local services by developing comprehensive community directories to assist local groups and organisations.
- 5) Housing - to ensure a diverse range of affordable housing options, such as crisis accommodation and old age housing, are available to meet the needs of all sections of the community by working in partnership with the Department of Housing and other community organisations.
- 6) Social and Environmental Impacts of Mining - to ensure that negative impacts of current and future mining are minimised through completion of comprehensive social and Environmental impact statements and consultation with mining authorities as well as development of adequate exit policies.
- 7) Environment - to increase environmental awareness of the community and ensure environmental sustainability through community group involvement, recycling and composting and tree preservation policies.
- 8) Community Consultation and Awareness - to ensure that the community is consulted and aware of issues affecting them through enhanced council protocol and involvement with steering committees.

### **3.6.3 Upper Hunter Shire Council**

The Upper Hunter Shire Council has produced a management plan for the period 2006 to 2009 which identifies strategies and objectives for key functions of the council. The Council is in the process of reviewing its Future Works Program and developing a Strategic Plan for the Upper Hunter Shire to coordinate with its annual Management Planning Process. Key aspects of the Management plans include:

- 1) Administration - to provide, improve and maintain road networks, drainage systems and traffic facilities, waste management and public places.
- 2) Community Services and Education - to minimise existing and future social problems and maximise community participation in decision making. This includes working with community groups to administer quality aged care and low income residential facilities at Merriwa and Murrurundi, and family services through the Upper Hunter Family Day Care Scheme.
- 3) Economic Affairs - to manage tourism and promotion as well as economic and business development within the shire. This involves developing Scone as a regional livestock selling centre, promoting industrial development at the Scone Regional airport and residential development at Aberdeen, Merriwa and Murrurundi.
- 4) Health - management of noxious plants, sewerage disposal and inspections of regulated premises and onsite waste disposal systems.
- 5) Housing and Community Amenities – to protect and enhance the natural environment whilst promoting compatible development. This includes undertaking a New Flood Study for the township of Aberdeen and implementing the Scone housing raising programs as the first phase of an efficient Floodplain Management Process.
- 6) Building and Construction - continuing to control development so that it is compatible with the area's natural environment and that new housing

complies to minimum standards of 3.5 star energy rating as a component of Energy Efficient Housing.

- 7) Transport and Communications - maintaining and improving the quality of the roads, ongoing community education by attracting sponsorship for Road Safety initiatives.
- 8) Water Supplies - commence construction of the Lake Glenbawn- Scone augmentation which consists of sourcing water from Lake Glenbawn and construction of a pump station and water treatment plant. Further develop the Private Irrigation District to utilize water supply pipeline from Lake Glenbawn to transport rural water quotas to the rural properties during off-peak demand periods, allowing the development of specialty cropping.

In July 2004 a community survey was conducted to inform the social /community plans for the newly formed Upper Hunter Shire Council. The central aims of the survey was to identify services or facilities that community members were most satisfied with and perceived as being most important. Important areas identified as needing improvement included: local roads, water and sewerage systems, recycling services, local employment, support for new business, environmental protection, opportunities for youth and management of development within the Shire. Roads, mines, LGA amalgamation and employment were anticipated as the most significant issues that the Shire would be likely to face in the near future.

The amalgamation of former councils within the Upper Hunter Shire has resulted in delays to inaugural elections, leaving the area without an integrated environmental plan or official stance on mining. The Local Environmental Plans from the former Merriwa, Murrurundi and Scone Councils are still applicable within their respective areas. A review of the plans to prepare a new Local Environmental Plan that covers the new Council area was yet to be completed at the time of preparing this report.

### **3.7 Socio-Economic Characteristics**

This section of the report provides a brief discussion of the socio-economic characteristics of the Muswellbrook LGA based on data available from the latest 2006 Census. As residential mining industry employees are likely to settle in the townships of Muswellbrook, Singleton and Scone, a comparative analysis of ABS data for these urban centres has also been included. A focus on the urban centres of Singleton and Scone is necessary, as analysis of the broader LGA's in which these towns are based is likely to mask patterns specific to these townships.

At the time of preparation the latest 2006 Census figures on the industry of employment; workforce occupation and employment status were not yet publicly available from the ABS, therefore 2001 Census data figures have been included for these socio-economic characteristics.

#### **3.7.1 Muswellbrook LGA**

##### **Population Numbers and Age Structure**

In 2006, the Muswellbrook LGA had an estimated resident population of 15,236 with 725 people or 4.8% identifying themselves as Indigenous. Around 1,842 people or 12.1% of the Muswellbrook LGA population in 2006 were born outside of Australia, compared to 31% of the NSW State population.

The total population of the Muswellbrook LGA increased by 480 people (3.3%) from 2001 to 2006. Figure 3.8 below demonstrates the total population of the Muswellbrook LGA from 1996 to 2006.

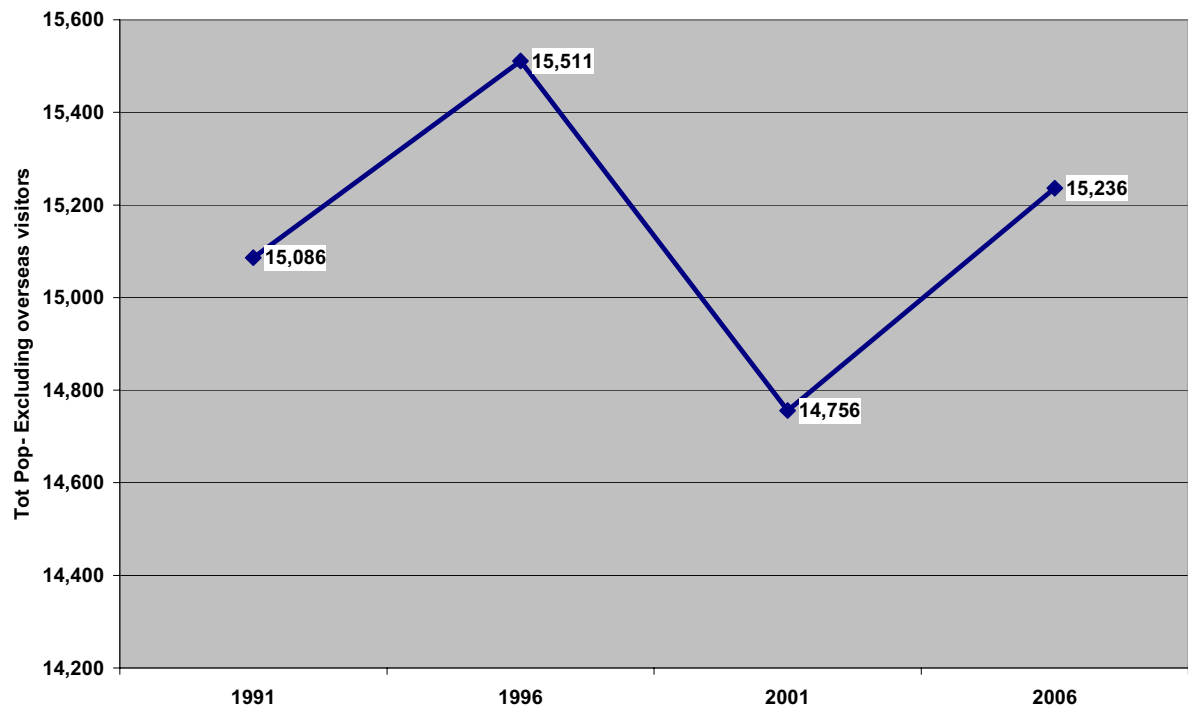


**Figure 3.8. Total Population of Muswellbrook LGA Excluding Overseas Visitors: time series 1996; 1999; 2001 and 2006**

The median age for the Muswellbrook LGA in 2006 was 34 years which is younger than the median age for both New South Wales (37 years) and the Hunter Statistical Division (39 years). Key features of the Muswellbrook LGA compared with the Hunter Statistical Division are provided in Table 3.6 below.

**Table 3.6. Selected Characteristics of the Muswellbrook LGA and Hunter Statistical Division**

| Selected Characteristics                   | Muswellbrook LGA | Hunter Statistical Division |
|--------------------------------------------|------------------|-----------------------------|
| Total persons excluding overseas visitors  | 15,236           | 589,239                     |
| Median age                                 | 34               | 39                          |
| Median individual income (\$/weekly)       | 453              | 394                         |
| Median household income (\$/weekly)        | 1,060            | 888                         |
| Median family income (\$/weekly)           | 1,213            | 1,090                       |
| Median rent (\$/weekly)                    | 150              | 180                         |
| Median housing loan repayment (\$/monthly) | 1,300            | 1,300                       |
| Average household size                     | 2.6              | 2.5                         |

The 2006 Census data indicates the Muswellbrook LGA also had a relatively young population compared to the broader Hunter Statistical Division. Table 3.7 and Figure

3.9 demonstrate the age structure of Muswellbrook LGA and the Hunter Statistical Division.

**Table 3.7. Age Structure of Population 2006: Muswellbrook LGA and Hunter Statistical Division**

| Age bracket  | Muswellbrook LGA |              | Hunter Statistical division |              |
|--------------|------------------|--------------|-----------------------------|--------------|
|              | No.              | %            | No.                         | %            |
| 0-4          | 1,255            | 8.2          | 36,356                      | 6.2          |
| 5-9          | 1,216            | 8.0          | 38,939                      | 6.6          |
| 10-14        | 1,225            | 8.0          | 41,265                      | 7.0          |
| 15-19        | 1,113            | 7.3          | 40,307                      | 6.8          |
| 20-24        | 945              | 6.2          | 36,796                      | 6.2          |
| 25-29        | 980              | 6.4          | 32,357                      | 5.5          |
| 30-34        | 1,093            | 7.2          | 36,676                      | 6.2          |
| 35-39        | 1,098            | 7.2          | 39,248                      | 6.7          |
| 40-44        | 1,194            | 7.8          | 41,262                      | 7.0          |
| 45-49        | 1,059            | 7.0          | 42,620                      | 7.2          |
| 50-54        | 954              | 6.3          | 39,520                      | 6.7          |
| 55-59        | 869              | 5.7          | 37,999                      | 6.4          |
| 60-64        | 692              | 4.5          | 31,949                      | 5.4          |
| 65-69        | 468              | 3.1          | 25,893                      | 4.4          |
| 70-74        | 403              | 2.6          | 21,908                      | 3.7          |
| 75-79        | 312              | 2.0          | 19,934                      | 3.4          |
| 80-84        | 186              | 1.2          | 14,925                      | 2.5          |
| 85+          | 174              | 1.1          | 11,286                      | 1.9          |
| <b>Total</b> | <b>15,236</b>    | <b>100.0</b> | <b>589,240</b>              | <b>100.0</b> |

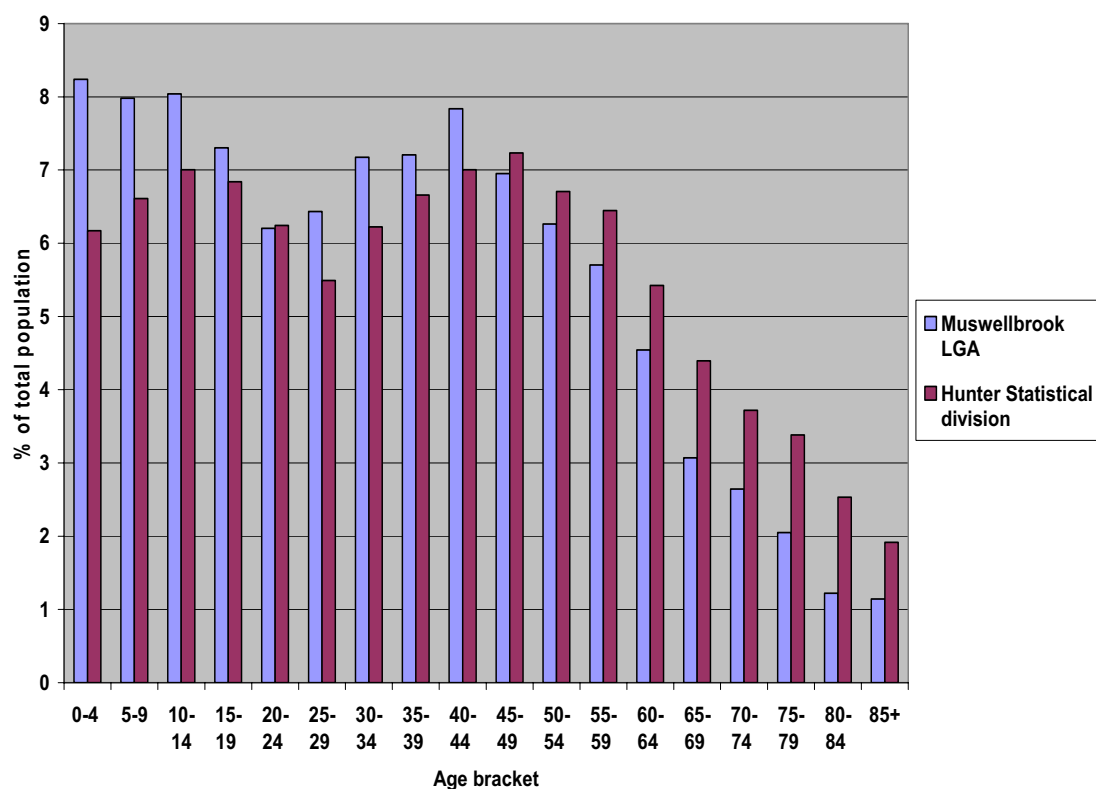


**Figure 3.9. Age Structure of Population 2006: Muswellbrook LGA and Hunter Statistical Division**

The age structure of the Muswellbrook LGA indicated large numbers of people in both young and more mature family age groups (0-19 years and 25-49 years), and a lower proportion of people of retiree age, than the broader Hunter Statistical Division. The 2006 Census data also indicates that 24.3% of the Muswellbrook LGA population was under the age of 15 years (classified as being of dependent age) compared to only 19.8% in the Hunter Statistical Division.

Despite Muswellbrook LGA demonstrating a relatively young population compared to the Hunter Statistical Division, the Census data indicates that the population was aging from 1996 to 2006. Figure 3.10 demonstrates these changes in the age structure of the Muswellbrook LGA population.

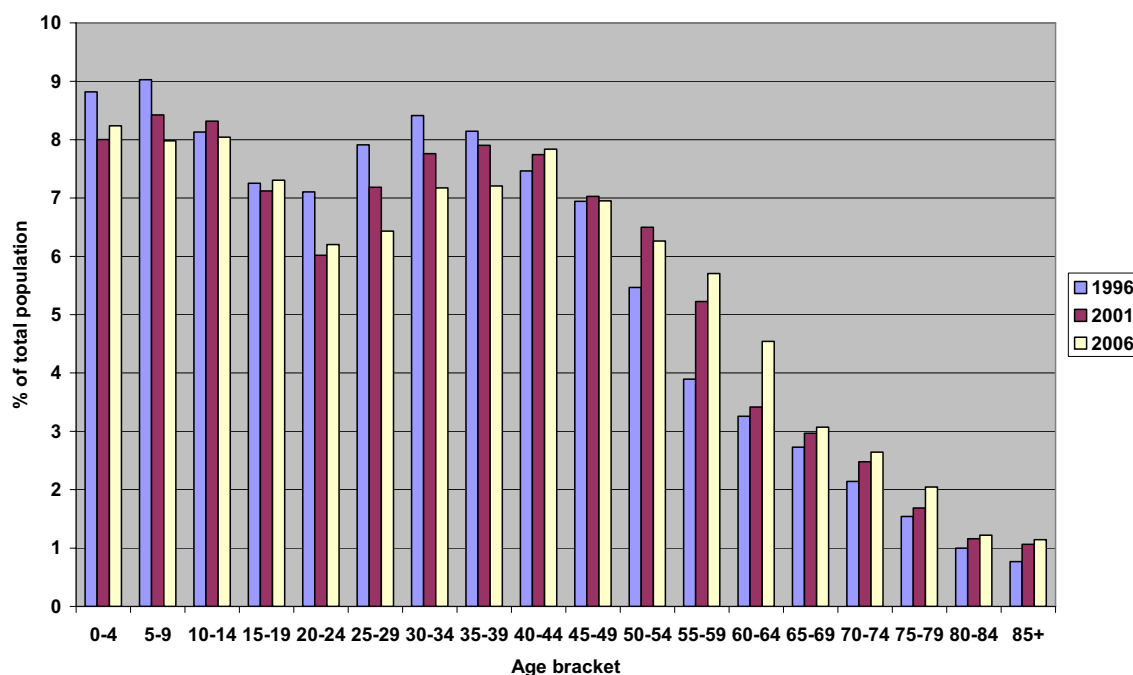


**Figure 3.10. Muswellbrook LGA Population Age Structure: 1996; 2001 and 2006**

According to Census data the Muswellbrook LGA experienced a decline of 200 people (-5.9%) aged between 25 and 39 years of age living in the area from 2001 to 2006. During this same period the number of people aged over 55 years living in Muswellbrook LGA increased by 448 (16.9%), indicating increased proportions of retirees. Figure 3.11 below demonstrates the percentage change for each age bracket from 2001 to 2006.

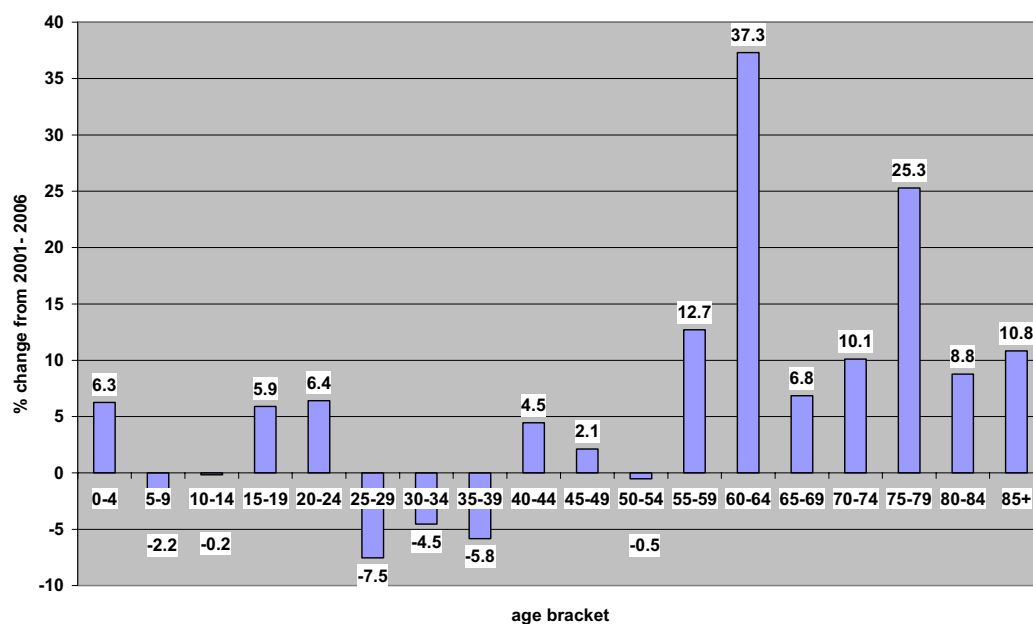


**Figure 3.11. Percentage Change in Muswellbrook LGA Population Age Structure (2001- 2006)**

The Muswellbrook LGA Indigenous population on the other hand has grown by 342 people or 89.3% from the 1996 to 2006 Census. The proportion of people identifying themselves as Indigenous in the Muswellbrook LGA increased from 3.4% of the total population in 2001 to 4.8% in 2006. Figure 3.12 displays the changes in the number and age structure of Indigenous people living in Muswellbrook LGA for this time period.

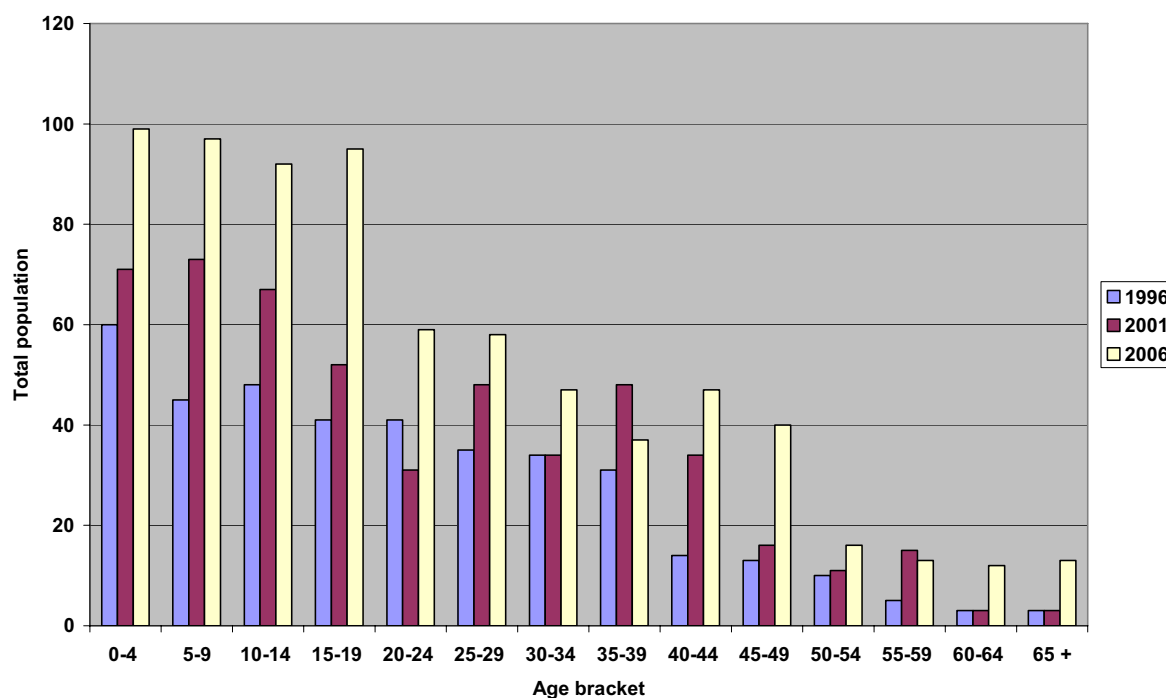


**Figure 3.12. Muswellbrook LGA Indigenous Population Age Structure: 1996; 2001 and 2006**

The most dramatic growth in the indigenous population from the 1996 to 2006 was seen in those aged over 65 years and aged 40-44 years. Figure 3.13 represents the percentage change in the Muswellbrook LGA Indigenous population age structure from 1996 to 2006.

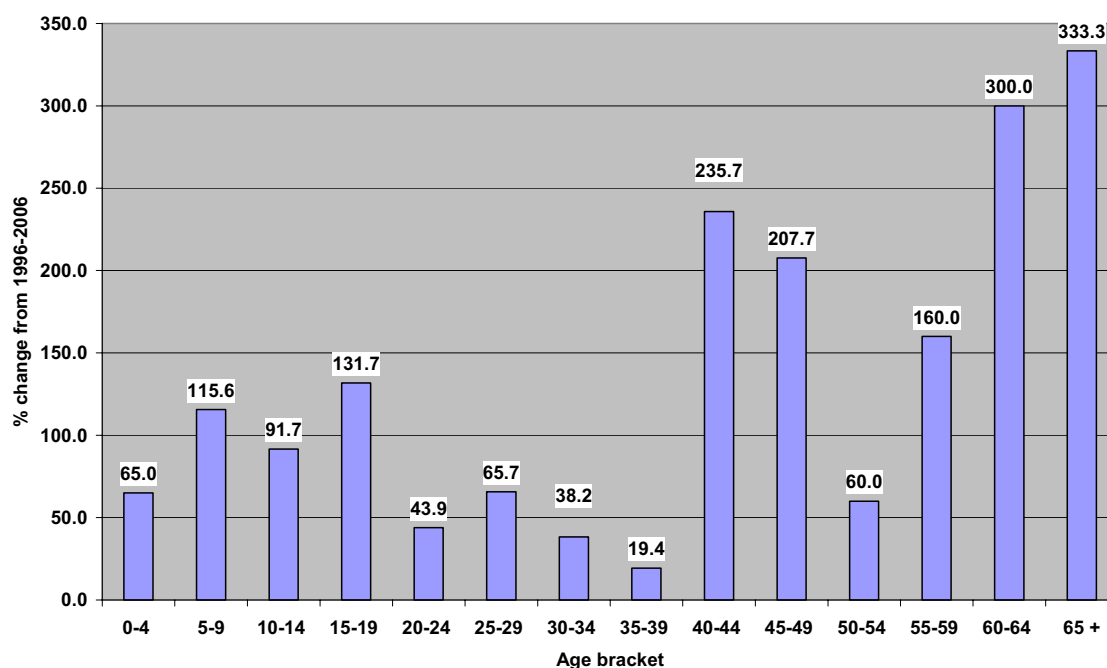


**Figure 3.13. Percentage change in Muswellbrook LGA Indigenous Population Age Structure (1996- 2006)**

### **Occupations, Industries of Employment and Educational Qualifications**

As noted above, at the time of reporting, the latest 2006 Census data for occupations was not publicly available, therefore 2001 Census data has been included in this section as a means for establishing a baseline. It should be recognised that occupations, industries of employment and educational qualification figures will have changed between Censuses and may not fully reflect the current situation.

According to the 2001 Census, most of the Muswellbrook LGA work force were employed in the industrial sectors of: Retail trade (863 people, 13.9%), Mining (789 people, 12.7%), and Agriculture, forestry and fishing (667 people, 10.7 %). Figure 3.14 demonstrates the percentage of industries of employment for the Muswellbrook LGA work force.

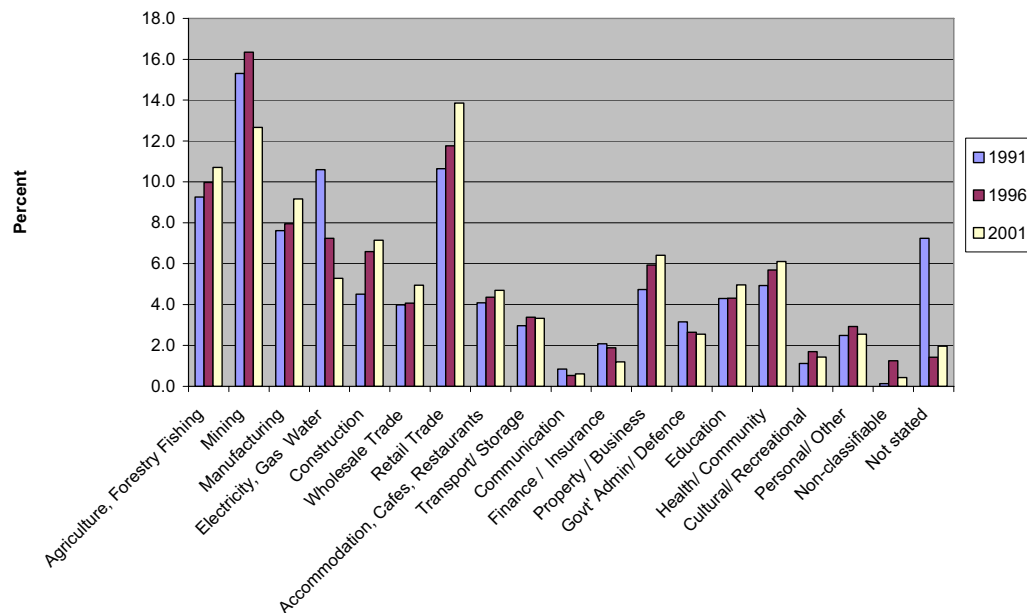


**Figure 3.14. Industry of Employment for Muswellbrook LGA Workforce (1991, 1996, 2001)**

The most significant changes in industry of employment for the Muswellbrook LGA workforce from the 1991 to 2001 Census were demonstrated in the areas of: Construction (+146 people, 48.8% growth), Property and business services (+81 people, 27.7% growth) Electricity, gas and water supply (-374 people, 53.2% decline) and Finance and Insurance services (-63 people, 45.6% decline). The mining industry demonstrated a decline of 226 people or 22.3% from 1991 to 2001. Figure 3.15 demonstrates the percentage of change for industry of employment of the Muswellbrook LGA workforce for this 10 year period.

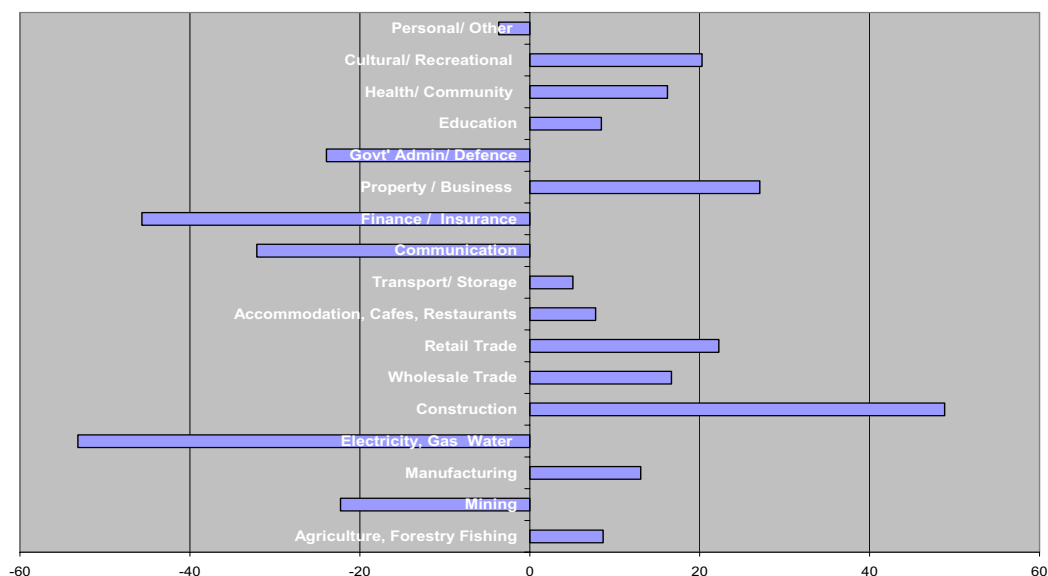


**Figure 3.15. Percentage Change in Industry of Employment of Muswellbrook LGA Workforce (1991 to 2001)**

According to the 2001 Census, the Muswellbrook LGA workforce was characterised by occupations of: Tradespersons (1045 people, 16.7%), Intermediate production and transport workers (842 people, 13.5%), and Labourers (793 people, 12.7%). Figure 3.16

shows changes in the Muswellbrook LGA workforce's occupation from the 1991 to 2001 Census.

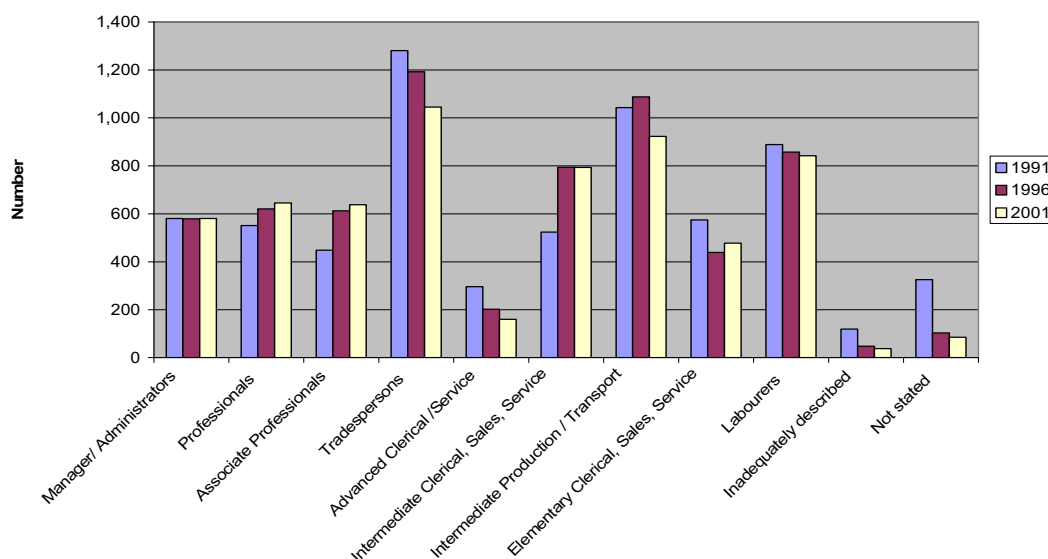


**Figure 3.16. Muswellbrook LGA Workforce Occupation (1991, 1996 and 2001)**

In 2001, Muswellbrook LGA demonstrated higher proportions of full time employment (62.8%) compared to the broader Hunter Statistical Division (54.7%). Figure 3.17 demonstrates the employment status of the Muswellbrook LGA population compared to the broader Hunter Councils region.

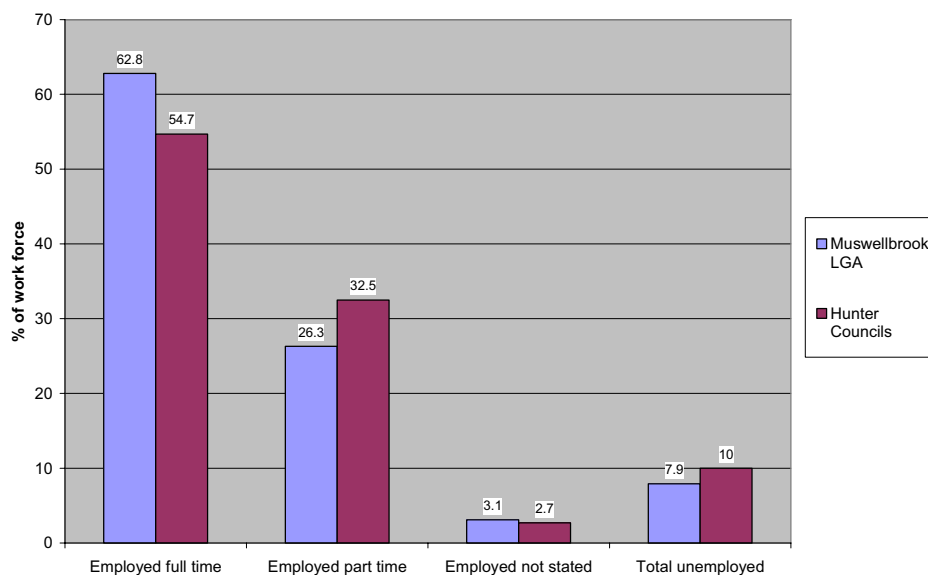


**Figure 3.17. Employment Status of Muswellbrook LGA and Hunter Councils Region Population (2001)**

According to the 2001 Census, the qualifications of the Muswellbrook LGA workforce was predominantly vocational, a trend which has been relatively stable over time. Figure 3.18 demonstrates the educational qualifications of the Muswellbrook LGA from 1991 to 2001.

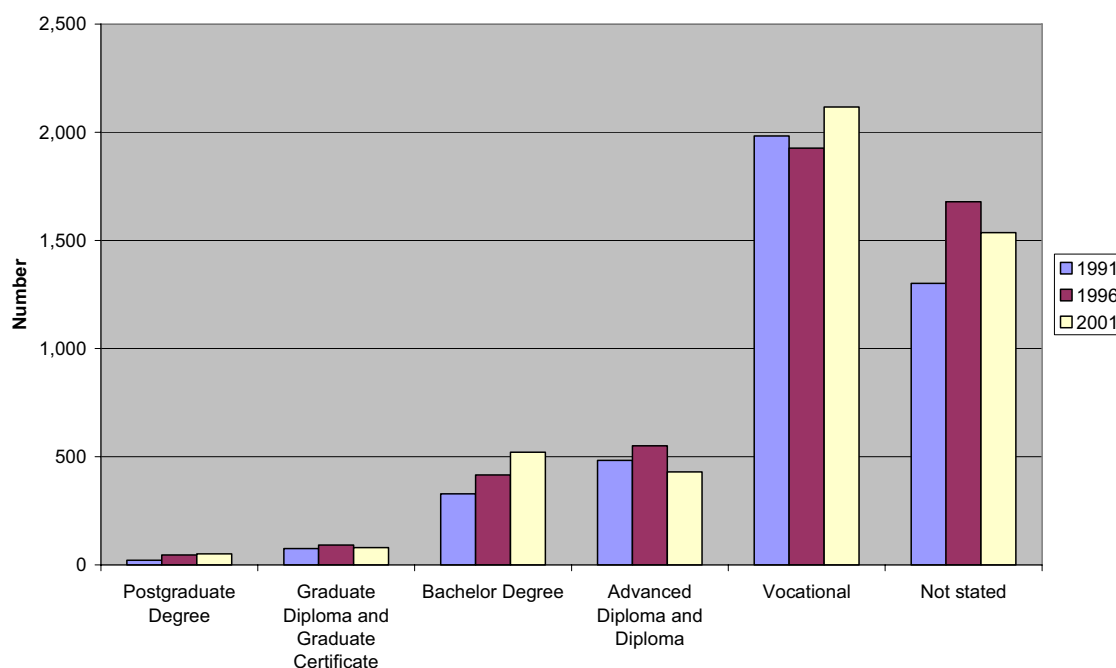


**Figure 3.18. Educational Qualifications of Muswellbrook LGA (1991, 1996 and 2001)**

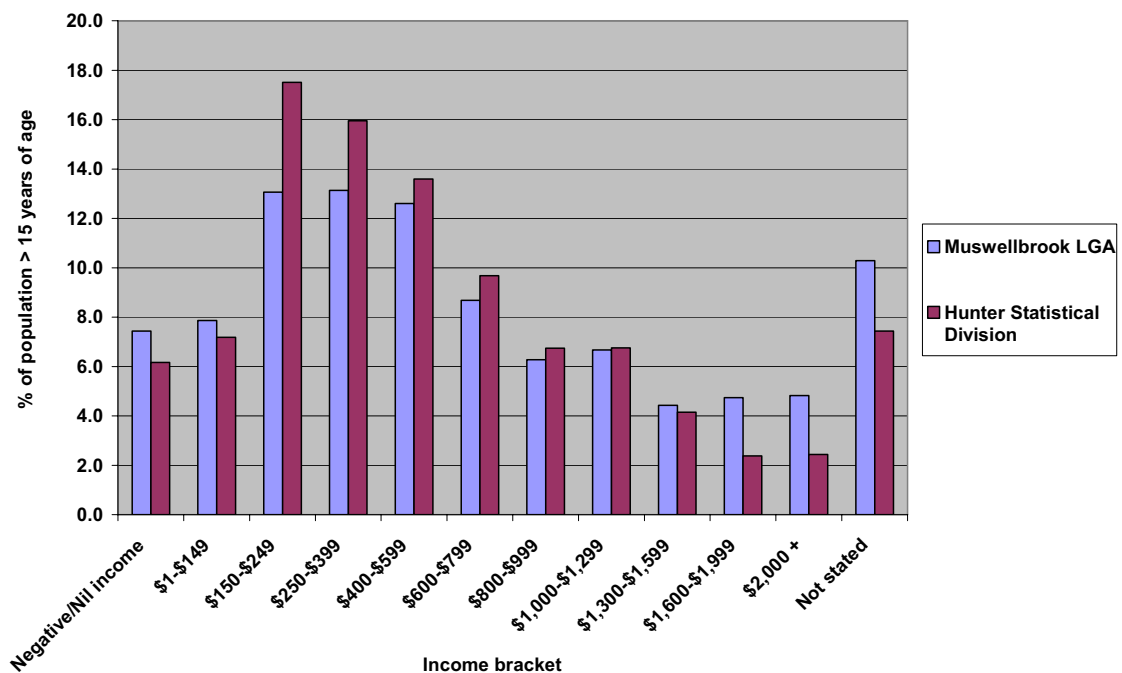
### Household Incomes

The 2006 Census data indicates that the Muswellbrook LGA population demonstrated higher household incomes than the broader Hunter Statistical Division. Approximately 21% of persons aged over 15 years in Muswellbrook LGA recorded individual weekly incomes above \$1000, compared to 16% in the broader Hunter Statistical Division. Relatively high incomes within the Muswellbrook LGA population may be attributed to the prevalence of mining industry in the area; however overall the distribution of weekly individual earnings demonstrated similar trends in both Muswellbrook LGA and the Hunter Statistical Division.

The highest proportion of Muswellbrook LGA individuals aged over 15 years (13.1%) reported weekly incomes of \$150-\$249, parallel to the broader Hunter Statistical Division demonstrating the highest proportion (17.5%) in the same bracket. Table 3.8 and Figure 3.19 compare the income of the Muswellbrook LGA population and the broader Hunter Statistical Division.

**Table 3.8. Weekly Individual Incomes of Person Aged > 15 years 2006: Muswellbrook LGA and Hunter Statistical Division**

| Weekly Individual income | Muswellbrook LGA |              | Hunter statistical division |              |
|--------------------------|------------------|--------------|-----------------------------|--------------|
|                          | No.              | %            | No.                         | %            |
| Negative/Nil income      | 858              | 7.4          | 29,133                      | 6.2          |
| \$1-\$149                | 908              | 7.9          | 33,961                      | 7.2          |
| \$150-\$249              | 1,507            | 13.1         | 82,777                      | 17.5         |
| \$250-\$399              | 1,516            | 13.1         | 75,412                      | 16.0         |
| \$400-\$599              | 1,455            | 12.6         | 64,258                      | 13.6         |
| \$600-\$799              | 1,002            | 8.7          | 45,736                      | 9.7          |
| \$800-\$999              | 725              | 6.3          | 31,877                      | 6.7          |
| \$1,000-\$1,299          | 770              | 6.7          | 31,932                      | 6.8          |
| \$1,300-\$1,599          | 511              | 4.4          | 19,640                      | 4.2          |
| \$1,600-\$1,999          | 547              | 4.7          | 11,257                      | 2.4          |
| \$2,000 +                | 557              | 4.8          | 11,529                      | 2.4          |
| Not stated               | 1,187            | 10.3         | 35,167                      | 7.4          |
| <b>Total</b>             | <b>11,543</b>    | <b>100.0</b> | <b>472,679</b>              | <b>100.0</b> |

**Figure 3.19 Weekly Individual Incomes of Person Aged > 15 years 2006: Muswellbrook LGA and Hunter Statistical Division**

## Family Sizes

The family structure of a community can provide an indication of settlement patterns, housing markets and demand for services and facilities. The 2006 Census data indicates that Muswellbrook LGA demonstrated relatively high proportions (35.0%) of families comprised of couples with dependent children (children under 15 years of age) compared to the broader Hunter Statistical Division (28.9%). The most prevalent family type in both the Muswellbrook LGA and the Hunter Statistical Division in 2006 was however couple families without children. Table 3.9 below details the family structures of the Muswellbrook LGA and Hunter Statistical Division populations over 2001 to 2006.

**Table 3.9 Family composition 2001-2006: Muswellbrook LGA and Hunter Statistical Division**

| Family Composition                  | 2001 Census      |              |                             |              | 2006 Census      |              |                             |              | Change from 2001- 2006 |            |                             |            |
|-------------------------------------|------------------|--------------|-----------------------------|--------------|------------------|--------------|-----------------------------|--------------|------------------------|------------|-----------------------------|------------|
|                                     | Muswellbrook LGA |              | Hunter Statistical Division |              | Muswellbrook LGA |              | Hunter Statistical Division |              | Muswellbrook LGA       |            | Hunter Statistical Division |            |
|                                     | No.              | %            | No.                         | %            | No.              | %            | No.                         | %            | No.                    | %          | No.                         | %          |
| Couple family with no children      | 1317             | 34.5         | 57756                       | 37.7         | 1,432            | 36.1         | 62,834                      | 39.2         | 115                    | 8.7        | 5,078                       | 8.8        |
| Couple family with children <15     | 1378             | 36.1         | 47376                       | 30.9         | 1,386            | 35.0         | 46,314                      | 28.9         | 8                      | 0.6        | -1,062                      | -2.2       |
| Couple family with children >15     | 460              | 12.1         | 20541                       | 13.4         | 452              | 11.4         | 21,637                      | 13.5         | -8                     | -1.7       | 1,096                       | 5.3        |
| One parent family with children <15 | 409              | 10.7         | 15255                       | 10.0         | 424              | 10.7         | 15,764                      | 9.8          | 15                     | 3.7        | 509                         | 3.3        |
| One parent family with children >15 | 183              | 4.8          | 10193                       | 6.6          | 229              | 5.8          | 11,729                      | 7.3          | 46                     | 25.1       | 1,536                       | 15.1       |
| Other family                        | 66               | 1.7          | 2175                        | 1.4          | 41               | 1.0          | 2,161                       | 1.3          | -25                    | -37.9      | -14                         | -0.6       |
| <b>Total</b>                        | <b>3813</b>      | <b>100.0</b> | <b>153296</b>               | <b>100.0</b> | <b>3,964</b>     | <b>100.0</b> | <b>160,439</b>              | <b>100.0</b> | <b>151</b>             | <b>4.0</b> | <b>7,143</b>                | <b>4.7</b> |

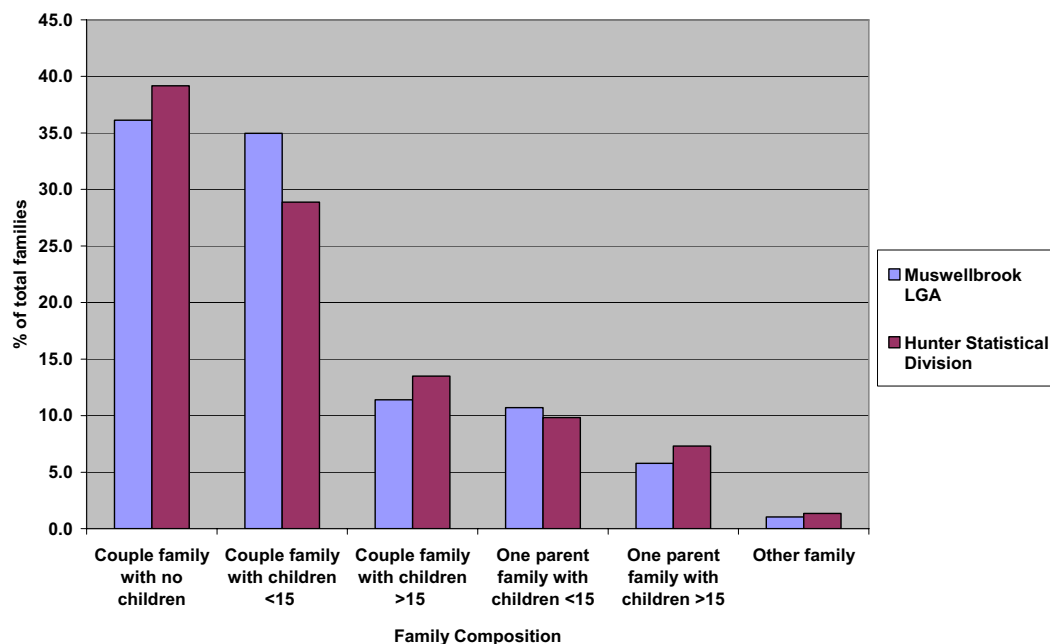


**Figure 3.20 Family Composition 2006: Muswellbrook LGA and Hunter Statistical Division**

Changes in family structure may give indication to changes in the residential role and function of a community. According to Census data the total number of families in the Muswellbrook LGA increased by 151 (4.0%) from 3,813 families in 2001 to 3,964 families in 2006. The largest increase in family type in the Muswellbrook LGA over this period was observed in one parent families with non-dependent children (older than 15 years) which increased by 25.1%. This trend was not as strong in the broader Hunter Statistical Division which experienced an increase of only 15.1% in one parent families with non-dependent children over this period. Figure 3.21 below details changes in family structure of the Muswellbrook LGA and Hunter Statistical Division from 2001 to 2006.

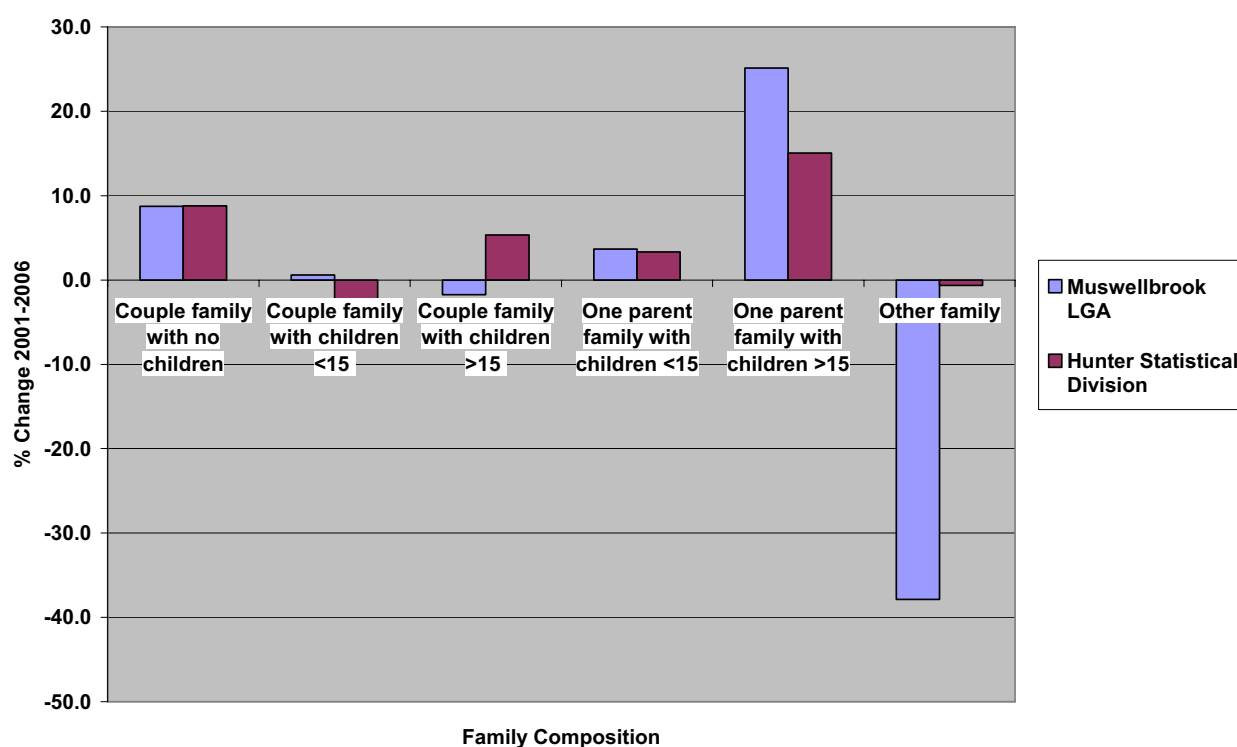


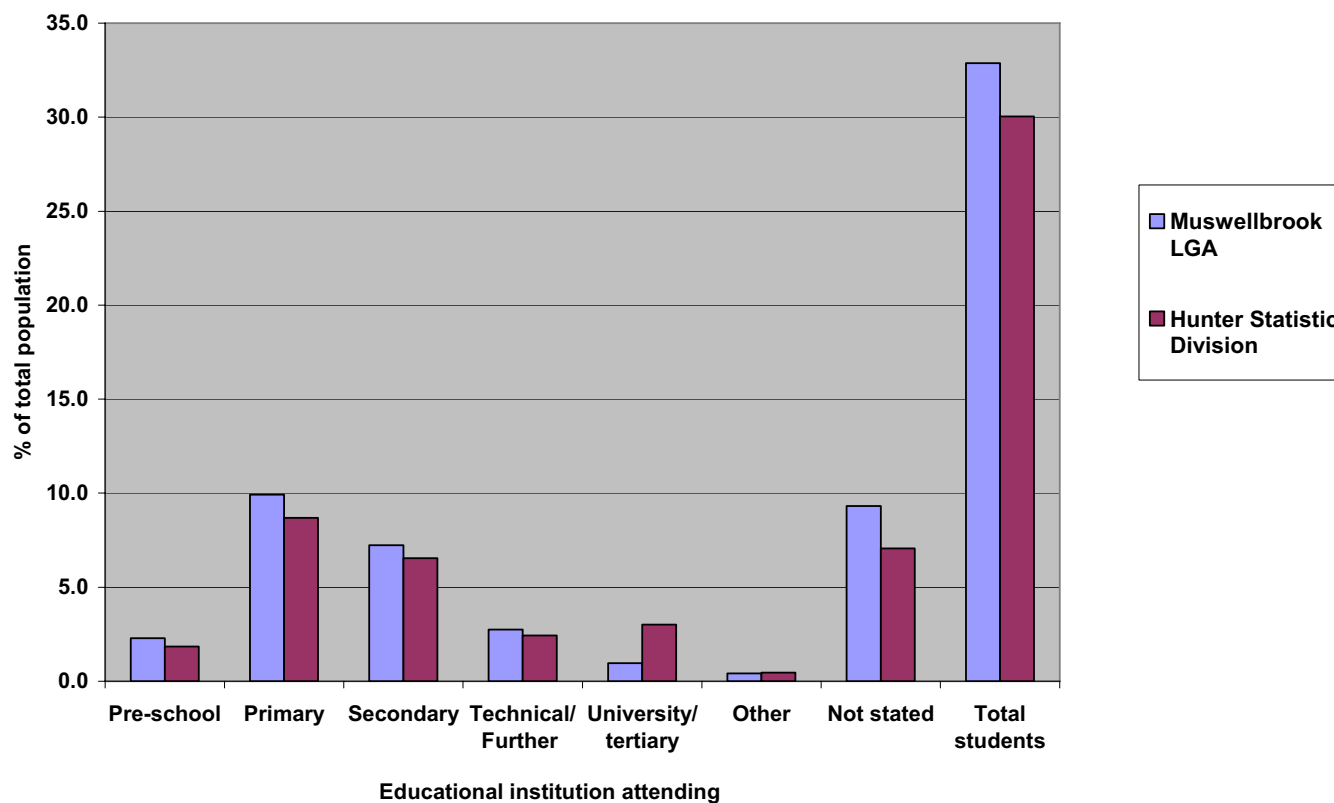
**Figure 3.21. Percentage Change in Family Composition 2001- 2006: Muswellbrook LGA and Hunter Statistical Division**

## Education

The types of educational institutions that community members attend can reflect several factors, such as age and family structure, proximity or access to tertiary education, which may in turn influence retention of young adults within the community. According to the 2006 Census the Muswellbrook LGA population demonstrated a relatively high proportion of people attending primary school (9.9%) and secondary school (7.2%) compared to the broader Hunter Statistical Division - 8.7% and 6.5% respectively; and a relatively low proportion attending university (1.0%) compared to the Hunter Statistical Division (3%). Table 3.10 and Figure 3.22 detail the educational institutions attended by the Muswellbrook LGA and Hunter Statistical Division populations in 2001.

**Table 3.10. Educational Institute Attending 2001- 2006: Muswellbrook LGA and Hunter Statistical Division**

| Education Institute attending | 2001 Census      |              |                      |              | 2006 Census      |              |                      |              | Change 2001- 2006 |            |                      |            |
|-------------------------------|------------------|--------------|----------------------|--------------|------------------|--------------|----------------------|--------------|-------------------|------------|----------------------|------------|
|                               | Muswellbrook LGA |              | Hunter Stat Division |              | Muswellbrook LGA |              | Hunter Stat Division |              | Muswellbrook LGA  |            | Hunter Stat Division |            |
|                               | No.              | %            | No.                  | %            | No.              | %            | No.                  | %            | No.               | %          | No.                  | %          |
| Pre-school                    | 235              | 1.6          | 9,299                | 1.7          | 349              | 2.3          | 10,852               | 1.8          | 114               | 48.5       | 1,553                | 16.7       |
| Primary                       | 1,717            | 11.6         | 54,195               | 9.7          | 1,511            | 9.9          | 51,164               | 8.7          | -206              | -12.0      | -3,031               | -5.6       |
| Secondary                     | 1,096            | 7.4          | 38,881               | 6.9          | 1,102            | 7.2          | 38,560               | 6.5          | 6                 | 0.5        | -321                 | -0.8       |
| Technical/ Further            | 444              | 3.0          | 16,866               | 3.0          | 419              | 2.8          | 14,360               | 2.4          | -25               | -5.6       | -2,506               | -14.9      |
| University/ tertiary          | 178              | 1.2          | 18,092               | 3.2          | 145              | 1.0          | 17,739               | 3.0          | -33               | -18.5      | -353                 | -2.0       |
| Other                         | 65               | 0.4          | 3,230                | 0.6          | 63               | 0.4          | 2,686                | 0.5          | -2                | -3.1       | -544                 | -16.8      |
| Not stated                    | 933              | 6.3          | 22,948               | 4.1          | 1,420            | 9.3          | 41,647               | 7.1          | 487               | 52.2       | 18,699               | 81.5       |
| <b>Total students</b>         | <b>4,668</b>     | <b>31.6</b>  | <b>163,511</b>       | <b>29.1</b>  | <b>5,009</b>     | <b>32.9</b>  | <b>177,008</b>       | <b>30.0</b>  | <b>341</b>        | <b>7.3</b> | <b>13,497</b>        | <b>8.3</b> |
| <b>Total population</b>       | <b>14756</b>     | <b>100.0</b> | <b>561522</b>        | <b>100.0</b> | <b>15,236</b>    | <b>100.0</b> | <b>589,240</b>       | <b>100.0</b> | <b>480</b>        | <b>3.3</b> | <b>27,718</b>        | <b>4.9</b> |

**Figure 3.22. Education Institution Attended 2006: Muswellbrook LGA and Hunter Statistical Division**

Changes in educational institutions attended by the population may reflect changes in other community level factors, such as age structure, availability of educational opportunities and cultural attitudes towards educational attainment. Figure 3.23 demonstrates the change in the number of people attending educational institutions in the Muswellbrook LGA.

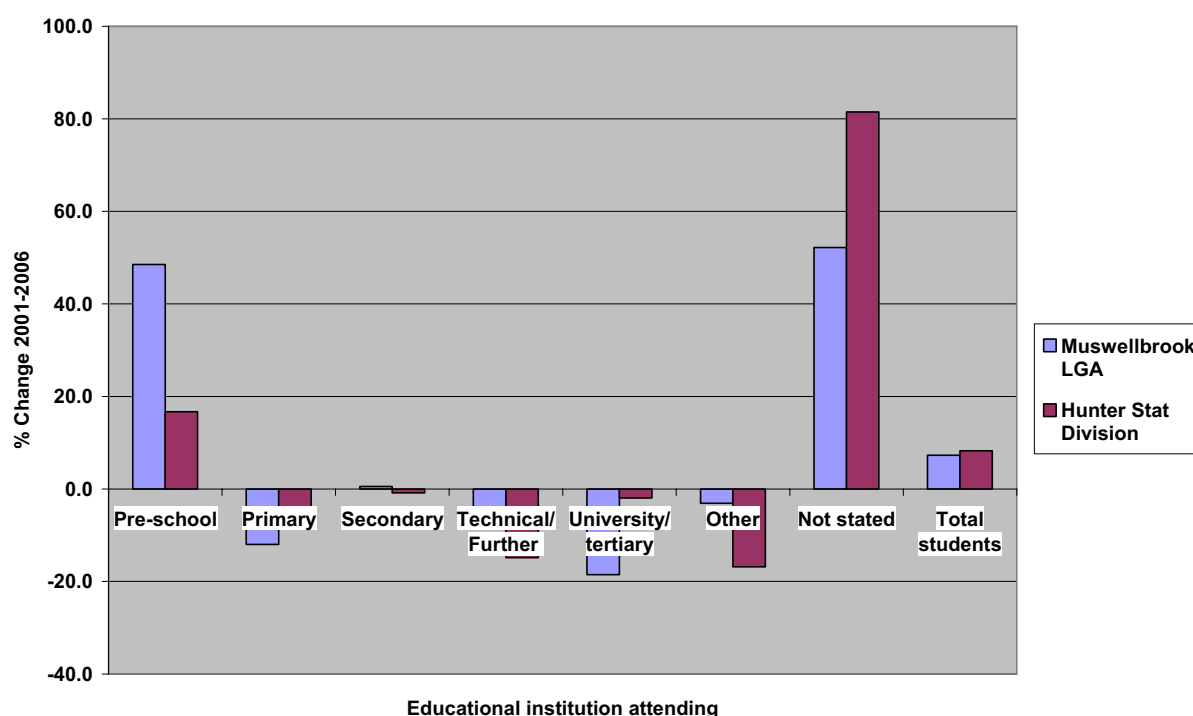


**Figure 3.23. Percent Change in Educational Institution Attended 2001-2006: Muswellbrook LGA and Hunter Statistical Division**

According to Census data the Muswellbrook LGA population has demonstrated an overall increase (7.3%) in the proportion of people attending educational institutions from 2001 to 2006; however declines were observed during this period in the proportion of the total population attending primary schools (206 people or 12%), technical or further education institutions (25 people, 5.6%) and university or tertiary institutions (33 people, 18.5%). However the high proportion of students recorded as attending an un-stated educational institution makes it difficult to assess true proportions across various institutions.

### Dwellings

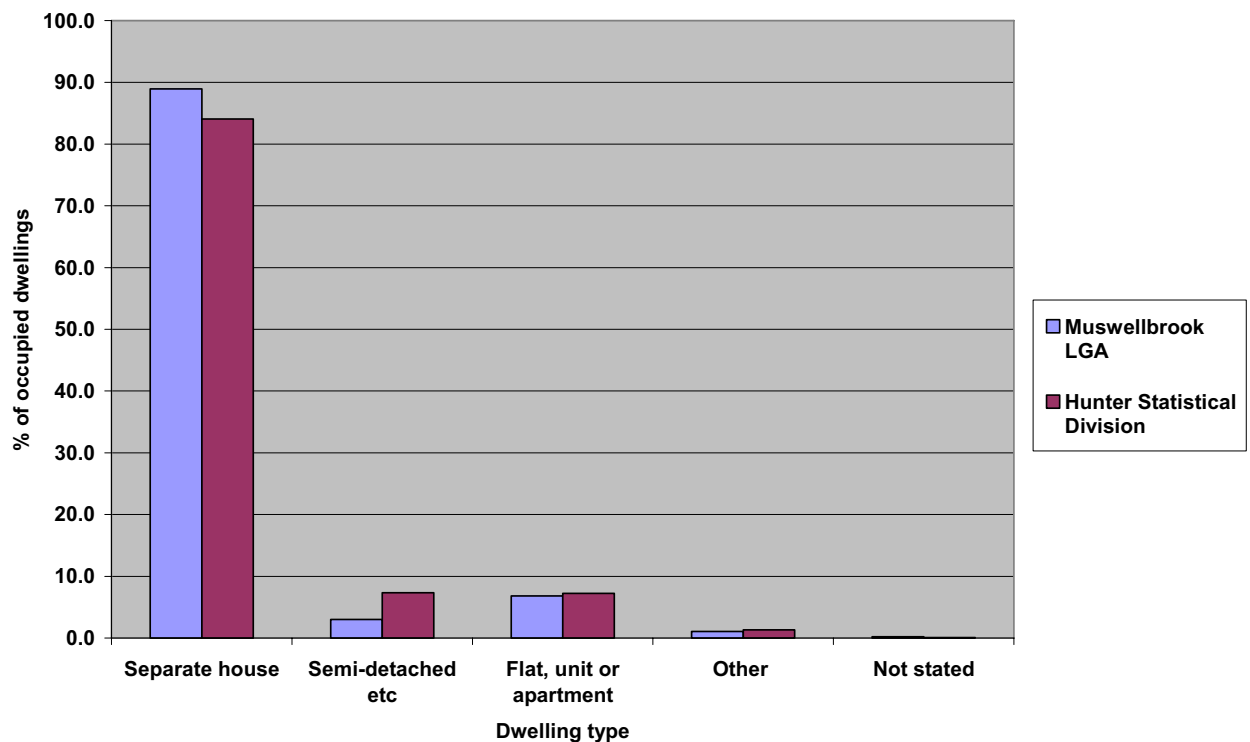
The types of dwelling in a community may give indication to the role and function that the area plays in the housing market. For instance families are more likely to be attracted to areas with greater concentrations of detached or separate dwellings.

The 2006 Census data indicates that the housing stock in both the Muswellbrook LGA and Hunter Statistical Division displayed similar patterns and was characterised by separate or detached dwellings; which is typical of low to medium density housing in localities outside of the metropolitan area. The Muswellbrook LGA demonstrated higher proportions of separate houses (87.1%) compared to the Hunter Statistical Division (83.3%); which may in part explain the younger population and higher proportion of families in Muswellbrook LGA. Table 3.11 and Figure 3.24 demonstrate the dwelling types in Muswellbrook and the Hunter Statistical Division.

The Muswellbrook LGA demonstrated higher occupancy rates (90.9% of total dwellings occupied) compared to the Hunter Statistical Division (89.1%). The amount of unoccupied dwellings increased over the period from 2001 to 2006 by 32 dwellings (6.0%) in Muswellbrook and 3,641 dwellings (15.0%) in the broader Hunter Statistical Division.

**Table 3.11. Dwelling Types 2001 - 2006: Muswellbrook LGA and Hunter Statistical Division**

| Dwelling type        | 2001             |      |                             |      | 2006             |      |                             |      | Change 2001-2006 |       |                             |       |
|----------------------|------------------|------|-----------------------------|------|------------------|------|-----------------------------|------|------------------|-------|-----------------------------|-------|
|                      | Muswellbrook LGA |      | Hunter Statistical Division |      | Muswellbrook LGA |      | Hunter Statistical Division |      | Muswellbrook LGA |       | Hunter Statistical Division |       |
|                      | No.              | %    | No.                         | %    | No.              | %    | No.                         | %    | No.              | %     | No.                         | %     |
| Total dwellings      | 5,930            |      | 241,620                     |      | 6,208            |      | 256,860                     |      | 278              | 4.7   | 15,240                      | 6.3   |
| Unoccupied dwellings | 533              | 9.0  | 24,310                      | 10.1 | 565              | 9.1  | 27,951                      | 10.9 | 32               | 6.0   | 3,641                       | 15.0  |
| Occupied dwellings:  | 5,397            | 91.0 | 217,310                     | 89.9 | 5,643            | 90.9 | 228,909                     | 89.1 | 246              | 4.6   | 11,599                      | 5.3   |
| Separate house       | 4,649            | 86.1 | 179,828                     | 82.8 | 4,914            | 87.1 | 190,591                     | 83.3 | 265              | 5.7   | 10,763                      | 6.0   |
| Semi-detached        | 278              | 5.2  | 16,060                      | 7.4  | 172              | 3.0  | 16,937                      | 7.4  | -106             | -38.1 | 877                         | 5.5   |
| Flat, unit, apartm't | 238              | 4.4  | 15,319                      | 7.0  | 419              | 7.4  | 17,598                      | 7.7  | 181              | 76.1  | 2,279                       | 14.9  |
| Other                | 118              | 2.2  | 4,478                       | 2.1  | 126              | 2.2  | 3,647                       | 1.6  | 8                | 6.8   | -831                        | -18.6 |
| Not stated           | 114              | 2.1  | 1,625                       | 0.7  | 12               | 0.2  | 136                         | 0.1  | -102             | -89.5 | -1,489                      | -91.6 |

**Figure 3.24. Dwelling Type 2006: Muswellbrook LGA and Hunter Statistical Division**

Overall the total amount of dwellings increased between the 2001 and 2006 Censuses in both the Muswellbrook LGA (278 dwellings, 4.7% growth) and Hunter Statistical Division (15,240 dwellings, 6.3% growth). The Muswellbrook LGA demonstrated a significant increase in the amount of flats, units and apartments (181 dwellings, 76% growth) compared to the Hunter Statistical Division (14.9%); which may reflect the general trend towards higher density housing, or changes in the residential function of the area (i.e. less of a family focus) (Figure 3.25).

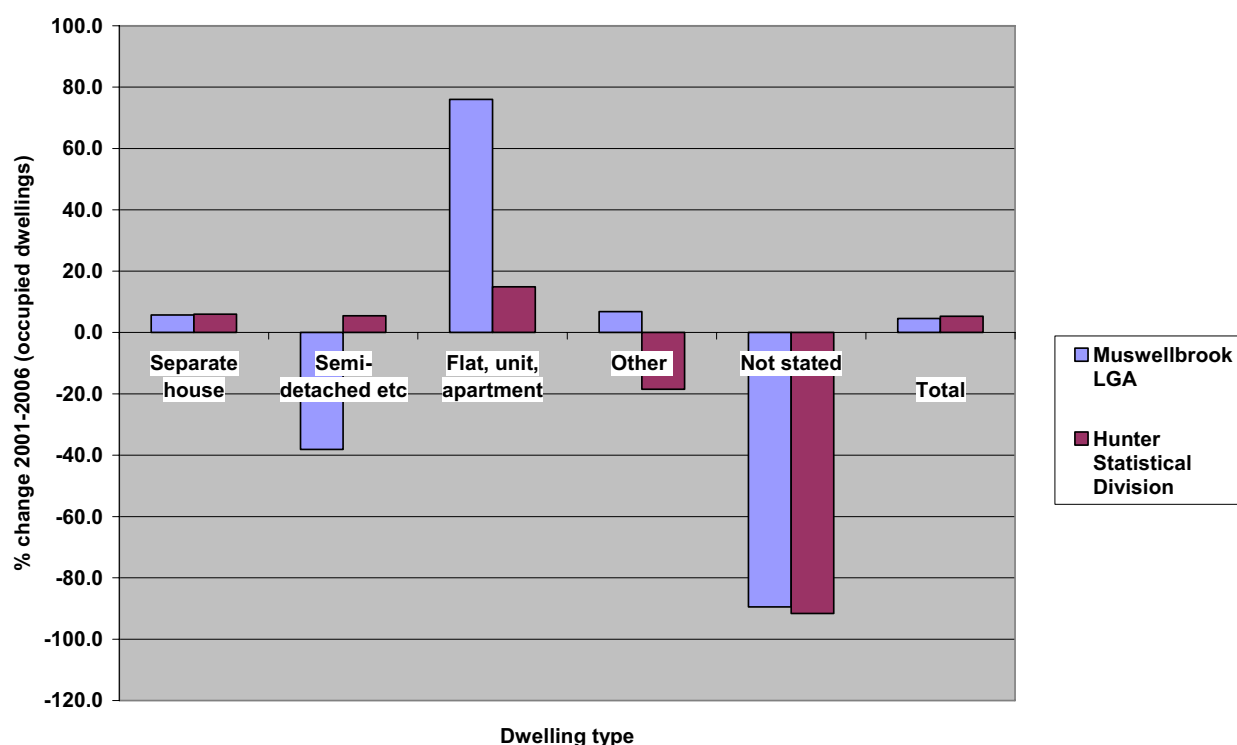


**Figure 3.25. Percentage Change in Dwelling Type 2001-2006: Muswellbrook LGA and Hunter Statistical Division**

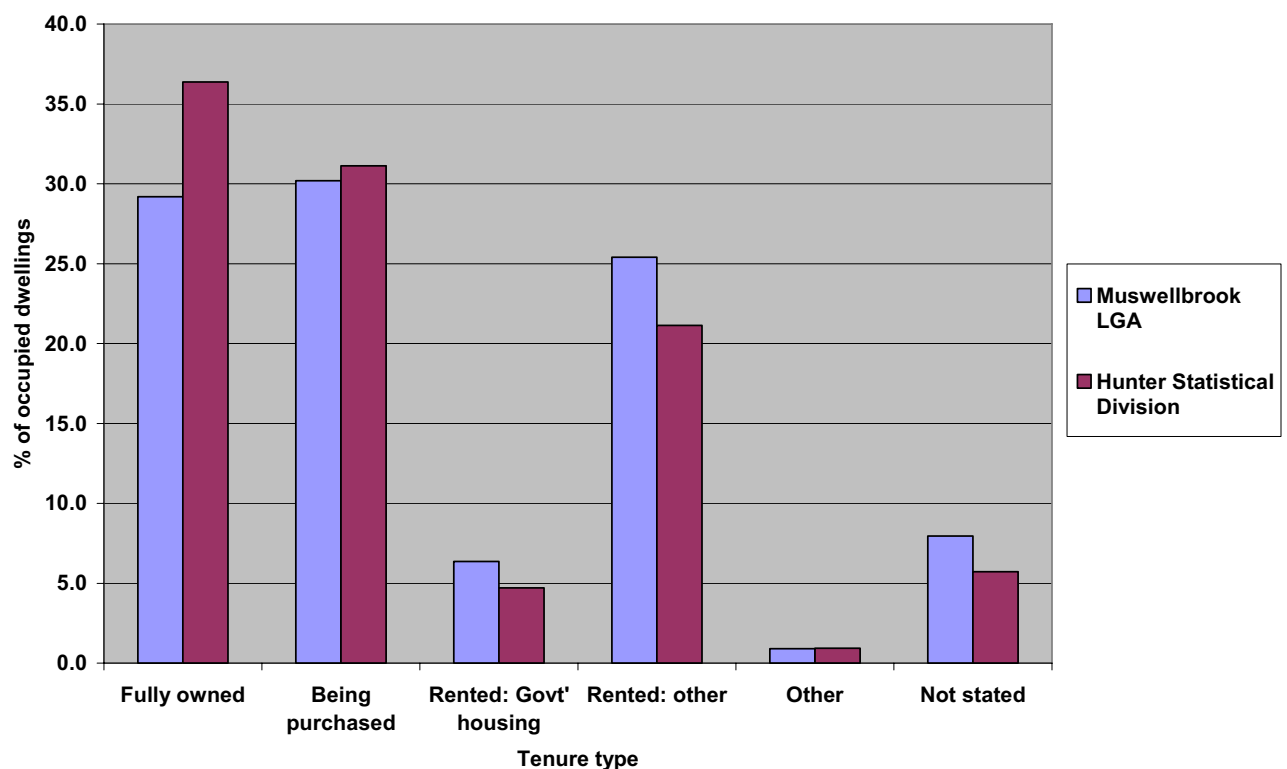
The Muswellbrook 2003-2004 State of the Environment report reported a number of significant residential subdivisions in Muswellbrook and Denman including Calool Heights, Calgaroo, Eastbrook Links Estate, the proposed North Muswellbrook development, Catholic Church subdivision, Denman North subdivision and the Woodlands Ridge Rural residential development.

Housing tenure Census data can provide some insight into the socio-economic function of an area, as well as trends in housing markets. According to Census data Muswellbrook LGA demonstrated a mix of housing tenure types likely to attract a mix of residents from young couples to retirees. Table 3.5 details tenure types of dwellings in the Muswellbrook LGA from 1991 to 2001.

According to the 2006 Census, Muswellbrook LGA demonstrated a lower proportion of fully owned households (29.2%) than the broader region (36.4%). This is interesting in light of the proportionately higher incomes displayed by the Muswellbrook LGA population, but may be explained by the prevalence of young families. Table 3.12 and Figure 3.26 outline the dwelling tenure types in Muswellbrook LGA and the broader Hunter Statistical Division in 2006.

**Table 3.12. Dwelling Types 2001 - 2006: Muswellbrook LGA and Hunter Statistical Division**

| Tenure type           | 2001             |       |                             |       | 2006             |       |                             |       | Change from 2001-2006 |       |                             |       |
|-----------------------|------------------|-------|-----------------------------|-------|------------------|-------|-----------------------------|-------|-----------------------|-------|-----------------------------|-------|
|                       | Muswellbrook LGA |       | Hunter Statistical Division |       | Muswellbrook LGA |       | Hunter Statistical Division |       | Muswellbrook LGA      |       | Hunter Statistical Division |       |
|                       | No.              | %     | No.                         | %     | No.              | %     | No.                         | %     | No.                   | %     | No.                         | %     |
| Fully owned           | 1,880            | 34.8  | 94,121                      | 43.3  | 1,648            | 29.2  | 83,262                      | 36.4  | -232                  | -12.3 | -10,859                     | -11.5 |
| Being purchased       | 1,295            | 24.0  | 54,892                      | 25.3  | 1,704            | 30.2  | 71,252                      | 31.1  | 409                   | 31.6  | 16,360                      | 29.8  |
| Rented: Govt' housing | 394              | 7.3   | 11,265                      | 5.2   | 359              | 6.4   | 10,781                      | 4.7   | -35                   | -8.9  | -484                        | -4.3  |
| Rented: other         | 1,251            | 23.2  | 42,698                      | 19.6  | 1,434            | 25.4  | 48,386                      | 21.1  | 183                   | 14.6  | 5,688                       | 13.3  |
| Other                 | 272              | 5.0   | 6,027                       | 2.8   | 51               | 0.9   | 2,143                       | 0.9   | -221                  | -81.3 | -3,884                      | -64.4 |
| Not stated            | 305              | 5.7   | 8,307                       | 3.8   | 449              | 8.0   | 13,085                      | 5.7   | 144                   | 47.2  | 4,778                       | 57.5  |
| Total                 | 5,397            | 100.0 | 217,310                     | 100.0 | 5,645            | 100.0 | 228,909                     | 100.0 | 248                   | 4.6   | 11,599                      | 5.3   |

**Figure 3.26. Dwelling Tenure Type 2006: Muswellbrook LGA and Hunter Statistical Division**

Census data indicates that both the Muswellbrook LGA and Hunter Statistical Division experienced growth in the proportion of total occupied dwellings that were in the process of being purchased from 2001 to 2006; this reflects an increase in the number of people paying off mortgages.

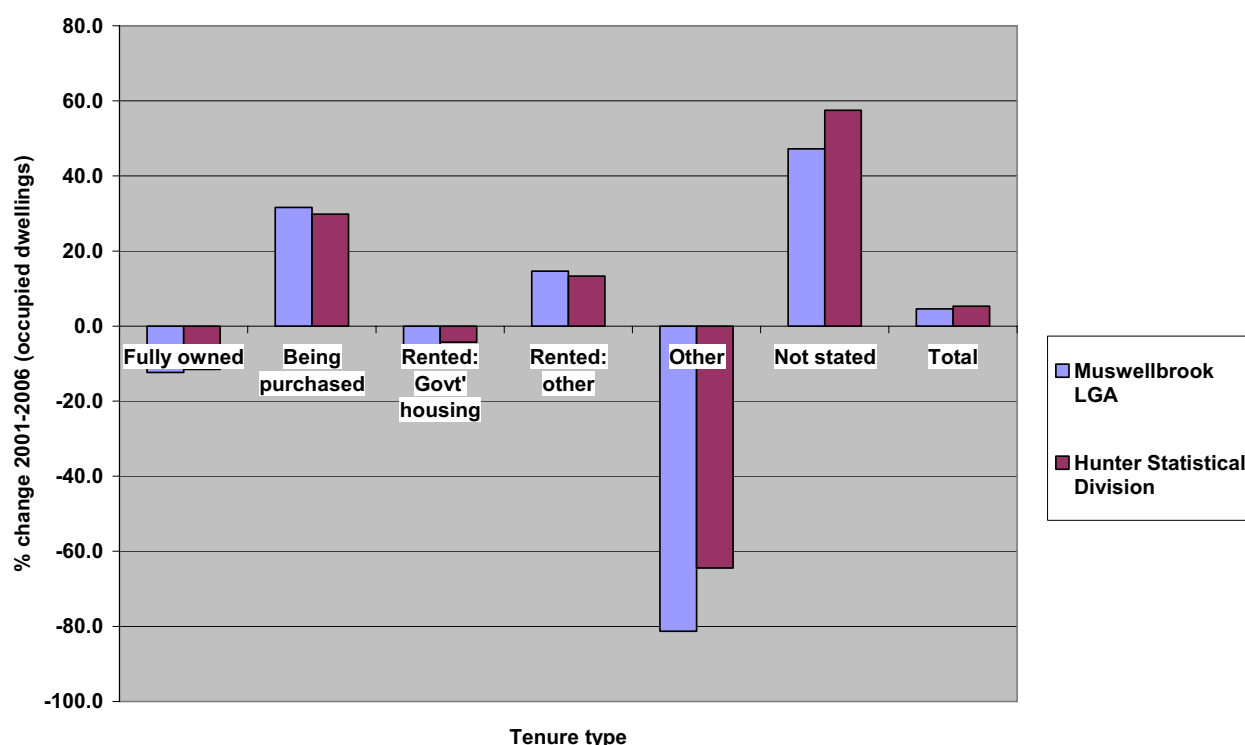


**Figure 3.27. Changes in Dwelling Tenure Type 2001- 2006: Muswellbrook LGA and Hunter Statistical Division**

### 3.7.2 Muswellbrook LGA Demographic Summary

The Muswellbrook LGA population grew by 3.3% between 2001 and 2006, despite demonstrating population declines between 1999 and 2001; which may be reflective of resource cycles which have historically affected Hunter population numbers. In 2006 the Muswellbrook LGA population was relatively young compared to the broader Hunter Statistical Division, with a higher proportion of young and mature families and a lower proportion of people of retiree age. However, the Census data indicates that the Muswellbrook population is ageing from previous Censuses.

The amount of people identifying themselves as Indigenous in the Muswellbrook LGA demonstrated significant increases from 1996 to 2006. Furthermore the number of Indigenous people, as a proportion of the total Muswellbrook LGA population, increased during this time.

The Muswellbrook LGA population recorded higher incomes than the Hunter Statistical Division; however the overall distribution of earnings demonstrated similar trends and was characterised by high proportions of individual incomes between \$150 to \$249 per week.

There was a relatively large increase in the proportion of one parent families with non-dependent children (older than 15 years of age) in the Muswellbrook LGA compared to the Hunter Statistical Division; reflecting changes in the residential role and function of the area.

The Muswellbrook LGA population in 2006 demonstrated relatively high proportions of people attending primary school and secondary school, which is in keeping with the

young population; and relatively low proportions attending university compared to the broader Hunter area. Overall the total number of students in Muswellbrook grew from 2001 to 2006; however declines were observed in the number of people attending primary school, technical or further education and university. A high proportion of students did not state what type of educational institution they were attending, making these findings difficult to interpret.

The housing stock in Muswellbrook LGA was characterised by higher proportions of separate or detached dwellings than the Hunter statistical division; which is typical of low to medium density and family oriented housing. Muswellbrook demonstrated high occupancy rates for housing and lower proportions of unoccupied dwellings. The total amount of dwellings increased between the 2001 and 2006 Census, representing 4.7% growth in Muswellbrook, compared to 6.3% growth in the Hunter Statistical division.

Despite recording higher incomes in 2006, the Muswellbrook LGA demonstrated a lower proportion of households than the broader Hunter Statistical area. Muswellbrook recorded growth in the proportions of occupied dwellings, which were in the process of being purchased between 2001 and 2006, indicating that more families were paying off mortgages. These finding may in part be explained by the prevalence of young families in the Muswellbrook LGA.

### **3.7.3 Muswellbrook, Scone, Singleton and Denman Suburb Comparisons**

The following section provides a demographic overview of the areas in which the operational workforce of the Mt Arthur Underground project is most likely to reside: Muswellbrook, Denman, Scone and Singleton.

The ABS 2006 Census has moved away from reporting on urban centre localities as in previous years and now reports on the basis of state suburbs<sup>5</sup>. For the purposes of this analysis and in order to provide meaningful comparison between the residential areas of Singleton, Muswellbrook, Denman and Scone, data for Singleton includes the suburbs of Singleton Heights; Darlington-Singleton; Hunterview and Singleton Balance. The location of these suburb boundaries as delineated by the ABS are shown in Figures 3.28 to 3.34.

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<sup>5</sup> Census-specific area where collection districts are aggregated to approximate suburbs.



Figure 3.28. Muswellbrook Suburb Area

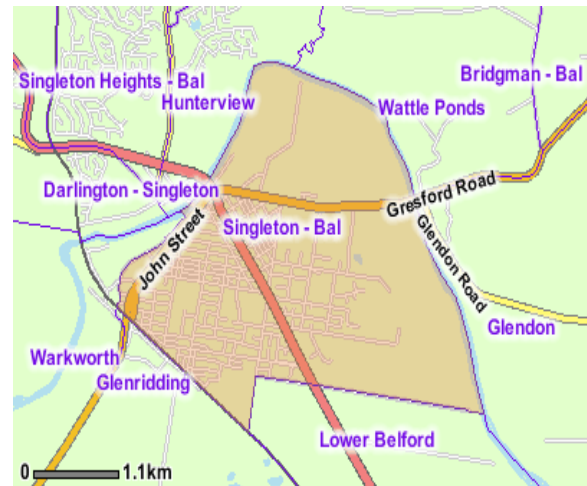


Figure 3.31. Singleton Balance Suburb Area

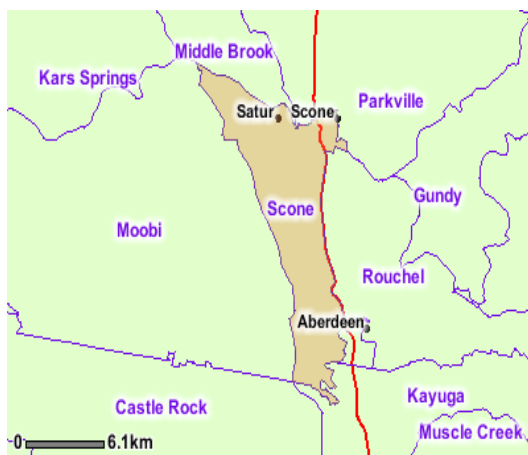


Figure 3.29. Scone Suburb Area

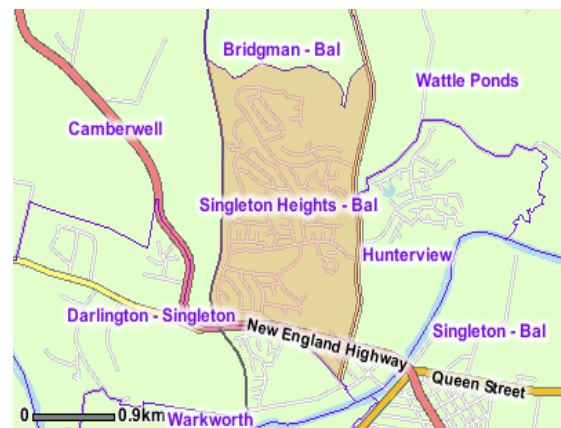


Figure 3.32. Singleton Heights Suburb Area



Figure 3.30. Denman Suburb Area



Figure 3.33. Darlington-Singleton Suburb Area

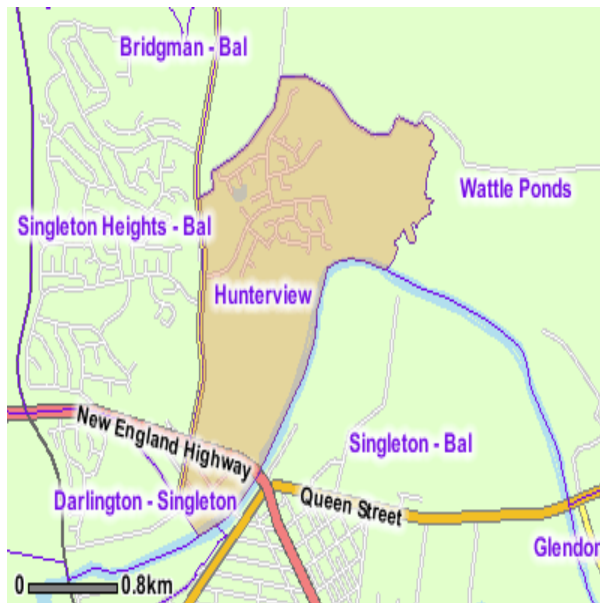


**Figure 3.34. Huntview Suburb Area**

Source: ABS 2006 Census available online at <http://www.abs.gov.au/websitedbs/d3310114.nsf/Home/census>

## Population and Age Structure

The 2006 Census indicates that the suburbs of Muswellbrook, Scone, Denman and Singleton demonstrated fairly large differences in total population: Muswellbrook recorded 10,708 people; Singleton 13,493<sup>6</sup>; Scone 5,081 and Denman 1,953. According to Census data the suburbs display similarities in terms of demographic patterns. One of the most notable differences between the suburbs was the median ages recorded, with Scone recording the highest median age of 38 years and Muswellbrook the lowest of 33 years.

Table 3.13 details a range of selected demographic characteristics for the suburbs of Scone, Denman, Muswellbrook and Singleton including Hunterview, Darlington and Singleton Heights.

**Table 3.13. Selected Demographic Characteristics 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

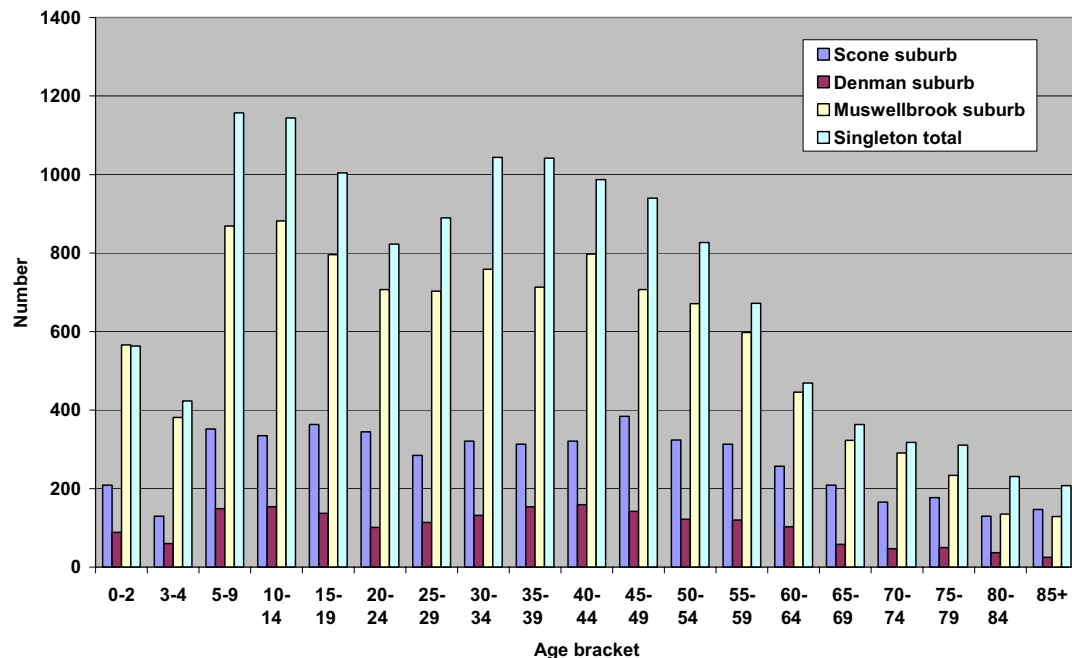
| Selected Characteristics                   | Scone Suburb | Denman Suburb | Muswellbrook Suburb | Singleton combined total |                   |            |                      |
|--------------------------------------------|--------------|---------------|---------------------|--------------------------|-------------------|------------|----------------------|
|                                            |              |               |                     | Singleton Balance        | Singleton Heights | Hunterview | Darlington-Singleton |
| Total persons excluding overseas visitors  | 5081         | 1953          | 10708               | 5784                     | 4776              | 2087       | 846                  |
| Median age                                 | 38           | 36            | 33                  | 37                       | 31                | 30         | 34                   |
| Median individual income (\$/weekly)       | 452          | 469           | 447                 | 429                      | 497               | 606        | 562                  |
| Median household income (\$/weekly)        | 920          | 1017          | 1066                | 1051                     | 1282              | 1664       | 1483                 |
| Median family income (\$/weekly)           | 1132         | 1188          | 1226                | 1212                     | 1477              | 1713       | 1660                 |
| Median rent (\$/weekly)                    | 150          | 125           | 160                 | 180                      | 180               | 260        | 190                  |
| Median housing loan repayment (\$/monthly) | 1200         | 1112          | 1300                | 1300                     | 1300              | 1647       | 1517                 |
| Average household size                     | 2.4          | 2.5           | 2.6                 | 2.5                      | 2.8               | 3.1        | 2.7                  |

Table 3.14 and Figures 3.35 and 3.36 also outline the 2006 age structure of the suburbs that are likely to be affected by the additional Mt Arthur Underground Project workforce (Scone, Denman, Muswellbrook and Singleton combined total).

<sup>6</sup> Including the suburbs of Singleton Heights, Hunterview, Darlington and Singleton Balance.

**Table 3.14. Age Structure of Population 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

| Age bracket  | Scone suburb |              | Denman suburb |              | Muswellbrook suburb |              | Singleton total |              |
|--------------|--------------|--------------|---------------|--------------|---------------------|--------------|-----------------|--------------|
|              | No.          | %            | No.           | %            | No.                 | %            | No.             | %            |
| 0-2          | 209          | 4.1          | 89            | 4.6          | 566                 | 5.3          | 563             | 4.2          |
| 3-4          | 130          | 2.6          | 60            | 3.1          | 381                 | 3.6          | 423             | 3.2          |
| 5-9          | 352          | 6.9          | 149           | 7.6          | 869                 | 8.1          | 1,157           | 8.7          |
| 10-14        | 335          | 6.6          | 154           | 7.9          | 882                 | 8.2          | 1,144           | 8.6          |
| 15-19        | 363          | 7.1          | 137           | 7.0          | 796                 | 7.4          | 1,004           | 7.6          |
| 20-24        | 345          | 6.8          | 101           | 5.2          | 707                 | 6.6          | 823             | 6.2          |
| 25-29        | 285          | 5.6          | 114           | 5.8          | 703                 | 6.6          | 890             | 6.7          |
| 30-34        | 321          | 6.3          | 132           | 6.8          | 759                 | 7.1          | 1,044           | 7.9          |
| 35-39        | 313          | 6.2          | 154           | 7.9          | 713                 | 6.7          | 1,042           | 7.9          |
| 40-44        | 321          | 6.3          | 159           | 8.1          | 798                 | 7.5          | 987             | 7.4          |
| 45-49        | 384          | 7.6          | 142           | 7.3          | 707                 | 6.6          | 940             | 7.1          |
| 50-54        | 324          | 6.4          | 122           | 6.2          | 671                 | 6.3          | 827             | 6.2          |
| 55-59        | 313          | 6.2          | 120           | 6.1          | 598                 | 5.6          | 672             | 5.1          |
| 60-64        | 257          | 5.1          | 103           | 5.3          | 446                 | 4.2          | 469             | 3.5          |
| 65-69        | 209          | 4.1          | 58            | 3.0          | 323                 | 3.0          | 363             | 2.7          |
| 70-74        | 166          | 3.3          | 47            | 2.4          | 291                 | 2.7          | 318             | 2.4          |
| 75-79        | 177          | 3.5          | 50            | 2.6          | 234                 | 2.2          | 311             | 2.3          |
| 80-84        | 130          | 2.6          | 37            | 1.9          | 135                 | 1.3          | 231             | 1.7          |
| 85+          | 147          | 2.9          | 25            | 1.3          | 129                 | 1.2          | 208             | 1.6          |
| <b>Total</b> | <b>5,081</b> | <b>100.0</b> | <b>1,953</b>  | <b>100.0</b> | <b>10,708</b>       | <b>100.0</b> | <b>13,271</b>   | <b>100.0</b> |

**Figure 3.35. Age Structure of Population (numbers) 2006: suburbs of Scone, Denman, Muswellbrook and Darlington-Singleton**

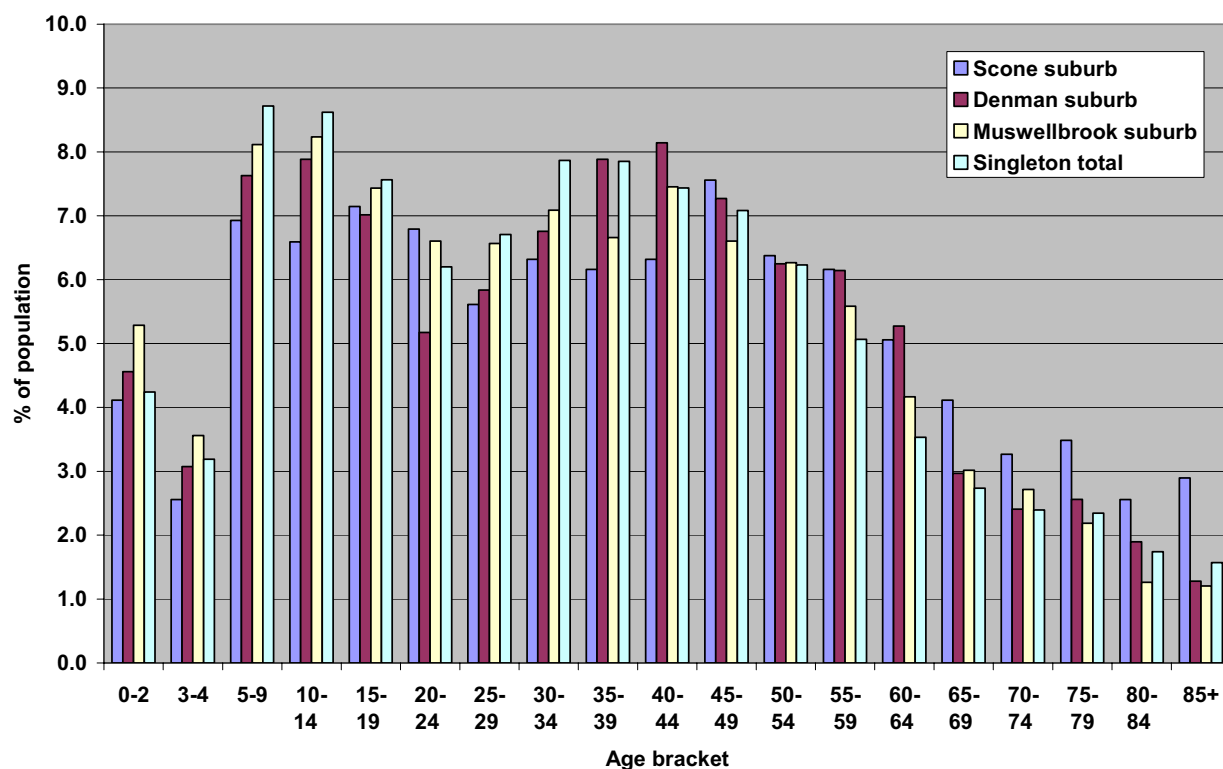


**Figure 3.36. Age Structure of Population (proportion) 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

The 2006 Census data indicates that the suburbs of Scone, Denman, Muswellbrook and Singleton demonstrated similarities in terms of population age structure. All 4 areas demonstrated the decline in proportions of young adults (20- 29 years of age) that is characteristic of regional and rural areas due to migration of youth to cities for educational, employment and recreational opportunities. This trend was most notable in Denman which recorded only 11.0% of the population aged between 25 and 29 years respectively.

The suburb of Scone recorded a relatively aging population in the 2006 Census compared to the other suburbs considered. The suburb of Scone demonstrated lower proportions of dependent children or people aged below 15 years (20%) and higher proportions of people aged above 65 years (16.3%) than all three of the other suburbs considered (see Table 3.15).

The suburb of Muswellbrook recorded the youngest population of the suburbs under consideration in the 2006 Census with 25% of the total population (2,698 people) being dependent children or aged below 15 years (25.2%) and only 10.4% of people aged above 65 years (1,112 people) (see Table 3.15).

**Table 3.15. Population Aged Below 15 years and Above 65 years 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

| Age bracket | Scone suburb |      | Denman suburb |      | Muswellbrook suburb |      | Singleton total |      |
|-------------|--------------|------|---------------|------|---------------------|------|-----------------|------|
|             | No.          | %    | No.           | %    | No.                 | %    | No.             | %    |
| Under 15    | 1,026        | 20.2 | 452           | 23.1 | 2,698               | 25.2 | 3,287           | 24.8 |
| Above 65    | 829          | 16.3 | 217           | 11.1 | 1,112               | 10.4 | 1,431           | 10.8 |

### Household Incomes

Singleton recorded the highest proportion (25.2%) of the total population earning individual weekly incomes over \$1000, compared to Muswellbrook (21.7%), Denman (19.9%) and Scone (17.8%). Table 3.16 and Figure 3.37 demonstrate the weekly individual incomes of persons aged over 15 years across the suburbs of Scone, Denman, Muswellbrook and Singleton in 2006.

**Table 3.16. Weekly Individual Incomes of Person Aged > 15 years 2006: suburbs of Scone; Denman; Muswellbrook; and Singleton**

| Weekly Individual income | Scone suburb |              | Denman suburb |              | Muswellbrook suburb |              | Singleton total |              |
|--------------------------|--------------|--------------|---------------|--------------|---------------------|--------------|-----------------|--------------|
|                          | No.          | %            | No.           | %            | No.                 | %            | No.             | %            |
| Negative/Nil income      | 248          | 6.1          | 120           | 8.0          | 549                 | 6.9          | 737             | 7.3          |
| \$1-\$149                | 292          | 7.2          | 128           | 8.5          | 633                 | 7.9          | 854             | 8.4          |
| \$150-\$249              | 589          | 14.5         | 170           | 11.3         | 1,149               | 14.3         | 1,303           | 12.9         |
| \$250-\$399              | 592          | 14.6         | 221           | 14.7         | 1,068               | 13.3         | 1,295           | 12.8         |
| \$400-\$599              | 631          | 15.6         | 194           | 12.9         | 998                 | 12.5         | 1,231           | 12.2         |
| \$600-\$799              | 479          | 11.8         | 175           | 11.7         | 661                 | 8.3          | 813             | 8.0          |
| \$800-\$999              | 224          | 5.5          | 106           | 7.1          | 484                 | 6.0          | 609             | 6.0          |
| \$1,000-\$1,299          | 261          | 6.4          | 107           | 7.1          | 542                 | 6.8          | 737             | 7.3          |
| \$1,300-\$1,599          | 183          | 4.5          | 58            | 3.9          | 378                 | 4.7          | 556             | 5.5          |
| \$1,600-\$1,999          | 136          | 3.4          | 63            | 4.2          | 420                 | 5.2          | 610             | 6.0          |
| \$2,000 +                | 140          | 3.5          | 71            | 4.7          | 399                 | 5.0          | 653             | 6.4          |
| Not stated               | 276          | 6.8          | 87            | 5.8          | 729                 | 9.1          | 730             | 7.2          |
| <b>Total</b>             | <b>4,051</b> | <b>100.0</b> | <b>1,500</b>  | <b>100.0</b> | <b>8,010</b>        | <b>100.0</b> | <b>10,128</b>   | <b>100.0</b> |

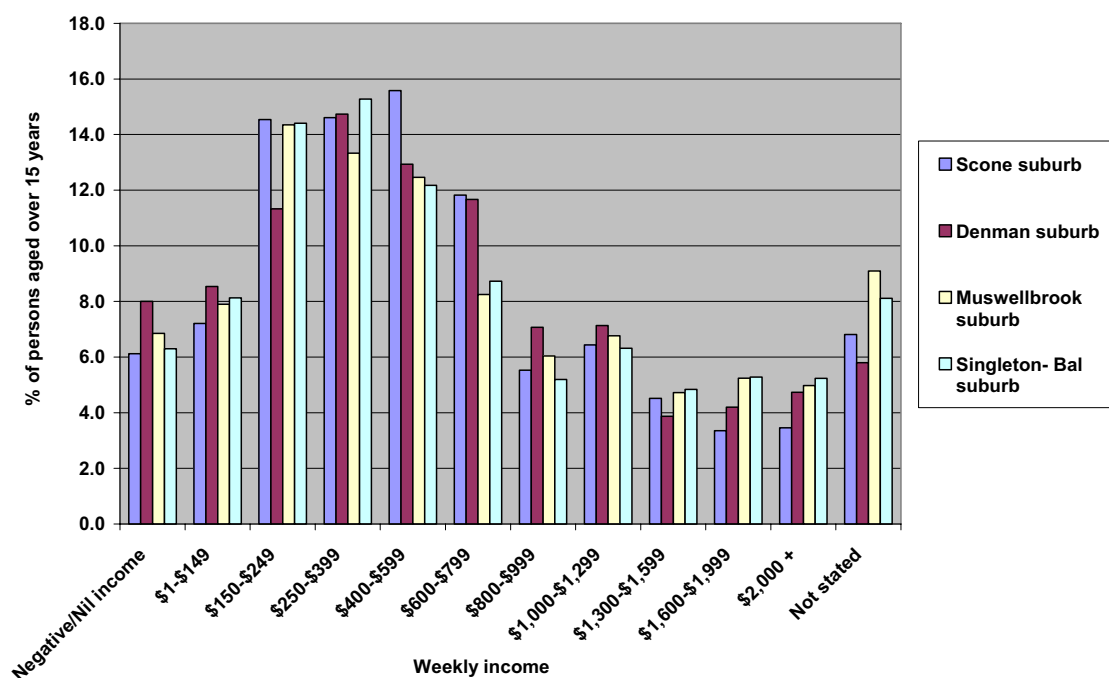


**Figure 3.37. Weekly Individual Incomes of Person aged > 15 years 2006: suburbs of Scone; Denman; Muswellbrook; and Singleton- Bal**

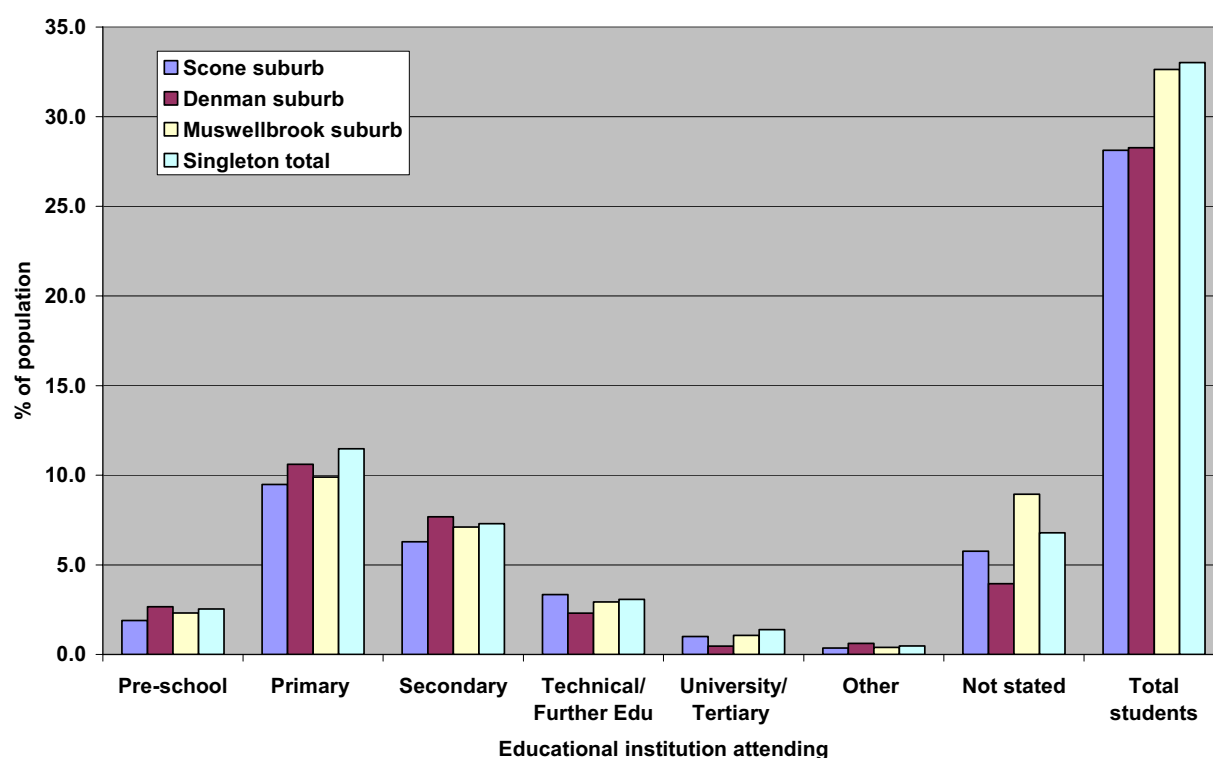
### Education

The 2006 Census data demonstrates similarities across the suburbs in terms of proportions of the population attending different types of educational institutions. Primary school was the most commonly attended educational institution across the suburbs with proportions ranging from 9.5% of the total population (482 people) in Scone to 11.5% of the population (1,523 people) in Singleton. A total of 3,272 people attended primary schools in 2006 across the 4 areas.

Interestingly the Muswellbrook suburb population did not record the highest proportion of primary school students, despite recording the highest proportion of the population being of primary school age; this may be accounted for by the relatively high proportion of students attending an un-stated educational institution as recorded in the 2006 Census. Table 3.17 and Figure 3.37 demonstrate the educational institutions attended across the 4 suburbs in 2006.

**Table 3.17. Educational Institution Attending 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

| Educational Institution attending | Scone suburb |       | Denman suburb |       | Muswellbrook suburb |       | Singleton total |       | Total |
|-----------------------------------|--------------|-------|---------------|-------|---------------------|-------|-----------------|-------|-------|
|                                   | No.          | %     | No.           | %     | No.                 | %     | No.             | %     |       |
| Pre-school                        | 96           | 1.9   | 52            | 2.7   | 248                 | 2.3   | 337             | 2.5   | 733   |
| Primary                           | 482          | 9.5   | 207           | 10.6  | 1,060               | 9.9   | 1,523           | 11.5  | 3,272 |
| Secondary                         | 319          | 6.3   | 150           | 7.7   | 761                 | 7.1   | 968             | 7.3   | 2,198 |
| Technical/ Further Edu            | 170          | 3.3   | 45            | 2.3   | 313                 | 2.9   | 407             | 3.1   | 935   |
| University/ Tertiary              | 51           | 1.0   | 9             | 0.5   | 114                 | 1.1   | 184             | 1.4   | 358   |
| Other                             | 18           | 0.4   | 12            | 0.6   | 42                  | 0.4   | 62              | 0.5   | 134   |
| Not stated                        | 293          | 5.8   | 77            | 3.9   | 957                 | 8.9   | 901             | 6.8   | 2,228 |
| Total students                    | 1,429        | 28.1  | 552           | 28.3  | 3,495               | 32.6  | 4,382           | 33.0  | 9,858 |
| Total population                  | <b>5,081</b> | 100.0 | <b>1953</b>   | 100.0 | <b>10708</b>        | 100.0 | <b>13,271</b>   | 100.0 | -     |

**Figure 3.37. Educational Institution Attending 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

The Singleton combined area recorded the highest proportion of students in 2006 with 33.0% of the total population (4,382 people) attending an educational institution of some sort, compared to 28.1% of the total population (1,429 people) in Scone.

### Family Composition

The family composition in the suburbs most likely to be affected by population increases associated with the Mt Arthur Underground workforce may give some

indication as to where families are likely to settle and subsequent demand for services (refer to Table 3.18 and Figures 3.38 and 3.39 below). The 2006 Census data indicates that the suburb of:

- Singleton combined area demonstrated relatively high proportions of couple families, and families with children, both dependent (under 15 years of age) and non-dependent (over 15 years of age);
- Muswellbrook demonstrated relatively high proportions of one-parent families;
- Denman demonstrated relatively low proportions of one parent families and families with non-dependent children; and
- Scone demonstrated relatively high proportions of families without children and low proportions of families with dependent children.

**Table 3.18 Family Composition 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

| Family Composition                  | Scone suburb |              | Denman suburb |              | Muswellbrook suburb |              | Singleton total |              |
|-------------------------------------|--------------|--------------|---------------|--------------|---------------------|--------------|-----------------|--------------|
|                                     | No.          | %            | No.           | %            | No.                 | %            | No.             | %            |
| Couple family with no children      | 545          | 40.2         | 204           | 39.4         | 982                 | 35.1         | 1,154           | 32.5         |
| Couple family with children <15     | 427          | 31.5         | 193           | 37.3         | 941                 | 33.7         | 1,312           | 36.9         |
| Couple family with children >15     | 161          | 11.9         | 46            | 8.9          | 321                 | 11.5         | 455             | 12.8         |
| One parent family with children <15 | 126          | 9.3          | 44            | 8.5          | 344                 | 12.3         | 356             | 10.0         |
| One parent family with children >15 | 79           | 5.8          | 28            | 5.4          | 177                 | 6.3          | 241             | 6.8          |
| Other family                        | 17           | 1.3          | 3             | 0.6          | 31                  | 1.1          | 37              | 1.0          |
| <b>Total</b>                        | <b>1,355</b> | <b>100.0</b> | <b>518</b>    | <b>100.0</b> | <b>2,796</b>        | <b>100.0</b> | <b>3,555</b>    | <b>100.0</b> |

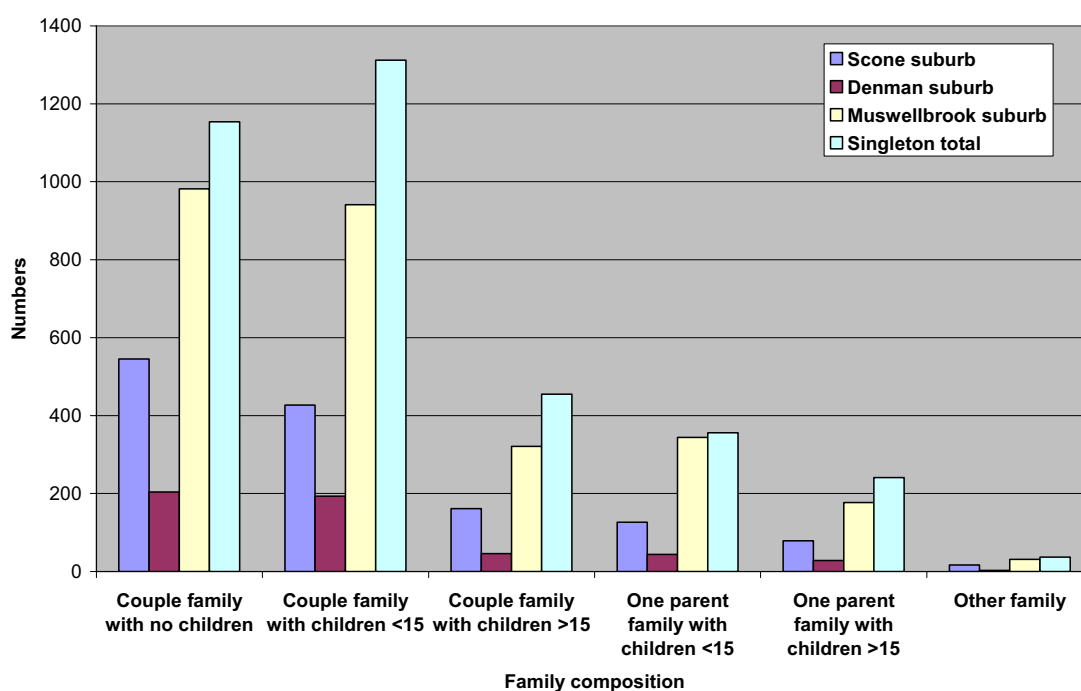


**Figure 3.38. Family Composition (numbers) 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

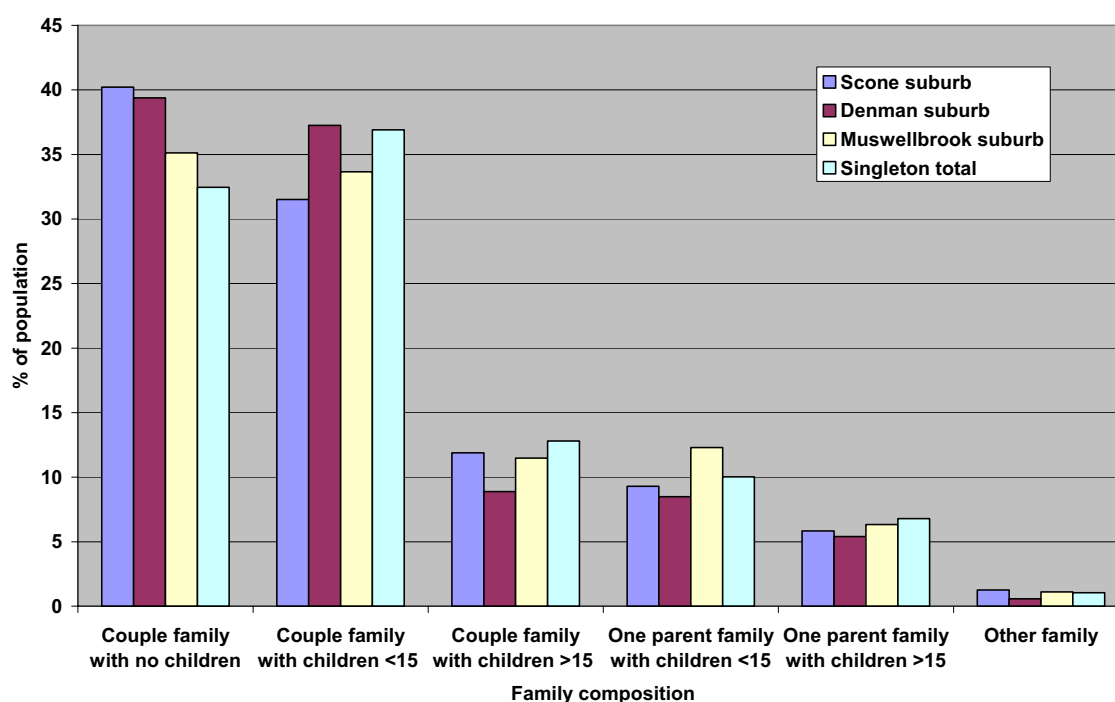


**Figure 3.39. Family Composition (proportions) 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

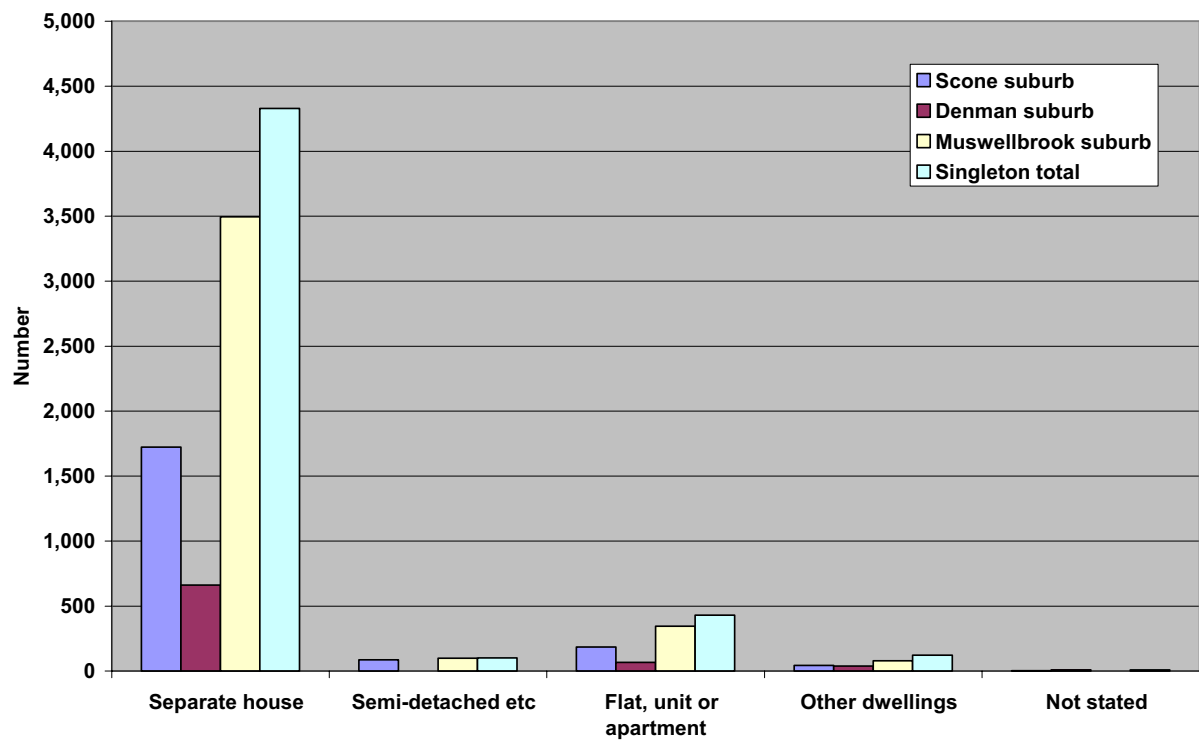
### Dwelling Types and Home Ownership

The proportions of dwelling types observed in the 2006 Census across the four areas under consideration displayed similar patterns. Separate or detached dwellings were characteristic of the housing stock across the suburbs and semi-detached dwellings were least common; which is characteristic of the low to medium density housing typically observed in localities outside of the metropolitan area.

The occupancy rates of dwellings were comparable in all four suburbs in 2006 and ranged from 91.4% (191 unoccupied dwellings) in Scone to 92.5% (328 unoccupied dwellings) in Muswellbrook. The 2006 Census data indicates that across the four areas there were approximately 1001 unoccupied dwellings. Table 3.19 and Figures 3.40 and 3.41 demonstrate the patterns in dwelling type across the areas of Scone, Denman, Muswellbrook and Singleton.

**Table 3.19. Dwelling Type 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

| Dwelling characteristics    | Scone suburb |      | Denman suburb |      | Muswellbrook suburb |      | Singleton Total |      |
|-----------------------------|--------------|------|---------------|------|---------------------|------|-----------------|------|
|                             | No.          | %    | No.           | %    | No.                 | %    | No.             | %    |
| Total private dwellings     | 2,233        | 100  | 845           | 100  | 4,346               | 100  | 5,391           | 100  |
| Unoccupied dwellings        | 191          | 8.6  | 69            | 8.2  | 328                 | 7.5  | 413             | 7.7  |
| Occupied private dwellings: | 2,042        | 91.4 | 776           | 91.8 | 4,018               | 92.5 | 4,978           | 92.3 |
| Separate house              | 1,724        | 84.4 | 662           | 85.3 | 3,495               | 87.0 | 4,329           | 87.0 |
| Semi-detached etc           | 87           | 4.3  | 0             | 0.0  | 99                  | 2.5  | 101             | 2.0  |
| Flat, unit or apartment     | 185          | 9.1  | 67            | 8.6  | 346                 | 8.6  | 430             | 8.6  |
| Other dwellings             | 43           | 2.1  | 38            | 4.9  | 78                  | 1.9  | 123             | 2.5  |
| Not stated                  | 3            | 0.1  | 9             | 1.2  | 0                   | 0.0  | 10              | 0.2  |

**Figure 3.40. Dwelling Type 2006: suburbs of Scone, Denman, Muswellbrook and Singleton (numbers)**

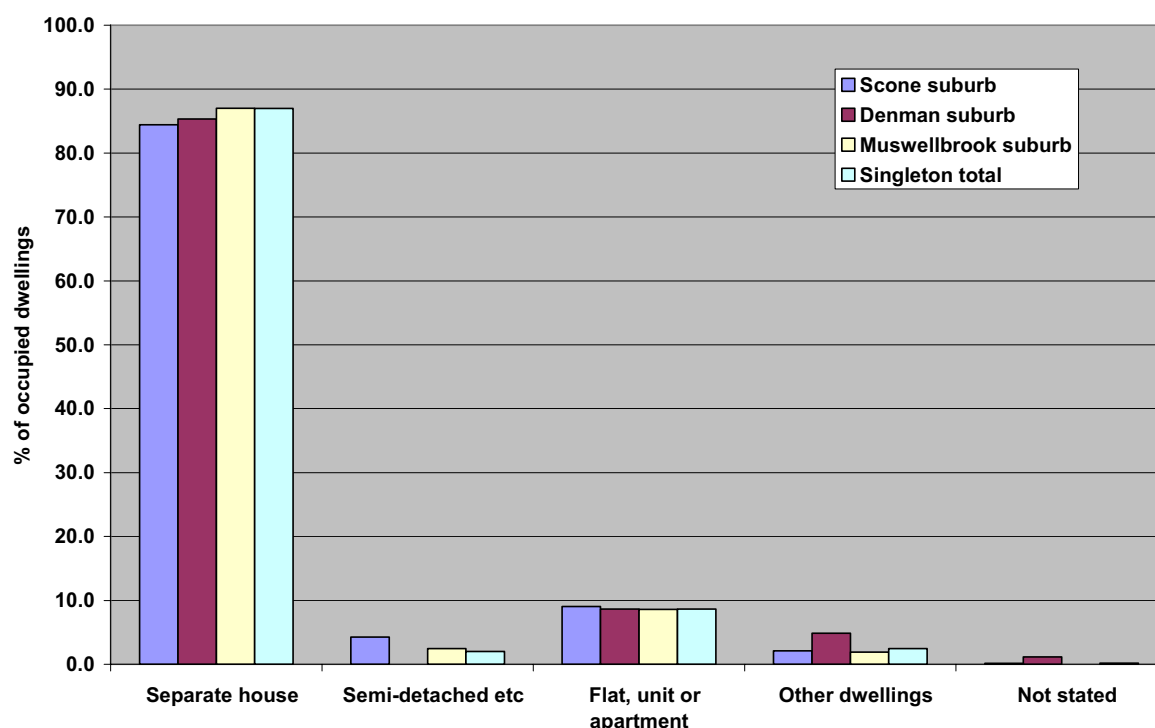


**Figure 3.41. Dwelling Type 2006: suburbs of Scone, Denman, Muswellbrook and Singleton (proportions)**

The tenure data from the 2006 Census indicates that the suburb of Scone demonstrated a higher proportion of fully-owned homes (687 dwellings, 33.7%) compared to, Denman (243 dwellings, 31.3%), Singleton combined (1386 dwellings, 28.5%) and Muswellbrook (1119 dwellings, 27.8%). The Muswellbrook suburb population demonstrated the lowest proportion of fully owned homes and the highest proportion of homes rented from government housing authorities (349 dwellings, 8.7% of occupied dwellings). Singleton combined area demonstrated the highest proportion of homes being purchased. Table 3.20 and Figures 3.42 and 3.43 detail the dwelling tenure type of the Scone, Denman, Muswellbrook and Singleton areas.

**Table 3.20. Tenure Type 2006: suburbs of Scone, Denman, Muswellbrook and Singleton**

| Tenure type                                 | Scone suburb |       | Denman suburb |       | Muswellbrook suburb |       | Singleton total |       |
|---------------------------------------------|--------------|-------|---------------|-------|---------------------|-------|-----------------|-------|
|                                             | No.          | %     | No.           | %     | No.                 | %     | No.             | %     |
| Fully owned                                 | 687          | 33.7  | 243           | 31.3  | 1,119               | 27.9  | 1386            | 28.5  |
| Being purchased (includes rent/ buy scheme) | 593          | 29.1  | 220           | 28.3  | 1,261               | 31.4  | 1698            | 34.9  |
| Rented - Govt' housing                      | 111          | 5.4   | 11            | 1.4   | 349                 | 8.7   | 367             | 7.6   |
| Rented other                                | 524          | 25.7  | 181           | 23.3  | 981                 | 24.4  | 1125            | 23.2  |
| Other                                       | 14           | 0.7   | 3             | 0.4   | 30                  | 0.7   | 26              | 0.5   |
| Not stated                                  | 112          | 5.5   | 119           | 15.3  | 277                 | 6.9   | 257             | 5.3   |
| Total                                       | 2041         | 100.0 | 777           | 100.0 | 4,017               | 100.0 | 4859            | 100.0 |

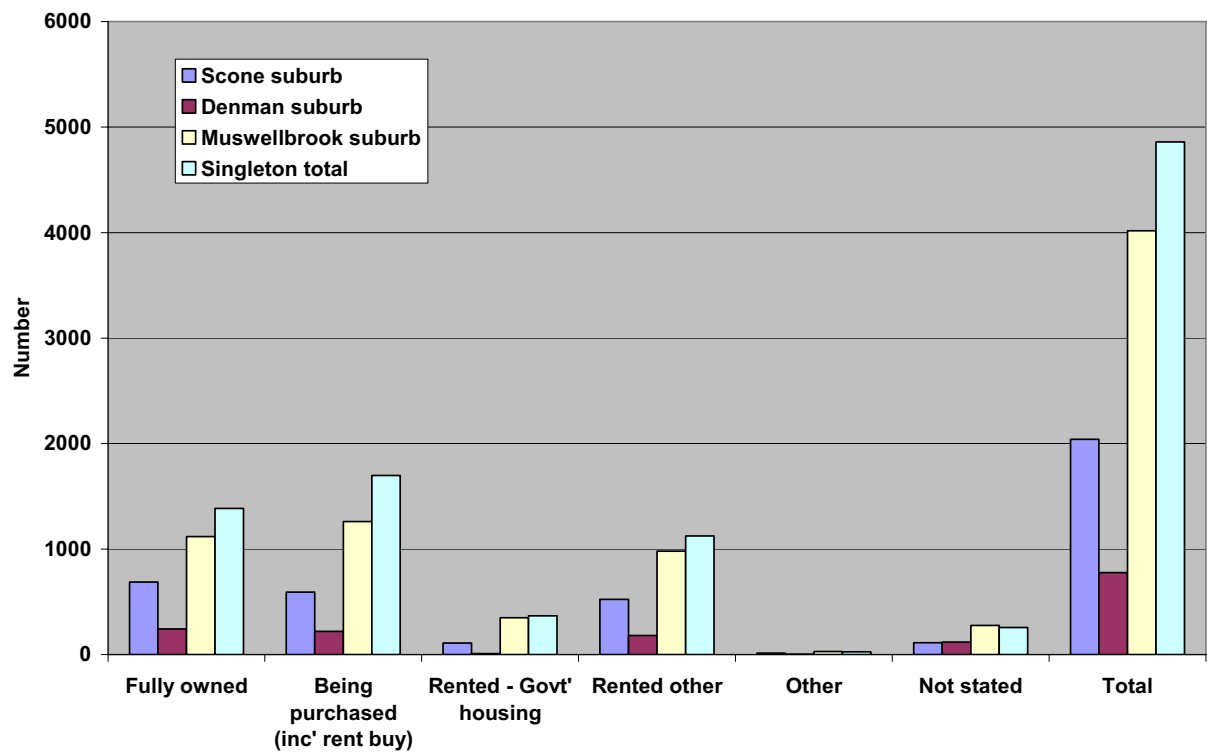


Figure 3.42. Tenure Type 2006: suburbs of Scone, Denman, Muswellbrook and Singleton (numbers)

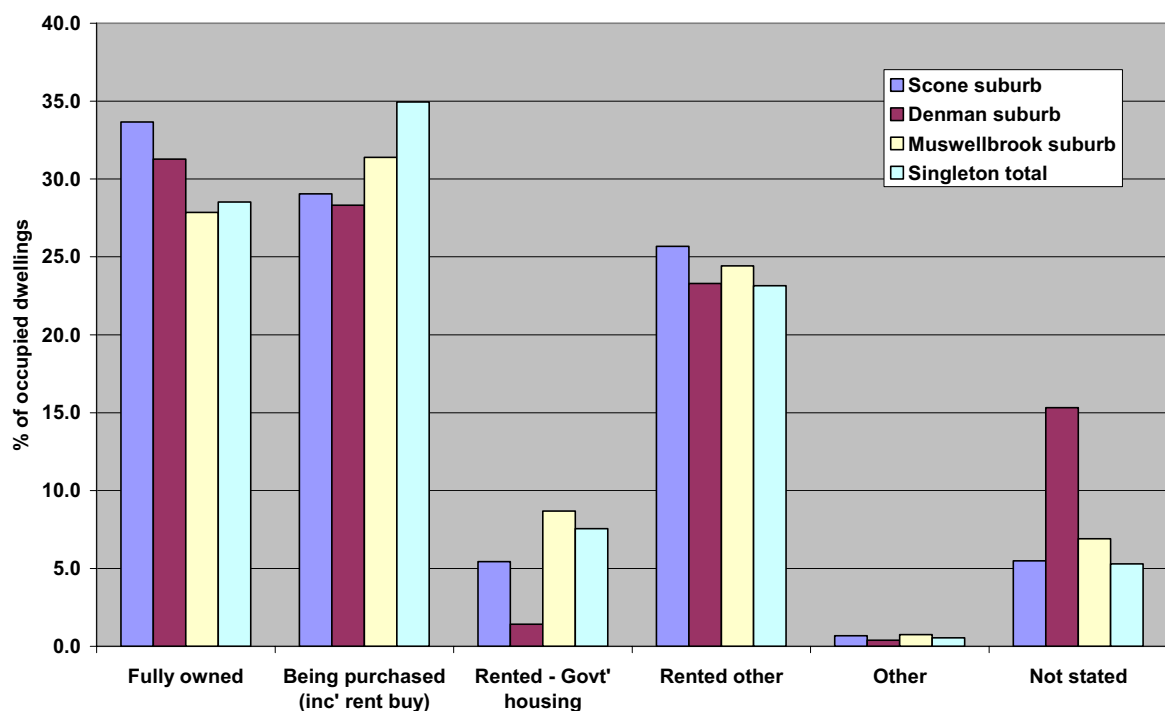


Figure 3.43. Tenure Type 2006: suburbs of Scone, Denman, Muswellbrook and Singleton (proportions)

### 3.7.4 Summary of Muswellbrook, Scone and Singleton, Denman Suburb Comparisons

The suburbs of Muswellbrook, Scone, Denman and Singleton display similar demographic patterns across a number of indicators, with differences between the areas relatively small. Differences in the proportions of indicators observed across the areas must be interpreted cautiously in cases, due to the high proportions of unknown data, or people that did not state information. Presented below is a summary of the key characteristics of the four suburbs under consideration.

The suburb of Scone is an aging population, with higher proportions of the population of retiree age. Scone demonstrated the:

- highest median age;
- highest proportion of the population over 65 years;
- highest proportion of families without children;
- lowest proportion of students;
- lowest median family income;
- smallest average household size;
- highest proportion of full-owned homes which is reflective of older populations
- lowest dwelling occupancy rate; and
- highest proportions of dwellings that are semi-detached or flats, units and apartments, which is also reflective of high proportions of retiree aged people.

The suburb of Muswellbrook is relatively affluent and young with high proportions of the population of young family age. Muswellbrook demonstrated:

- relatively low median age;
- the highest proportion of the population under 15 years;
- relatively high median household and family incomes;
- a relatively high proportion of the population earning weekly incomes over \$1000;
- the highest proportion of one-parent families;
- relatively high proportions of families with dependent children (aged under 15 years);
- the lowest proportion of fully owned homes;
- the highest proportions of homes rented from government housing authorities; and
- relatively high proportion of students overall.

The suburb of Denman is also relatively young with high proportions of young families. Denman demonstrated:

- the lowest median rent;
- the lowest median housing loan repayments;
- the lowest proportion of government housing;
- relatively high proportions of couple families without children;
- the lowest proportion of one-parent families;
- the lowest proportion of families with non-dependent children (over 15 years of age);
- relatively low proportions of students overall; and
- the highest proportion of secondary students.

The Singleton combined area demonstrated relatively variable demographics across the four suburbs under consideration (Singleton Balance, Singleton Heights, Darlington Singleton and Huntview). Huntview suburb demonstrated significant differences to the other suburbs and was relatively young and affluent with the highest median

rents and housing loan repayments. Generally the Singleton combined area was relatively affluent and young with:

- the highest proportions of the population demonstrating individual weekly incomes over \$1000;
- the highest proportion of students overall;
- the highest proportion of primary school students;
- relatively high proportions of couple families and families with dependent and non-dependent children;
- the highest occupancy rate of housing; and
- the highest proportion of homes being purchased, which is reflective of young families.

Housing and demographic data can reflect the residential role and function of an area. Additional Mt Arthur Coal employees moving to the region with their families may be likely to relocate to areas which display similar socio-economic characteristics to their own. As such it could be expected that: couple families with young children may relocate to Denman and Singleton; Single parent families to Muswellbrook, couples without dependent children may relocate to Singleton; and couples without children and older people may relocate to Scone.

As stated above the four suburbs displayed many similarities. This includes drops in the proportions of young adults 20-29 years of age that are characteristic of regional and rural areas due to migration of youth to the cities for education, employment and recreational opportunities (most notable in Denman and Singleton).

### **3.8 Infrastructure and Services**

The ability of the population to source services, facilities and employment is a major social indicator. The Muswellbrook Shire has numerous sources of employment and major infrastructures. However, there is a severe shortage of skilled workers to fill employment opportunities in the area. Furthermore several social infrastructures are understaffed.

A media review of the Muswellbrook area and the Hunter region indicates that public service provision is a critical community issue. The ability of the health and public transport system to service Muswellbrook residents has been questioned. In addition the Muswellbrook CBD has had some difficulties in retaining local businesses. These issues are detailed more thoroughly in the community issues section (Section 3.9).

#### **3.8.1 Health**

Muswellbrook has one hospital which is the largest of six public hospitals located in the Upper Hunter sector of the New England area Health Service. Other hospitals are present in Singleton, Denman, Merriwa, Scone and Murrumbidgee. The Muswellbrook hospital and nursing homes are supported by a range of community health services and health professionals working within the Shire. In addition, the Muswellbrook Shire has a range of aged care services and facilities including an aged day care and activity service, health and community care nurses and a Home Care Service of NSW.

#### **3.8.2 Education**

There are numerous public and independent schools located across the three LGA's covering primary and secondary education. The main tertiary institution in the area is the Muswellbrook TAFE, is located in Muswellbrook.

### **3.8.3 Transport**

Access to social services and infrastructure can be influenced by modes of transport. Consistent with most rural areas across Australia, the Muswellbrook LGA featured people driving cars as the dominant mode of transport to get to work, with only about 5% of people using public transport.

### **3.8.4 Power and Water**

In terms of utility infrastructure in the Upper Hunter, there are seven electricity companies and five gas companies. The Muswellbrook Council owns, operates and manages three separate water supply schemes, supplying drinking water to the towns of Muswellbrook, Denman and Sandy Hollow. Muswellbrook Shire also has two reticulated sewerage schemes located in Muswellbrook and Denman and the Shire has a waste landfill at Muswellbrook and a transfer station at Denman.

### **3.8.5 Leisure and Recreation**

Leisure and recreational opportunities and facilities within the region include the Glenbawn Dam; Lake St Clair; Lake Liddell recreation area; Wollemi National Park; horse, harness and greyhound racing facility; the Muswellbrook Golf Club; the Historical Town Walk; the vineyards of the Upper Hunter Valley and the Muswellbrook Swimming Complex. The Upper Hunter Regional Library services townships in the Upper Hunter region. The library has six branches: Muswellbrook, Denman, Scone, Aberdeen, Merriwa and Cassilis. In relation to local business, strong retail interest has been shown in the \$30 million shopping complex that is currently under construction within the Muswellbrook township.

### **3.8.6 Community Services**

Residents within the Shire of Muswellbrook have access to a wide range of community services, provided by local, state and federal governments as well as volunteer organisations. Community services available in the Muswellbrook LGA include, but are not limited to; support services; financial counselling services; community health services; family support programs, centres and programs; the Local Aboriginal Land Council; and many more support programs such as Lifeline and the Hunter Park Family Centre.

## **3.9 Community Issues**

### **3.9.1 Media Review**

Salient community issues identified in the local media include: water quantity and quality, diversification of the local economy and government community service provision such as health and public transport. Mining related coverage in the Muswellbrook local media has centred on economic benefits and employment opportunities and more recently with the recent approval of the Anvil Hill project, greenhouse gas emissions and climate change.

### **3.9.2 Water**

It is evident from the media review that the communities in the Hunter Valley regard water quality and quantity as a critical issue. Poor water quality has the potential to severely restrict human activities in the Hunter Catchment, both in terms of human health and economic costs due to loss of production and increased costs of water treatment. There is considerable community pride of waterways. A recent council approved subdivision near Wybong Creek has sparked fear regarding damage. Community concern about waterways is also reflected by the Cleaner Waterways Program initiated by the Hunter Catchment Management Trust. The Muswellbrook

Shire Council conducts education seminars for local schools to increase awareness of the need to protect waterways and to minimise pollutants.

According to reports in the Muswellbrook Chronicle, the Hunter region has experienced the worst drought in 30 years and significant waterways have been affected. For example in 2006 the Goulburn River has recorded no flow in certain areas. The Department of Water and Energy Hunter implemented new water sharing plans to regulate water usage from Hunter Valley Rivers in December 2005. Water shortages have necessitated the implementation in mid 2005 of 'user pays' water charges by the Muswellbrook Shire Council and Level 1 Water Restrictions for the townships of Muswellbrook, Denman & Sandy Hollow. In addition, there have been restrictions on the Hunter River water available for agricultural and industrial purposes, including mining, with allocations for general security water as low as 0% in recent years in response to the record low storage levels at Glenbawn Dam.

### **3.9.3 Public Service Provision**

Public service provision is a central community concern, as shown by the media review. Health and public transport in the Muswellbrook Shire have been identified as requiring improvement. The Hunter region has a shortage of doctors and is cited as having the fifth worst doctor-patient ratio in the State. Muswellbrook has a ratio of 1:754 people per full-time equivalent General Practitioner, when it is suggested that the recommended ratio is 1:200 (Muswellbrook Chronicle, 20 March 2006). The Muswellbrook hospital has approached the Industrial Relations Council regarding understaffing issues. These views with respect to the local health service echo comments made by participants in the project's consultation program and are further addressed in the Needs Assessment (Section 5). Ongoing project community consultation activities have been mindful of current health service issues and have sought further feedback from Muswellbrook health service professionals wherever possible.

### **3.9.4 Attraction and Retention**

The media review indicated that Muswellbrook Shire has experienced difficulty in attracting and retaining skilled workers and retail businesses. The Muswellbrook Council has invested considerable energy in promoting the Shire in order to attract new residents from metropolitan areas. This has been driven primarily by trades/skills shortages in the area. Local businesses have been asked to identify employment opportunities in order for the Council to promote the Shire's requirements at events such as 'Country Week'.

### **3.9.5 Cumulative Impacts of Industry**

Recognition of the contribution of the industry to the local region through direct (employment of local residents) and indirect effects (flow on effects to other industry sectors that service the industry) is highlighted in local newspaper articles and press releases. However, considerable community concern has been expressed regarding the cumulative environmental impacts of industry and development on air, noise and water quality in Muswellbrook, and surrounding areas of Merriwa, Murrurundi, Scone, and Singleton. In response to these concerns the then Department of Urban Affairs and Planning (now Department of Planning) undertook a Cumulative Impact Study for the Upper Hunter Region that was completed in June, 1997.

The media review shows that the extensive development in the Muswellbrook area has resulted in numerous and detailed environmental assessments. Subsequently potential social impacts and community issues related to development in Muswellbrook have been well-documented. Many of the community issues raised in these processes parallel those identified in the media review. For instance the Mount Arthur North Coal Project Environmental Impact Statement produced in 2000

provides a detailed analysis of environmental and community impacts and issues in the Muswellbrook area. Community issues emerging from this process include concerns about negative impacts from mining operations such as: dust, noise, vibration and water quality. Key issues also included economic benefits of mining in the area such as: sourcing employment from the local region; supporting local education and training; and promoting diversified business development and other economic opportunities in the region.

A study conducted by the Centre for Social Responsibility in Mining (CSR), University of Queensland (Brereton and Forbes 2004) investigated the impact of mining in the Muswellbrook area. Local stakeholders were interviewed and identified the main positive and negative aspects of the local mining industry. Positives included direct and indirect improvements to the local economy, employment opportunities, local skills base, as well as provision of infrastructure and services. Negatives associated with local mining operations included: environmental impacts, mine dependency, social and economic polarisation, skills shortage related to the community's inability to compete with wages set by mines and limited industry employment and training opportunities for local youth. The main community issues identified by Muswellbrook stakeholders were managing the impacts of mining; unemployment; a bypass for the town; and long term sustainability of the community.

A further study by the CSR is considering the cumulative impacts (social, environmental and economic) of the five coal mines surrounding Muswellbrook. The study commenced in September 2005. A release date of the final report is as yet unknown.

### **3.9.6 Air Quality**

The media review indicated that poor quality air, particularly at night, is a significant concern in some areas of the Shire. Domestic wood fires, gas flaring, motor vehicles, backyard burning, bushfires and dust are all contributors. Industry sectors such as coal mining, power generation and agricultural activities are also reported sources of air pollutants within the region with recent media suggesting that air pollution complaints have increased in Muswellbrook and Singleton with the majority related to mines and mining activities (The Newcastle Herald, 13 July 2007).

Media reports indicated that the Aerosol Sampling Program (ASP) study conducted by the Australian Nuclear Science and Technology Organisation (ANSTO) has involved monitoring suspended particulates over large areas of NSW since 1991.

### **3.9.7 Noise**

The media review has highlighted that noise can be a concern to residents in any residential or urban setting. In the Muswellbrook area, noise related complaints to the Council appear to be as a result of noise from heavy vehicles, trains, cattle and poultry farms and farm machinery. Noise complaints are also received by the various mining operations in the area via their community enquiry/complaint lines.

### **3.9.8 Climate Change**

The media review has highlighted a heightened interest in climate change and related issues. Such coverage has escalated during the time of the recent approval of the Anvil Hill project with environmentalists holding protests and threatening to sue the NSW Government over the approval (*Daily Telegraph*, 17 May 2007).

Mt Arthur Coal's parent company, BHP Billiton, has acknowledged the issue of climate change and consequently recently released a *Climate Change Policy* which commits the company to reducing energy use across its operations by 13% and greenhouse gas emissions by 6% by 2012. The Policy also commits to contributing

\$300M to greenhouse gas emission reduction research and projects (both internal and external) by 2012.

The company is also investigating further opportunities for the control of greenhouse gas emissions, such as methane capture and combustion.

### **3.9.9 Housing Approvals**

Housing approvals were another common issue arising during the media review with the Housing Industry Association identifying a significant increase in residential building approvals (*The Newcastle Herald*, 5 July 2007). Other reports also suggest that 'building is booming' following surges in Muswellbrook approvals (Lake Macquarie News, 12 July 2007).

### **3.9.10 Project Implications of the Media Review**

The review of the media in the Muswellbrook area is useful for anticipating salient community issues and areas requiring further scope as part of the social assessment program. As shown, community issues are driving substantial community activity and influencing broader public perception around development within the region.

There is a strong community and regional focus on water quantity and quality. This is related to current water shortages and droughts, heavy water dependence by industry and a community identity structured around activities associated with the waterways. Any potential impacts upon smaller waterways are likely to be met with significant community and regional resistance due to concerns for the larger system.

The proposal is viewed by many as an opportunity to inject money and skills into the local economy. Given the community is influenced by resource development cycles, experiencing strong periods of growth followed by a flattening of the population and economy; managing population change associated with development is a continual challenge for the Shire.

Increases in the Muswellbrook population have several implications for service delivery. Muswellbrook has experienced difficulty retaining retail business and skilled workers. There is currently a trades/skills shortage in which community service provision appears to have suffered. There are a limited number of trades' people in the Shire, and these skilled workers are often employed by industry/mining due to the relatively higher wages. As such the community has struggled to source quality skilled workers to provide services. Subsequently there has been a strong focus by Muswellbrook Shire Council on attraction/retention and education/training. The Council has been proactive in promoting the area as a good place to live in order to attract new skilled residents.

The Muswellbrook Shire Council has also been proactive in attempting to maximize development opportunities and forge partnerships between local business and industry. The Council has a strong focus on economic diversification and has been encouraging further development of businesses complementary to industry. There are opportunities to build alternative economic development opportunities, so that the Muswellbrook community is less reliant on agriculture and the mining industry. There are also opportunities to enhance the community benefits of mining in the region and more effectively sustain development cycles. Partnerships between industry and the community have the potential to address environmental and social issues in the region by contributing to a sustainable local economy.

## **4 Community Attitudes Towards the Proposal**

This section summarises the issues and perceived impacts identified by a range of stakeholders with an interest in the proposed Mt Arthur Underground Project. As has been highlighted earlier in this report, impact assessments are likely to be deficient if they discount the effect on people's values, social dynamics and beliefs about particular events. Those people directly affected are in the best position to say how they actually experience events. Further, people's own predictions, in the form of optimism and fears, are a significant component of their behaviour and hence social impacts (Ross 1990).

Consequently, in this section of the report, issues and attitudes have been expressed in line with stakeholder feedback relating to the proposal. Where possible, throughout the assessment process, stakeholder views have been validated through the development of community information sheets summarising the key findings/outputs of the various phases of the assessment and through the provision of feedback sheets that afford further community comment and feedback.

### **4.1 Stakeholder Analysis**

Social impact assessment involves the cooperation and coordination of a number of 'social partners' or stakeholders. As Burdge (2004) outlines, stakeholders may be affected groups or individuals that:

- live nearby a resource;
- have an interest in the proposed action or change;
- use or value a resource;
- are interested in its use; or
- are forced to relocate.

As previously highlighted, stakeholders have been identified through previous SIA work in the area and through a community networking approach. Stakeholder attitudes have been documented through a range of consultative assessment methods. These mechanisms by stakeholder group are summarised in the following table.

**Table 4.1. Stakeholder Consultations Undertaken as Part of the SIA Program**

| Stakeholder Group                                                                                                                                                                                                                                             | Mechanism                                                                                                                                                                                                                                                                                                                                                                                     | No. of Consultations*                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Residents/Landholders/Tenants                                                                                                                                                                                                                                 | Personal interviews with residents/landholders and tenants located in proximity to the MAC operation in the areas of: <ul style="list-style-type: none"> <li>• UG Project Exploration Licence</li> <li>• Antiene Estate</li> <li>• Denman Road</li> <li>• East Highway</li> <li>• Golden Highway</li> <li>• Racecourse Area</li> <li>• Roxburgh Road</li> <li>• South Muswellbrook</li> </ul> | 67<br>11<br>13<br>10<br>4<br>1<br>11<br>9<br>8 |
| Service Providers <ul style="list-style-type: none"> <li>• Accommodation</li> <li>• Education</li> <li>• Health</li> <li>• Justice</li> <li>• Tourism</li> <li>• Health</li> <li>• Youth</li> <li>• Community Services</li> <li>• Local Government</li> </ul> | Personal and telephone interviews with service providers across the following areas: <ul style="list-style-type: none"> <li>• Muswellbrook LGA</li> <li>• Singleton</li> <li>• Scone</li> </ul>                                                                                                                                                                                               | 48                                             |
| Community Groups                                                                                                                                                                                                                                              | Presentations on the project to community groups within the Muswellbrook LGA                                                                                                                                                                                                                                                                                                                  | 6                                              |
| Community Consultative Committee                                                                                                                                                                                                                              | Project presentations to CCC members and regular updates on the project through monthly meeting forum                                                                                                                                                                                                                                                                                         | Monthly                                        |
| Employees                                                                                                                                                                                                                                                     | Surveys of existing MAC employees to develop mine employee profile and to update residential and expenditure patterns                                                                                                                                                                                                                                                                         | 51                                             |
| <b>Total Number of Consultations</b>                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                               | <b>172</b>                                     |

\*Many of these groups have been consulted on more than one occasion at key stages in the assessment process.

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In addition, a number of community information sheets have been produced to summarise the project and outputs of the assessment program.

Issues emerging from these consultations are outlined in more detail below.

## 4.2 Community Issues

This section outlines the issues/perceived impacts identified by the range of stakeholders with an interest in the proposed development. Approximately 172 consultations were undertaken across the Muswellbrook, Singleton and Scone (now referred to as the Upper Hunter Shire area) Local Government Areas between November 2005 and June 2006 to identify community issues with the proposed Underground Project.

A subsequent phase of consultation was undertaken during July 2007 to present the outcomes of the environmental assessment process and the mitigation measures that had been proposed to address the above community issues.

The questions that were raised during the second phase of the consultation process were primarily focused on the company's existing operations rather than concerns with the proposed Underground Project. Local residents and landholders also commented on their appreciation of Mt Arthur Coal's existing communication and consultation mechanisms. Questions specifically related to the Underground Project

were primarily associated with the technical aspects of the mining operations such as the proposed mining phases and extent of mining.

## General Issues

As identified above, the first round of consultation sought to introduce the proposal to the community and to identify and document community issues. The following chart illustrates the key issues that were raised by the community when first introduced to the Underground Project.

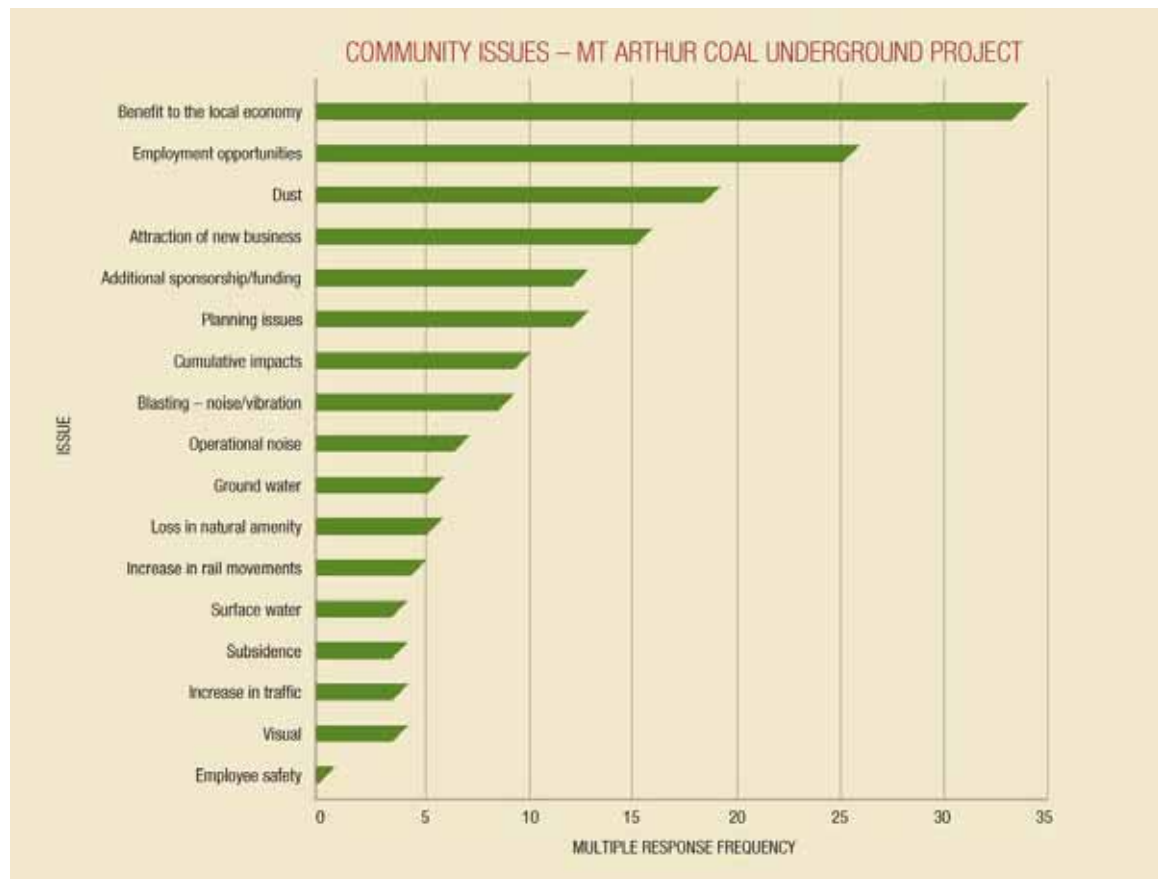


**Figure 4.1. Community Issues Identified Through Consultation**

With respect to potential negative impacts associated with the project, increase in dust levels and the potential for cumulative impacts with other mines were the most frequently identified issue themes. Other issues raised included blasting - noise/vibration, noise from the proposed mining operation, impacts of subsidence and the potential loss of the area's natural features. Economic benefits of the project, employment opportunities and flow on effects to the local economy, were frequently cited.

In general, visual and dust impacts relating to the project were perceived by many respondents as less critical given the underground nature of the proposal; and it was apparent that issues varied according to the geographic location of stakeholders, as illustrated in the map below.

## Geographic Issues

Issues raised throughout the consultation program were closely associated with the geographic location of respondents. For instance, the proximity to local infrastructure (e.g. rail line), the co-location of particular industry sectors (e.g. irrigators) and the natural geography of the land (e.g. ability to view surrounding mines) were seen to influence the types of issues raised by respondents.

Using the location markers as a guide (refer to Figure 4.2), landholders residing in the Antienne area were more likely to raise issues associated with noise and property values; whereas on Denman Road issues of water, dust, visual amenity and traffic impacts were frequently cited. Cumulative impacts of mining, general visual amenity and dust were noted as key issues in the Racecourse area, South Muswellbrook and further a field at Roxburgh Road.

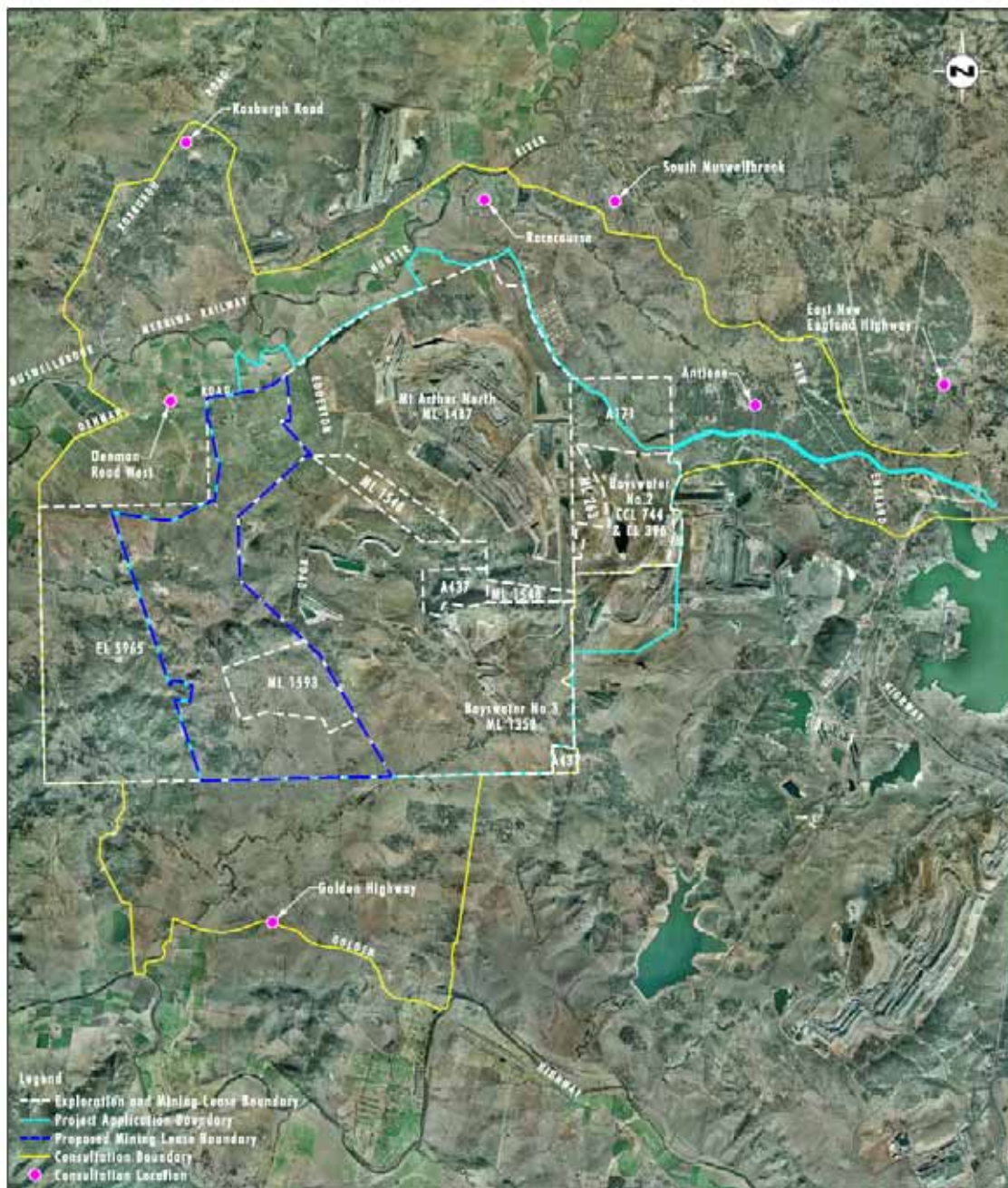


Figure 4.2. Location of Residents Consulted as Part of the Program

Each of the issue themes identified are described in the sub sections that follow and, where appropriate, quotes obtained from the interview transcripts have been used to highlight the issues raised.

### Dust

A number of residents were concerned that a new mine would increase the dust levels in the area. However, the majority of respondents felt that given the mine was an underground operation, dust impacts would be reduced. Specific issues relating to dust included: stockpiling of coal, transportation of coal, and exposed areas of land on the project site.

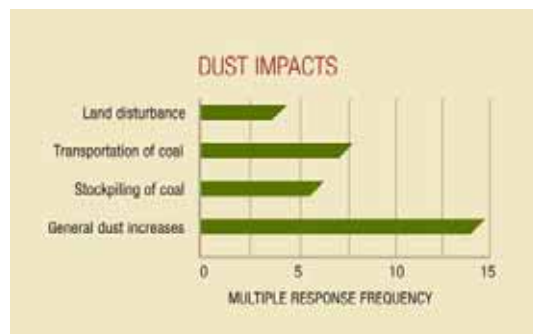


**Figure 4.3. Dust Impact Issues**

*"It is black dust, coal dust, another mine can only make it worse"*

*"Muswellbrook is always so dusty, but it is a mining town"*

*"I clean my furniture everyday because of the dust"*

*"The outside of my house is so dirty, it gets in the gutters and the tanks"*

*"Extra trains can only mean more dust along the train line"*

*"As long as there is stockpiling there will be dust"*

*"I am worried about more dust, it cannot be healthy for my family"*

### Cumulative Impacts Associated with Mining Operations and Potential Projects

Residents raised concerns about the number of current mines in the region. The major cumulative issue identified related to environmental impacts such as noise and dust. Cumulative issues associated with additional traffic and the changing nature of the area, (i.e. change in visual amenity from grazing country and natural views to views of mining operations) were also identified.

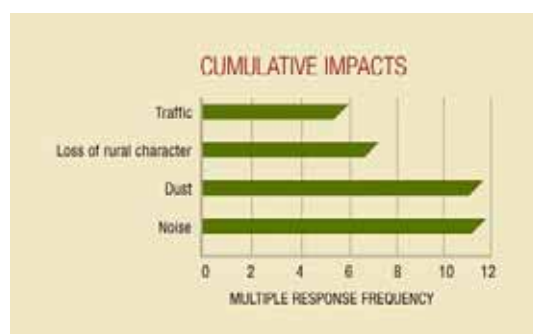


**Figure 4.4. Cumulative Impact Issues**

*"Everywhere I look I see a mine".*

*"I like to look at scenery, not mines everywhere"*

*"It is not just Mt Arthur Coal noise, but all the other mine noise as well"*

*"It never used to be this dusty, the more mines that start, the more dust on my house"*

## **Blasting**

In relation to blasting, existing issues of vibration and noise associated with blasting in the area from various mining operations, were raised during consultation.

*"The vibrations already shake my house, I don't want any more blasts"*

Stakeholders were also interested in obtaining additional information about blasting associated with an underground operation i.e. 'do they need to blast in underground mining projects and to what extent?'.

## **Operational Noise**

A number of residents were also concerned that noise from machinery and infrastructure required to run an underground mine might also impact upon them, particularly noise from trucks and noise from exhaust fans.

*"I don't want large fans buzzing, keeping me up all night".*

*"Trucks driving on site 24hrs a day is bound to be a nuisance"*

## **Water Issues**

Some residents raised issues associated with other environmental effects within the project area in particular water on and off-site such as groundwater impacts and surface water run-off.

For example, some respondents asked about the flow of water off site to the Hunter River in heavy rainfall and were concerned about water quality impacts to local waterways including the Hunter River and Saddlers Creek. Concerns were also raised as to how water would be managed on the site.

*"I sure hope that all the rainwater can stay on your land and not run into the river".*

*"My livelihood is that river"*

## **Subsidence**

During the consultation, respondents were told about potential impacts of subsidence associated with underground mining operations. As a result, issues regarding the degree of subsidence, how it would look from personal residences or roadways and the impacts to surface water flows were raised during the process.

*"The issue is really how much the land subsides"*

*"If it is not near my place, I am not worried"*

*"It may create big holes in the ground, that may not be safe"*

## Rail Movements

During the consultation process, respondents were advised of a potential increase in rail movements that would be associated with the new underground mining project. As a result, issues regarding the capability of the railway line to handle extra traffic and an increase in rail noise were raised by some of the respondents

*"It is not that bad at the moment but more coal means more coal trains and more noise"*

*"Can the rail line support more trains, it is already full of trains"*

## Loss of Natural Amenity

Some residents also expressed issues associated with potential impacts on the natural amenity of the area, in particular, environmental effects associated with the underground project and its operations. Some reiterated the need for continued responsible management.

*"They have always carried out operations responsibly; I hope it remains the same"*

*"More productivity can only mean more noise and dust"*

*"You can never get back to that peaceful rural environment"*

## Planning Issues

In relation to the underground project, a number of planning issues were identified by key stakeholders. These included a lack of trust in the development approval process, lack of faith in the company's ability to comply with approval conditions and further expansion concerns, should the underground project be given the go ahead by government.



**Figure 4.5. Planning Issues**

*"It is going to go ahead anyway, why should I waste my time worrying"*

*"The company will do what they want"*

*"At the end of the day it is up to the government"*

*"This is just the start, you guys will always keep mining further and further"*

*"It is good we are being asked now before it being submitted"*.

### **Additional Issues**

Some long-term residents of the area asked questions about the heritage/history associated with the land proposed for the underground project; In particular, if any works were to be carried out near Mt Arthur itself.

Others raised the issue of rehabilitation; in particular the company's plans for rehabilitation of the site should the proposal be approved.

*"At the end of it all I hope it looks like it used to"*

### **Potential Benefits**

When asked about potential benefits associated with the proposal, over two-thirds of respondents discussed benefits to the local economy, opportunities for further employment, and the potential attraction of new businesses to the area.

*"It will be good if the workers live and spend money in town"*

*"My kids may have a job there one day"*

*"May bring in some new underground mining businesses to the area"*

### **Regional Opportunities**

Respondents were also asked to comment on the community generally, particularly:

- Opportunities for employment
- Health of Local businesses
- Roads
- Public Transport
- Health services and facilities
- Recreation services and facilities
- Arts and cultural services
- Educational and school services and facilities
- Other community services and facilities

The majority of respondents saw a need for improved health services, both public and private and educational facilities (primary, secondary and tertiary) in the future, if the development proceeded.

Several residents identified the need to encourage more education in trades and mining related professions, and saw opportunities for the local TAFE to expand in this area.

There was a mixed response from respondents to the health of local businesses in the area.

Most of the respondents were very positive regarding the potential for new developments in their community such as new housing (subdivisions) and business

development, which were seen to also provide further opportunities for accommodation and retail services.

With regard to potential development in the area, more than half of those surveyed wanted the natural amenity of the area to be taken into consideration when designing the project.

## 5 Community Needs

To identify the needs of the Muswellbrook community an assessment of community needs was undertaken as part of the social assessment program for the project. The assessment had the following key objectives:

- To understand population and demographic changes within the Shire;
- To identify adequacy of existing services to meet community needs;
- To identify areas of potential strategic partnerships.

The methodology employed to obtain assessment information to meet the stated objectives included:

- 1) **Literature Review and Social Indicators Analysis** – this involved a review of relevant planning documents i.e. Muswellbrook Shire Council Social Plan 2005-2010, the Muswellbrook Shire Strategic Plan and the Muswellbrook Shire Council Community Enhancement Program (revised June 2006); and analysis of relevant socio-demographic data obtained from the ABS 2001 Census, to obtain a picture of population characteristics and population change in the locality.
- 2) **Assessment of Community Services and Facilities** – this involved identifying current services offered within the LGA and through personal interviews with service providers (approximately 43 interviews undertaken across a range of sectors – health, education, housing and accommodation, local government, youth) assessing the capacity of service providers to manage population change; and through interviews with local residents (approximately 80 in total).

### 5.1 Population and Demographic Change

The socio-demographic characteristics of the LGA have been presented in detail within Section 3. The key points can be summarised as follows:

- The Muswellbrook LGA population grew by 3.3% between 2001 and 2006, despite demonstrating population declines between 1999 and 2001;
- The Muswellbrook LGA population recorded higher incomes than the Hunter Statistical Division; and
- Muswellbrook demonstrated high occupancy rates for housing and lower proportions of unoccupied dwellings. The total amount of dwellings increased between the 2001 and 2006 Census representing 4.7% growth in Muswellbrook, compared to 6.3% growth in the Hunter Statistical division.

#### 5.1.1 Predicted Changes to Demographics

Since 2001, the State of the Environment report (2003-2004) produced by the Muswellbrook Shire indicates that the Muswellbrook area has been experiencing strong economic growth from commercial and industrial sectors as well as residential development. The Council indicates that economic growth is related to further

expansion and development of coal mining within the locality in the last 10 years, specifically the development of the Mt Arthur Coal open cut mine, as well as extensions to the Muswellbrook No. 1 Open Cut, Drayton and Liddell Coal Mines, and approval of the Mount Pleasant mine. This trend was predicted in the Strategic Study of Northern New South Wales Coalfields, produced by the Minerals Consultative Committee (MCC) in November 1999, which outlined that by 2007/2008; approximately 50% of production in the northern coalfields would be from new mines and extensions. This economic growth verifies the pivotal role of coal mining in the local Muswellbrook and regional economies.

It is also predicted that development in the Muswellbrook Shire will be closely related to increases in production of other primary industry sectors including viticulture, and the equine industry. There is also the prospect of the development of major industrial complexes in the vicinity of the Bayswater and Liddell power stations. The tourism industry is also expected to develop further due to the area's natural scenery and developing wine industry.

Residential developments have also contributed to growth in the Muswellbrook Shire, with a number of significant residential subdivisions being developed in both the Muswellbrook and Denman townships. Commercial centres will be redeveloped or established in new locations e.g. South Muswellbrook.

Future population growth in the area is also likely to be influenced by investor interest. For example, media reviews have indicated that Muswellbrook has recently been identified as a hotspot for property investor interest which is likely to influence future population growth.

The Hunter region population is also affected by resource cycles, as such population trends are also likely to change as a result of mining approvals granted and mine closures.

A review of population characteristics and relevant reports yields the following conclusions:

- Whilst the Muswellbrook Shire experienced a slight population decline (1996-2001), the regional trend and current economic development activity (including applications for development received by Muswellbrook Council), indicate predicted population growth in the coming years. This is consistent both with the 2006 Census (which reported a growth in population of 3.3% between 2001 and 2006 in the Muswellbrook Shire) and also with the forecasts issued by the Hunter Valley Research Foundation which has indicated that the population for the Shire is expected to grow to 16,600 by 2016 and to 17,000 by 2026.
- The population is relatively transient, characterised by short stays at place of residence and higher than State average rental trends. This is likely to continue with the increasing demand for additional mining workforce;
- Fewer elderly and high percentages of pre-school and primary children, coupled with an increasing mining workforce, indicate that higher percentages of children, than State average, would likely continue;
- Higher proportions of young people completing up to Year 10 level and few completing Year 12 education, indicates a need for appropriate skilled education of the nature of TAFE.

## 5.2 Community Services and Facilities

The ability of the population to source services, facilities and employment is a major social indicator.

Residents within the Muswellbrook Shire have access to a wide range of community services, provided by local, State and Federal governments as well as volunteer and community organisations.

In terms of employment, the Muswellbrook Shire has numerous sources of employment and major infrastructures. However, there is a severe shortage of skilled workers to fill employment opportunities in the area; furthermore several social infrastructures are considered understaffed.

A media review of the Muswellbrook area and the Hunter region indicates that public service provision is a critical community issue. The ability of the health and public transport systems to service Muswellbrook residents has been questioned in particular. In addition, the Muswellbrook CBD has struggled to retain businesses.

The Strategic Study of Northern New South Wales Coalfields, produced by the Minerals Consultative Committee in November 1999, confirmed the importance of addressing community concerns in view of the continued development of mining in this region. These concerns were described as relating not only to environmental and amenity issues but also to the limited employment opportunities being generated in the Shire, due to a large component of the mine workforce being sourced outside of the local area and commuting to the area.

The Muswellbrook Shire Council has also expressed concern about the possible negative effect of mining development on the attractiveness of the Shire to potential new residents and existing residents. Population statistics through the 1990's have indicated that development has not necessarily resulted in significant population growth. The provision of services and facilities to the community is therefore of great importance in sustaining the current community and in attracting new residents to the area.

Existing community services and facilities have been reviewed and are described in Section 3.8.

### 5.3 Assessing Community Needs – Service Provider and Community Perceptions

#### 5.3.1 Local Government

The planning processes facilitated by Muswellbrook Shire Council provide significant data in assessing areas of community need. Both the Muswellbrook Shire Council Strategic Plan (2005-2008) and the Muswellbrook Shire Council Social Plan 2005 – 2010, will be considered in this context. Significant consultation is conducted by the Local Council in implementing their planning processes.

##### 5.3.1.1 Muswellbrook Strategic Plan (2005-2008)

A central focus of the Muswellbrook Strategic Plan (2005-2008) is directed towards supporting and sustaining a diversified and expanding economy. This may be achieved by increasing the skills level and employability of residents to reflect the changing demands of the local economy. It is hoped that relationships between business and industry communities will be strengthened through partnerships facilitated by the 'Making Muswellbrook' Shire Committee. The Shire is also promoted and is developing as a short stay tourist destination which supports local tourist businesses and regional events.

Six key strategy areas have been outlined in the strategic plan. These include:

- 1) **Industry and business development plans involving expansion and diversification of industry and complementary businesses.** The Council aims to promote the area, build networks and gain greater assistance from business organisations and government. This involves liaison with Business Support and Network groups such as Chambers of Commerce and the Denman and Districts Development Association;
- 2) **Community perception strategies** that involve Council support of local events and beautification of the Shire through stakeholder and industry support group consultation and partnership;
- 3) **Population, infrastructure and provision of services strategies** focused on sustaining and increasing the region's population. This is dependent on enhancing community infrastructure, health facilities, and educational provision, as well as attracting medical practitioners. The Council aims to better market benefits of living and working in the Shire in order to encourage relocation to the Shire;
- 4) **Employment and education strategies** that have an immediate, short-term, long-term and ongoing focus. The Council's immediate plans involved assessing employment needs and labour shortages. Short-term plans focus on Council consultation and relationship with training organisations in order to develop industry specific skills within the Shire and attract new residents. Long-term plans on the other hand are intended to develop prevocational, and apprenticeship programs with training organisations. They also involve generating industry support for such programs and promoting industry job opportunities. On-going Council plans are focused on supporting Upper Hunter cooperative learning and sustainable business and industry development;
- 5) **Project management strategies** which centre on developing and distributing promotional materials for utilisation at country week, with the primary intention

of attracting new residents to the Muswellbrook Shire to address skill shortages. These plans include enhancing Council assistance with applications for project funding and grants;

- 6) **Tourism and promotion strategies** that involve support for existing and new regional events, tourism associations and tourist facilities. This includes signage and informational bay improvements. Council support has been expressed for the coal rail heritage centre, renewal of the railway station and Muswellbrook Visitors Centre.

### **5.3.1.2 The Muswellbrook Shire Council Social Plan 2005-2010**

The Muswellbrook Shire Council Social Plan 2005-2010 was based on consultation with residents and service providers and took into account demographic considerations. The key community issues and findings, as documented in the Social Plan are as follows:

#### **1. Community Information**

Residents were generally unaware of the range and type of services available to them. This was indicated across age and target groups, thus demonstrating a need to consider the way in which community information is provided to residents. Service providers were also unaware of the range of services available to the community, therefore causing difficulties in referring clients to the appropriate service when the wrong service is accessed as a first point of contact.

#### **2. Lack of Services for People who are Aged or who have a Disability**

Generally there was seen to be a lack of services available for people who are aged or have a disability. Existing services were considered to be at capacity, with more people requiring more services.

Of particular concern to the community was a lack of respite services available to support families with the additional pressures of having a family member(s) with a disability. It was suggested that existing programs needed to be maintained and new programs established to meet increasing needs in this area.

#### **3. Access to Services and Facilities**

From the perspective of service providers, the community's willingness to access services was seen to be a key issue – services said to exist but not being adequately accessed or utilised by the community. Service providers were struggling to find alternative ways to attract clients and encourage involvement by those who most needed support and assistance.

A key issue raised by residents was the lack of public phones and existing phones not working where they are located.

Access to bus shelters and bus stops was also raised as an issue for people in the community without transport. Currently buses stop wherever people are waiting and the community would prefer actual stops and shelters.

#### **4. Rural Isolation**

Rural isolation was raised as an issue, particularly in the context of families with young children or supporting elderly people. The community indicated that

they would appreciate opportunities to be more involved in the community, particularly if activities were available locally.

## 5. Educational Opportunities

Educational opportunities for young people were raised by service providers and the community as an issue, particularly in relation to the cost and range of available TAFE courses in Muswellbrook. The provision of TAFE courses was also raised as a concern for older people who are unemployed and looking to expand their skills.

Therefore in summary, key community needs, as identified by Local Government are as follows:

- Diversification of business;
- Attraction and retention of people / skills to the area;
- The sustainability of the community / population increase;
- Educational opportunities, particularly for young people (significantly fewer completing Year 12 than the State average).
- The need to address the skills shortage (tied to the issue of attraction and retention and fewer residents continuing at school past Year 10 education);
- Adequate provision of information to the community regarding community services and facilities;
- Lack of services for the aged and people with disabilities, particularly respite care;
- Willingness of the community to access services, particularly those most in need;
- Rural isolation, particularly children and the elderly;

In order to address community needs, the Shire has in place a Community Enhancement Program which is set out in the Muswellbrook Section 94 Contributions Plan. This Program aims to address issues raised in its Community Plan which are directed at improving the quality of life for the people of the Shire; and to advocate for contributions towards the provision of community facilities and services from developments having a significant social impact on the Shire community. Muswellbrook Shire Council is currently in the process of reviewing the existing Section 94 Contributions Plan.

### 5.3.2 Community Perceptions of Need

This section summarises perceptions of present and future issues relating to service delivery in the Muswellbrook Shire identified through interviews with service providers (30) and local residents (80). Community perceptions are outlined across the following sector headings:

- Education
- Youth
- Employment
- Health
- Aged and Disability
- Housing and Accommodation
- Other Community Services

## EDUCATION

Respondents were asked to rank the level of service provided for education and related services and facilities. The majority of respondents considered education services to be excellent. Figure 5.1 charts the responses:

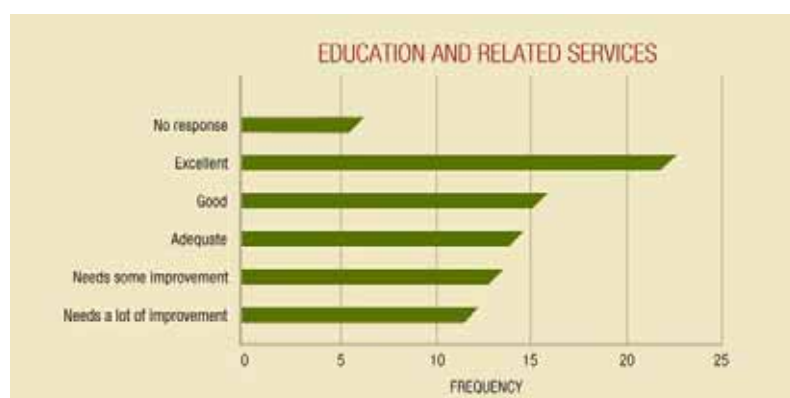


**Figure 5.1. Satisfaction with Education and Related Services / Facilities**

The **most pertinent issues** identified in relation to education included:

- Increased behavioural problems of all age groups, often related to family problems and alcohol /drug abuse amongst children;
- Transition to work – enabling easier transition from high school to work, given fewer young people seeking further education;
- Land availability for extensions to Muswellbrook primary schools (both public and private);
- Vulnerability of primary school staffing for Schools with smaller populations (i.e. Denman primary school in particular); and
- Application of zones to schools which has implications (low intake numbers in some areas and not in others).

The following issues were identified as **existing or emerging issues of most concern**:

- Availability of extended 'before school', 'after school' and 'vacation' care extending after 6pm;

- Behavioural issues affecting all age groups from pre-school to high school requiring effective interventions by trained people;
- Engaging and retaining the interest of those with no motivation to be at school;
- Providing 'life skills' with targeted programs for children and families 'at risk';
- Development of practical 'work skills' and 'on-the-job training' for school children;
- Addressing unrealistic expectations some employers have of school leavers;
- Provision of affordable transport for classes to other education facilities and services and between school and places of part-time employment.

**Trends likely to generate greater pressure in the Muswellbrook Shire** were identified as follows:

- Increased school retention rates and longer compulsory schooling leading to greater need to engage and retain the interest of those not wishing to attend school or continue to further education;
- More people working and increased working hours - more women and sole parents working, longer working hours and more casual work, increasing pressures for quality childcare; 'before school', 'after school' and 'vacation' care;
- Increasing numbers of children with disabilities that benefit from integration into the school community and school activities.

Respondents identified the following needs as requiring **greatest attention**:

- Provision and retention of school sites and land for related facilities in the face of growing development pressures;
- The availability of extended 'before school', 'after school' and 'vacation' care having regard to working hours and the time it takes Muswellbrook/ Denman residents to commute to and from jobs outside the Shire;
- The need to engage and retain the interest of those not wishing to attend school including those attending education because they have nothing better to do;
- The development of practical 'work skills', 'on-the-job training' and work experience;
- Changes in the delivery methods for tertiary education with increased use of flexible delivery methods in the workplace, i.e. using technology assisted learning methods such as online learning and video conferencing, will allow for increased capacity;

- Providing 'life skills' on a broad basis with targeted programs for children and families 'at risk';
- Provision of financial support for educational institutions to assist in running support programs for disadvantaged families;
- The ability to cost effectively provide transport for classes to facilities and services for classes - for instance, to attend environmental, cultural and arts programs.
- Transport for older school children to and from places of part-time employment.

## YOUTH

Respondents were asked a range of questions relating to youth and related services and facilities including the types of services offered, suitability of those services, types of services required, and general comments on the state of youth and youth related services and facilities for Muswellbrook Shire.

The **most important youth issues identified** were:

- Problems of 'Young People in Public Places' partly resulting from poor access to recreation and entertainment, and perceived lack of local activity;
- 'Lack of Access to Services' with young people not knowing services are available and how to access them.

The following issues were identified as **existing or emerging issues**:

- Provision of 'youth resource centres' to enable local access to high technology resources;
- Lack of youth entertainment facilities provided locally (such as cinemas and tenpin bowling centres);
- Limited use of existing multi-purpose, 'one-stop-shop' youth centres also providing youth welfare services (such as PCYC and the Muswellbrook Youth Service);
- Lack of paid youth workers able to work on youth welfare and other youth issues;
- Risk of an increasing divide between 'haves' and 'have nots' (mining vs. non-mining sector families);

**Trends likely to generate greater pressure in the Muswellbrook Shire** were identified as follows:

- Increasingly alienated young people, dropping out of work and society – problems amplified by lack of jobs for inexperienced, unskilled young people;
- Increasing economic pressures on young people and low-income families combined with unemployment and lack of cheap housing;
- Increasing drug and alcohol use and abuse in society leading to increased violence and unsafe situations for parents, teachers and young people;
- Increasing reliance on paid workers, paid carers and those with specialised training providing services tailored to those with particular needs;
- Increasing cultural diversity requiring culturally sensitive responses.

Respondents identified the following needs as requiring **greatest additional attention**:

- Provision of youth welfare services and youth workers;
- Affordable rental accommodation for those providing services;
- Provision of youth resource centres;
- Local entertainment facilities such as cinemas and ten pin bowling;
- Promotion of the multi-purpose, 'one-stop-shop' youth centres;
- Increase in paid workers engaged to work at youth centres.

## **EMPLOYMENT & BUSINESS OPPORTUNITIES**

Respondents were asked a range of questions relating to employment and related services and facilities including types of services offered and the suitability of those services, types of services required, and general comments on the state of local businesses and employment opportunities within the Muswellbrook Shire.

Figure 5.2 illustrates the responses obtained. Once again, the majority of respondents interviewed considered employment opportunities within the Shire to be excellent.

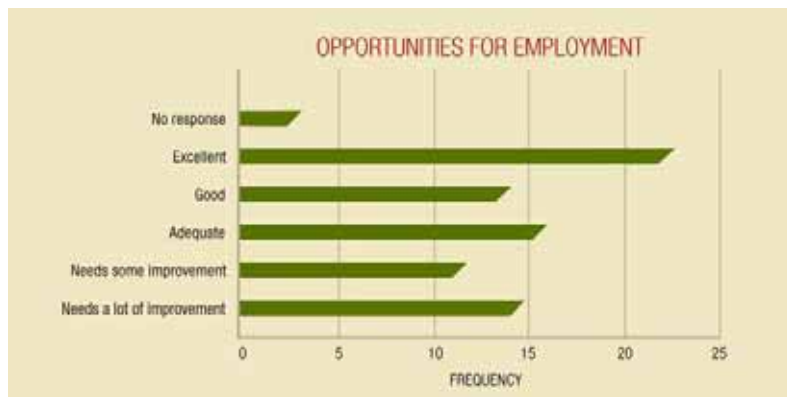


**Figure 5.2. Level of Satisfaction with Employment Opportunities**

Respondents were also asked to rate how they considered the 'health' of businesses within the Muswellbrook Shire. Most respondents considered the health of businesses to be adequate.

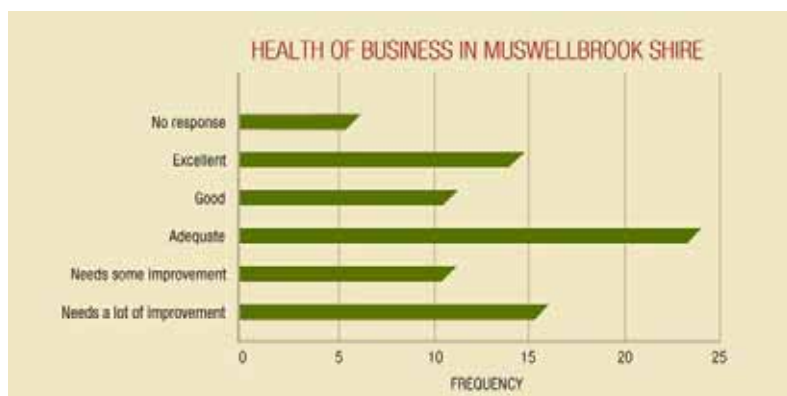


**Figure 5.3. Health of Businesses**

The **most important employment** issues identified included:

- Lack of 'Employment Opportunities' - increasing difficulties in placing young people resulting in growing youth unemployment;
- 'Employer Requirements' for young job starters - young people are not work ready;
- 'Affordable Transport' both within and from Muswellbrook for those seeking employment or training;
- 'Intensive Employment Assistance' - more intensive services for those with physical and mental disabilities, under-going rehabilitation or with health problems in general.

The following issues were identified as **existing or emerging issues**:

- Lack of local employment, especially part-time and casual work for women and school leavers;

- Increasing difficulties for local employers in finding skilled labour, particularly young skilled people;
- Greater employment support services for those who have physical or mental disabilities or with health conditions and are undergoing rehabilitation;
- Assisting mature aged (over 40 year olds) to return to work and fill skill gaps;
- Improvements to transport affordability and availability to support training, job search and employment.

**Trends likely to generate greater pressure in the Shire** were identified as follows:

- Increasing casualisation of the workforce and increases in precarious employment - resulting in high turn-over of employment and recurrent job seeking;
- Increasing numbers of single parents seeking employment - requiring more support services to enable them to return to work;
- Increasing mature aged job candidates – over 40 year olds chasing fewer jobs for this age group;
- Increasing poverty and debt amongst young job seekers, making travel, training and job seeking exceptionally difficult;
- Increasing expectation of those with physical or mental disabilities to join the labour force.

Respondents identified the following needs as requiring **greatest additional attention**:

- Increasing difficulties of local employers getting skilled labour especially young skilled labour;
- Employment services that meet the needs of those with physical or mental disabilities and borderline non-chronic conditions;
- Intensive employment support services for those with disabilities and those who have been through rehabilitation trying to get back into the workforce;
- Helping mature persons return to work by addressing skill gaps, including changing employer attitudes to hiring mature aged persons over 40;
- Availability of local employment especially part-time and casual jobs for single parents and those with young families;
- Improved access to employment services for rural residents.

## HEALTH

Respondents were asked to rate the level of service provided for Health and related services and facilities. Most respondents considered that health services required some or a lot of improvement.

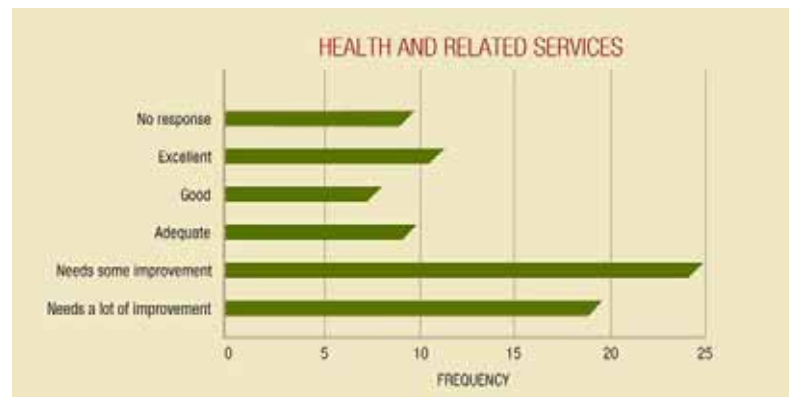


**Figure 5.4. Satisfaction with Health and Related Services**

The **most important health issues identified** included:

- Excessive waiting times for specialist services and general medical visits;
- Young People 'at risk' due to increasingly sedentary lifestyle, home or family circumstances, physical or drug abuse, physical or mental disability, or social alienation;
- Older People 'at risk' due to physical or mental disability, frailty, physical or social isolation, or lack of care;
- Supported 'In-home care' due to the increases of those with mental disabilities and the frail aged; Ageing partners and carers unable to cope, and the policy to care for people in their home and in the community (rather than in institutions).

The following issues were identified as **existing or emerging issues**:

- The number of socially isolated elderly residents living alone with no family living nearby and little connection with the community;
- Shortages of General Practitioners and limited 'out of hours' services;
- Those with chronic and degenerative diseases living at home or in private accommodation without monitoring and care;
- Lack of sufficient daytime, over-night and weekend emergency and respite care;
- The loss of carers as parents and partners in caring roles get older and frailer themselves, and neighbours are less willing and less able to assist.
- The increasing need for better integrated 'in-home' care, ranging from professional medical services to personal hygiene visits and other home-care services.

**Trends likely to generate greater pressure in the Shire** were identified as follows:

- A more demanding community (better educated, more knowledgeable, more active, politically aware and vocal), who will not stand for inadequate services;

- Increased youth related problems including learning and behavioural problems, health problems from more sedentary lives, youth suicides and physically active adolescents with mental health problems;
- Increasing shortages of General Practitioners, less 'bulk-billing' and reduced 'out of hours' services;
- People living longer, healthier lives, expecting to be able to cope at home as they age;
- Increasing mental health problems, increased incidence of mental degeneration and eventually dementia as people live longer;
- Less willingness, need and ability to provide long-term hospital and institutional care particularly for those with chronic ailments or with aged-related mental deterioration.
- Scarcity of family carers - more women work, greater distance between relatives; fewer volunteers, and neighbours are anonymous;
- Increasing demand for 'in-home' care especially from those with mental problems, chronic illnesses and patients discharged early from hospital.

Respondents identified the following needs as requiring **greatest additional attention**:

- Engaging the socially isolated and aged, particularly those with physical disabilities, mental problems, chronic diseases or who are too frail or too ill to engage in normal activities;
- Improved physical accessibility to health and related services through integrated clinical and allied health services, and related services co-located where residents naturally travel for other purposes (e.g. for shopping);
- Informal opportunities to seek advice and assistance before situations reach crisis point, including information on where to find help for emerging circumstances;
- Access to medical practitioners in times of need;
- Increased capacity for 'in-home' care from clinical specialists, allied health workers, home care and home support workers, with home support packages tailored to individual needs;
- Increased access to temporary day, over-night and weekend respite care for emergency situations and to allow regular, planned relief for family carers;
- Both short and long-term hostel and nursing home care especially 'secure units' and 'high level' care, but also 'low level' for those who can no longer cope on their own.

## AGED AND DISABILITY SERVICES

The most important aged and disability issue **identified by respondents related to the inadequacy of high need services**, especially for those with physical or mental disabilities;

The following issue was identified as an **existing or emerging issue**:

- Intervention services for young people especially those aged 0 to 4 years and adults with physical or mental disabilities.

**Trends likely to generate greater pressure in the Muswellbrook Shire** were identified as follows:

- Ageing population, living longer with disabilities;
- Increasing expectations that those with disability or in need of care will remain in their home unless in crisis even if they have chronic or degenerative illnesses;
- Lack of retirement villages with higher levels of care resulting in separation of partners and friends;
- Increasing numbers who cannot afford services.

Respondents identified the following needs as requiring **greatest additional attention** in the Muswellbrook Shire:

- Early intervention and assistance for young children with a disability, especially children aged 0 to 5 years;
- Services for young adults with physical or mental disabilities who have left school, who may be very active and still need additional care and assistance;
- Providing for those with high-level care needs because of physical and mental disabilities when partners, carers or parents are not available;
- Improving accessibility for those in need of assistance by locating services closer to those in need and providing affordable, direct transport services;
- Addressing the need for higher levels of care from that provided in retirement villages.

## HOUSING AND ACCOMMODATION

The **most important housing and accommodation** issues identified were:

- Availability and affordability of residential housing stock;
- Availability of and affordability of rental housing stock;
- Lack of 'Affordable Homes' especially for the young and elderly without support.

The following issues were identified as **existing or emerging issues**:

- Provision of temporary accommodation at times of major industry development;
- Affordable and low-income housing particularly in Muswellbrook;
- The social divide developing in Muswellbrook between the well serviced affluent and the poor living in less serviced areas.

**Trends likely to generate greater pressure in the Muswellbrook Shire** were identified as follows:

- High property prices and rentals placing greater financial and housing stress on families and individuals;
- Community expectations of help and support from Government and charities.

Respondents identified the following needs as requiring **greatest additional attention** in the Muswellbrook Shire:

- Ensuring the adequate supply of residential housing stock;
- Ensuring the adequate supply of rental housing stock;
- Avoiding a social divide developing in Muswellbrook between the affluent in well-serviced mature suburbs and the poor living in less well-serviced growth areas;
- Effective urban planning initiatives for healthier urban design (cycleways, walkways, connectivity, etc).

## **GENERAL COMMUNITY SERVICES AND FACILITIES**

Residents within the Muswellbrook Shire have access to a wide range of community services, provided by local, state and federal governments as well as volunteer organisations.

Community services available in the Muswellbrook LGA, include but are not limited to support services, financial counselling services, community health services, family support program and, and the Local Aboriginal Land Council.

Numerous leisure and recreational opportunities are also present within the Shire.

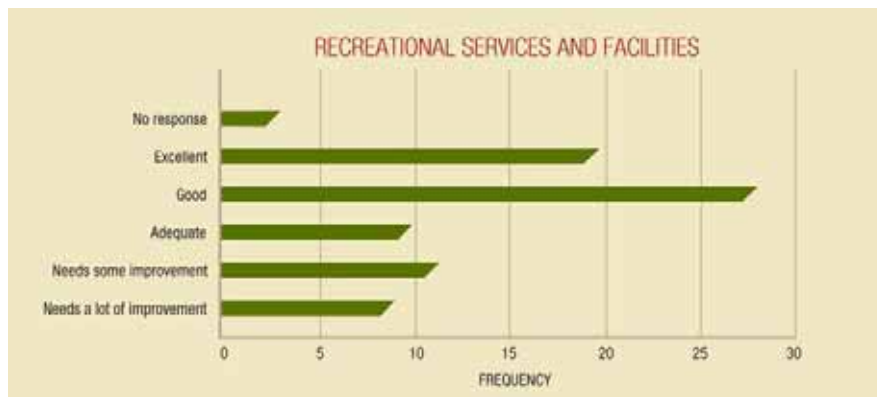


**Figure 5.5. Satisfaction with Recreational Services and Facilities**

Respondents were asked to rank their satisfaction with recreational services and facilities in the area. Most reported that the services and facilities were good.

Respondents were also asked to rank the level of service provided in the area of Arts and Culture.

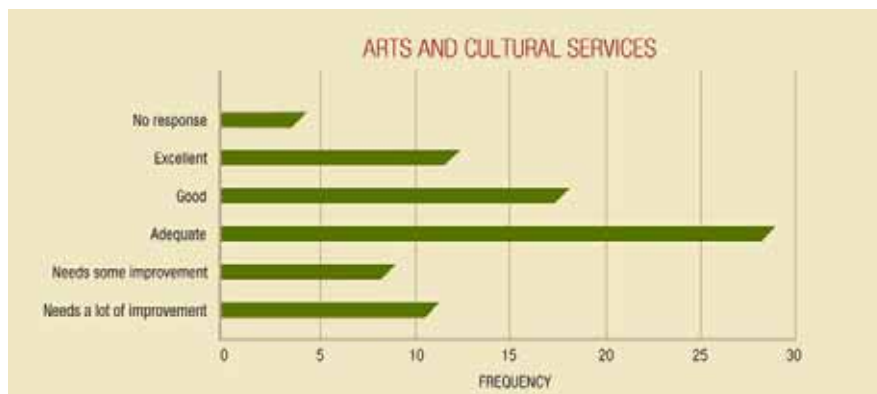


**Figure 5.6. Satisfaction with Arts and Cultural Services**

The **most important Community Service issues identified** included:

- 'Community building' – to break down social alienation and isolation;
- 'Community spaces' – where people are free to meet and interact;
- Ability to access community resources.

The following issues were identified as **existing or emerging issues**:

- Problems of low-income families ranging from social isolation to housing issues;
- Need for 'out-of-hours' support services;
- Access to library services, provision of expanded mobile library services;
- Need for more child-care and 'family day care' places particularly casual places, care outside normal business hours and at weekends;
- Increasing numbers of isolated, older people living alone, especially in rural areas of the Shire;

- Lack of public community gathering places for young people other than at shopping centres;
- Limited transport for those without cars.

**Trends likely to generate greater pressure in the Muswellbrook Shire** were identified as follows:

- Increasing numbers likely to need services – single parents, youths, the elderly;
- More multi-cultural population requiring culturally sensitive responses.

Respondents identified the following needs as requiring **greatest additional attention**:

- Need to enrich community life and create a 'sense of belonging', increasing social cohesion and neighbourly support and creating 'community' in new residential areas, specially for Muswellbrook urban centre;
- Need to overcome social isolation particularly of young people and the elderly;
- Need for 'out-of-hours' services – not just a help line (also a Services Information Directory);
- Need for more childcare and 'family day care' places, especially casual places and provision of care outside normal business hours and at weekends;
- Provision of youth entertainment facilities in the hire.

### 5.3.3 Summary of community needs

Figure 5.7 provides a summary of the community sectors most frequently perceived to require greatest improvement by residents in the Muswellbrook Shire.

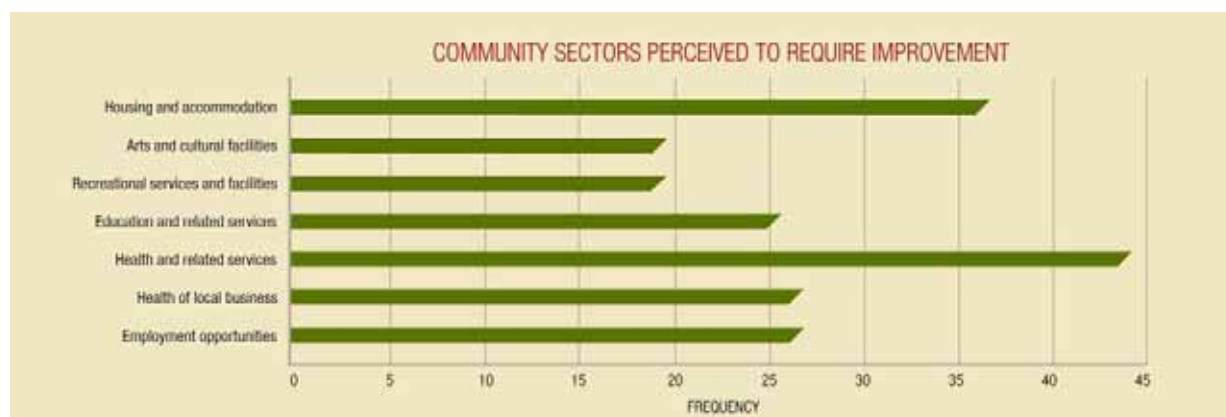


**Figure 5.7 Community Sectors Perceived to Require Improvement**

The majority of respondents interviewed saw a need for improved health and related services, and housing and accommodation facilities, should development proceed. These two community sectors were far more frequently reported than others.

The charts of satisfaction, illustrated in the earlier sections, also outline that respondents were generally satisfied with service provision (reporting adequate satisfaction through to excellent) in relation to each of the community sectors discussed other than in the health area. It is therefore clear from the consultation undertaken that health services and facilities are of concern to the community. Issues relating to each of these sectors are outlined in summary below.

## **HEALTH**

The most important health issues identified included: waiting times to access specialist medical services and local medical practitioners (the ratio of patient to GP is significantly higher for Muswellbrook than for the State ratio; health issues among youth e.g. obesity, physical or drug abuse, physical or mental disability and social alienation; and provision of appropriate care for the elderly i.e. institutional and 'in-home' care.

From a Local Government perspective, key health issues focused on lack of services for those with disabilities and the aged, particularly in relation to respite care to relieve family carers. In more general terms, but with implications for health specifically, rural isolation was noted as of concern for children and the elderly.

## **HOUSING AND ACCOMMODATION**

Perceived housing and accommodation issues identified by residents included the availability and affordability of residential and rental housing and temporary accommodation shortages in the area.

## **EDUCATION**

Education services within the area were also perceived as requiring improvement. Educational issues related to behavioural problems in schools due to family circumstance and substance abuse among youth; school retention rates; land availability for further institutional development; and staffing of local primary schools. A number of respondents identified the need to encourage more education in trades and mining related professions and outlined opportunities for the local TAFE to expand in this area and assist in the transition to work for young people.

From the Local Government perspective, the need for adequate TAFE facilities was highlighted, with an increasing number of young people leaving school at Year 10 and due to a notable skills shortage in the labour market.

## **EMPLOYMENT OPPORTUNITIES**

There was also a desire expressed to see further local employment opportunities in the area due to growing youth unemployment, affordable transport to facilitate employment opportunities and intensive employment assistance for young job starters and those with disabilities.

Local Government, in their Strategic Plan, was concerned with diversification of business and attraction and retention of people to the Shire. The importance of sustainability, for service provision and infrastructure, was highlighted. The Strategic Plan also raised the issue of skills shortage.

There was a mixed response regarding the health of local business, with some community members perceiving that the shopping centre was thriving, while others were concerned businesses in the main street of the town were closing down.

## YOUTH

Issues surrounding youth were also of concern to the community, as discussed previously in relation to employment opportunities and education, but more specifically in terms of access to appropriate recreation and entertainment. Youth facilities, both for general entertainment and more specific youth development programs, were described as lacking.

## 6 Population Impact Projections

Changes in population can bring about a range of social impacts at an individual, family and community level. Such changes may be associated with the workforces (construction and operation) associated with large scale development projects.

This section of the report provides a profile of the existing Mt Arthur Coal workforce, considers the projected population impacts associated with the Mt Arthur Underground Project; and also assesses this impact in light of other development activities that may influence population change in the region (Cumulative impacts), including the recently approved Anvil Hill operation and the approved but undeveloped Mount Pleasant mine.

In order to assess population changes associated with the project, the social assessment program involved a detailed review of service provision within the Muswellbrook Local Government Area (LGA) and relevant neighbouring townships (i.e. Singleton and Scone). This information has been used as a baseline from which population impacts can be predicted. However, as such information is provided as a 'snapshot' at a particular time, such information may be subject to fluctuation and change, and should thus be interpreted in this context.

### 6.1 Mt Arthur Coal Workforce Profile

In order to assess population impacts, it is necessary to have an understanding of the nature of the mine employee workforce and an indication of where the mine employee population may reside. In 1999, Coakes Consulting conducted a Mine Industry and Employee Survey which involved the participation of a number of mining operations and their employees within the Muswellbrook area. These operations included the Bayswater Colliery, Bengalla Mining Company, Anglo Coal Drayton and Muswellbrook Coal Company (Mining industry and Employee Survey, Coakes Consulting, 1999). This work is used for comparative purposes in the following analysis.

In 2003 and 2006, further surveys of Mt Arthur Coal employees were undertaken to provide revised data on a range of factors including employee residential locations and expenditure patterns. This revised work has been used to assist in predicting impacts associated with the influx of the Mt Arthur Underground Project workforce to the area.

The revised survey indicates that mine employees currently working for Mt Arthur Coal reside in a number of townships across the region, as shown in **Figure 6.1**. Using this residential distribution, it can be assumed that any new employees to the area have the potential to reside in similar townships across the region.

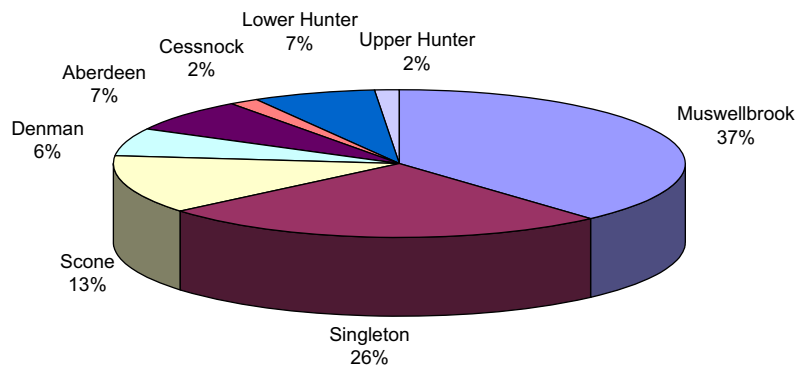
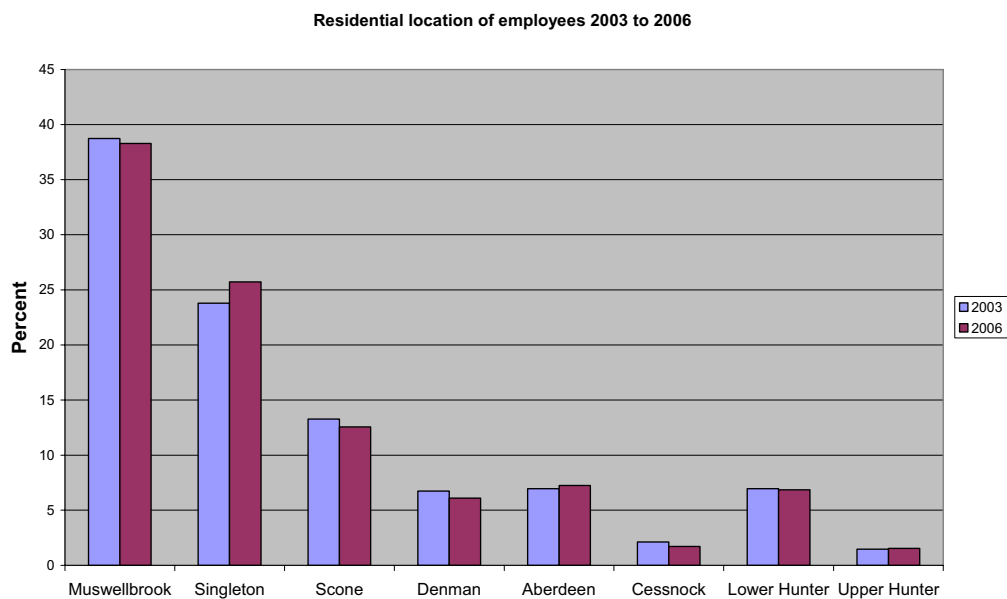
**Residential location of employees 23.06.06****Figure 6.1. Residential Location of Mt Arthur Coal Employees (2006)**

Figure 6.2 provides a comparison of employee residential locations in 2003 and 2006, showing little variation over the three year period.

**Figure 6.2. Employee Residential Locations (2003 and 2006)**

The 2006 employee survey shows the majority of Mt Arthur Coal employees have been with the company for 0 to 4 years, due substantially to the increase in employees resulting from the Mount Arthur North project development, approved in 2001 (Figure 6.3)

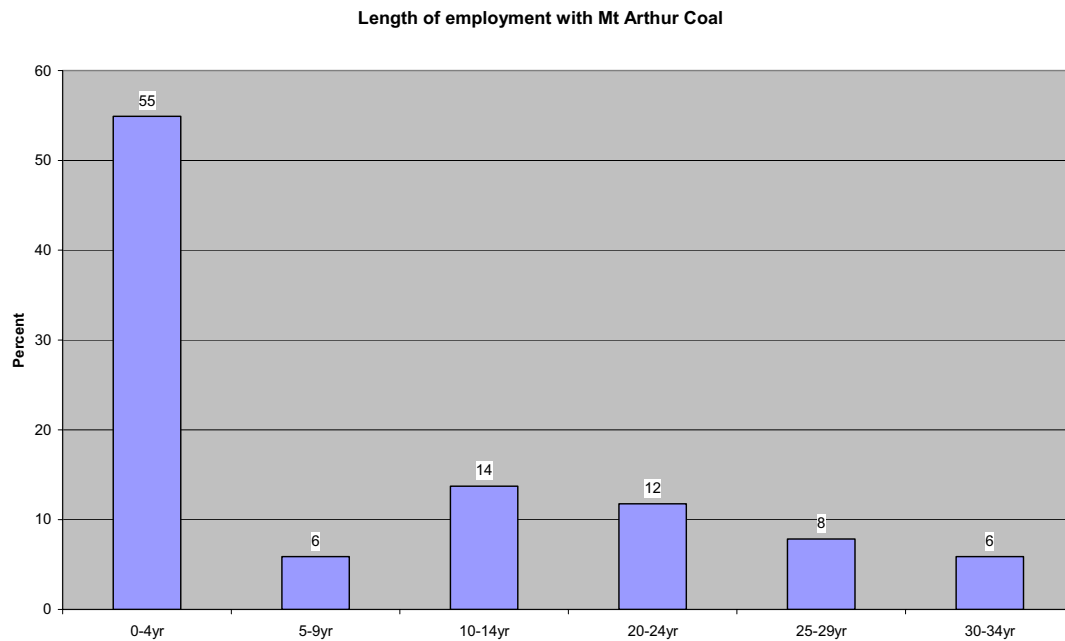


**Figure 6.3. Length of Employment**

A further employee characteristic shown in the 2006 survey is the length of time employees have resided in the local area. As figure 6.4 illustrates, length of local residency varies, however it is predominantly between 0 and 14 years.

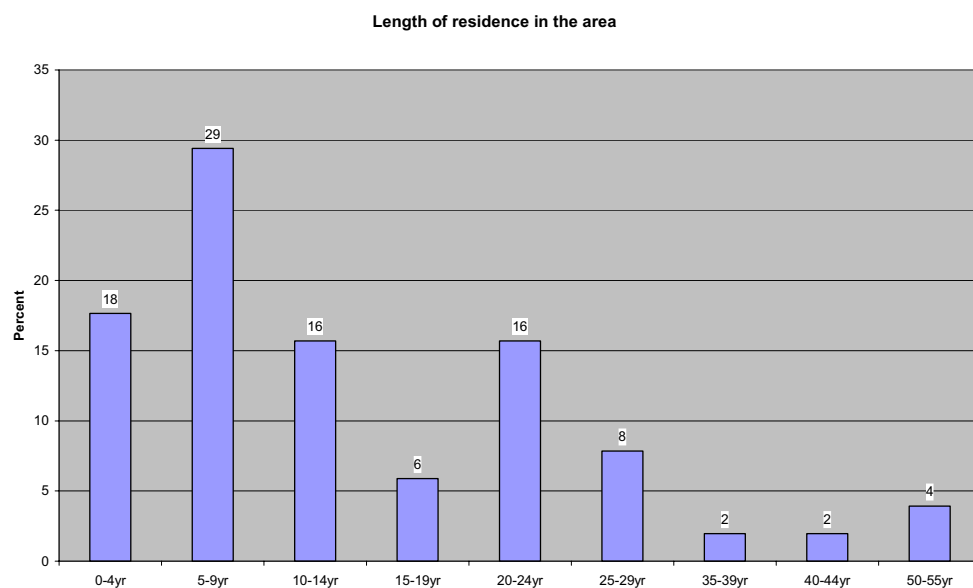
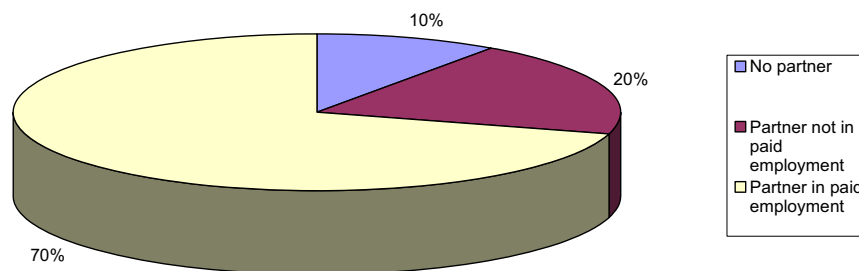
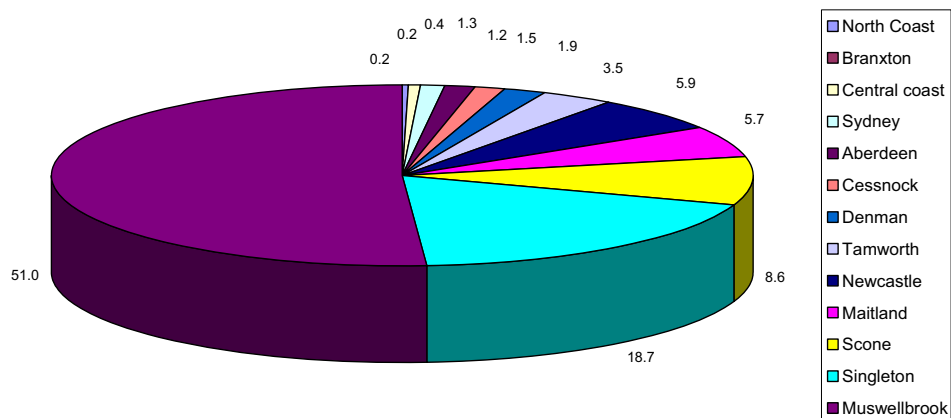


**Figure 6.4. Length of Residency in Local Area**

Figure 6.5 illustrates the employment status of employee's partners, showing a very high proportion (70%) of employees partners being in paid employment.

**Employment status of employees' partners****Figure 6.5. Status of Partners' Employment**

Current employees were also asked to nominate locations for household expenditure, and proportions of expenditure in various locations. The results are shown in **Figure 6.6** with a substantial proportion of household expenditure being spent in Muswellbrook (51%), followed by Singleton (18.7%) and Scone (8.6%).

**Percent of employee household expenditure overall: 2006****Figure 6.6. Household Expenditure Patterns**

## 6.2 Construction Phase

The construction phase workforce for the project is estimated to peak at 470 workers at any one time. Due to the specialised nature of construction, it is assumed that only

20% (94) of these contractor employees will be sourced from within and around the Muswellbrook LGA and that 80% (376) will be sourced from outside the region. It is further assumed for the purposes of this assessment that, due to the temporary nature of construction, these workers will not be accompanied by their families and will stay in temporary accommodation for the construction period.

Given that the major population impact, relating to the construction workforce, will be on temporary accommodation, a review of temporary accommodation in the Muswellbrook Shire was included in the service provision and needs assessment undertaken for the project.<sup>7</sup> This review included an assessment of the temporary accommodation currently available in the Muswellbrook LGA in hotels, motels and caravan parks.<sup>8</sup> In addition, the Shire has many bed and breakfast facilities and in March 2006, the Muswellbrook Tourist Information Centre estimated that a total of 600 beds are currently available in the Shire.

The review indicated that many of these establishments have relatively high occupancy rates, with a weighted average occupancy rate across the LGA of 73%. Given this figure, it is assumed that only 162 of these 600 beds would be available at any one time.

Temporary accommodation has also been identified as a constraint within the Singleton LGA. While there is sufficient land available for development, a shortage of temporary accommodation and rental availability, particularly at the lower end of the property market has been identified by Singleton Council.

Interviews with service providers have indicated that there are a number of temporary accommodation operators who plan to extend their operations in the next five years. The most significant of these is the capacity for expansion of the Pinnaroo Caravan Park, with an existing approval to expand up to an additional 90, 3-bed demountables. Together with the five year expansion plans of the other operators, this could further increase the temporary accommodation capacity of the Muswellbrook LGA by approximately 300 beds.

Provided these operators are able to have a proportion of this additional temporary accommodation available prior to the commencement of the project's construction phase, the temporary accommodation expansion plans in conjunction with currently available 162 beds, any available rental accommodation and proposed land developments of the Shire of Muswellbrook (refer to section 6.3.6); should provide sufficient accommodation within the area to accommodate the construction workforce associated with the Mt Arthur Underground Project.

During recent consultation activities with service providers, the Muswellbrook Shire has indicated the Council has a preference for housing project employees (construction and operational) in permanent housing in order to enhance benefits to the local community such as increased potential for social interaction and also flow on effects to the local economy.

Alternatively, temporary accommodation providers have noted that while they do have the potential to expand, adequate lead time is required to plan for any such expansion; and there will be a reluctance to make the necessary investments if there are perceived uncertainties as to the requirement for expansion. Therefore it is recommended that there is ongoing consultation between the Shire of Muswellbrook,

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<sup>7</sup> It has been assumed for the purposes of this assessment that the construction workforce will reside in a similar residential pattern as existing Mt Arthur Coal employees as outlined in the recent Mt Arthur Coal Employee Survey (Coakes Consulting, 2006)(Figure 6.7). This survey indicated that almost half of Mt Arthur employees reside in the Muswellbrook LGA in the towns/urban centres of Muswellbrook and Denman.

<sup>8</sup> This review was initially undertaken in March 2006. Information collected during the initial review was validated with service providers in July 2007 and updated where possible.

temporary accommodation providers and companies proposing new developments, as to intentions with respect to the housing of temporary personnel in the local area. Such consultation will enable more effective planning.

## 6.3 Operational Phase

### 6.3.1 Workforce Projections

The operational workforce associated with the Mt Arthur Underground Project is estimated to peak at approximately 300 workers. When assessing the population impacts of a proposed project, it is preferable to use the maximum workforce scenario in order to provide a true indication of the full impact of the project on the broader population. Although the operational employee population will increase in phases and will decline in later project stages, for the purpose of this analysis an operational workforce figure of 300 has been used to project population impacts relating to the Underground Project.

Based on previous experience in similar social impact assessments of development projects both nationally and internationally, the assumption is adopted that 20% of jobs associated with the Mt Arthur Underground Project will be locally sourced and 80% sourced from elsewhere. Given this assumption, it is then predicted that 20% of the 300 operational employees (60) will be drawn from the local area with 80% (240) relocating to the Muswellbrook LGA and surrounding areas for employment.

In line with this assumption, Table 6.1 shows the predicted residential location of individuals who may relocate to the area. Given the residential patterns outlined in the recent Mt Arthur Coal Employee Survey (Coakes Consulting, 2006)(Figure 6.7), almost half (103 or 43%) of these workers may choose to live in the Muswellbrook LGA in the towns/urban centres of Muswellbrook and Denman, with others residing in Scone and Singleton and other towns across the region.

These figures form the basis for predicted project related population and community service impacts shown in the following sections.

**Table 6.1. Town of Residence Estimations for Project Employees**

| Town                        | Residential Distribution (%) | Project Employees |
|-----------------------------|------------------------------|-------------------|
| <b>Muswellbrook</b>         | <b>37</b>                    | <b>89</b>         |
| <b>Denman</b>               | <b>6</b>                     | <b>14</b>         |
| Scone                       | 13                           | 31                |
| Aberdeen                    | 7                            | 17                |
| Singleton                   | 26                           | 62                |
| Other towns (across region) | 11                           | 26                |
| <b>Total</b>                | <b>100</b>                   | <b>240</b>        |

\*Residential distribution based on outcomes of the Mt Arthur Coal Employee Survey (2006).

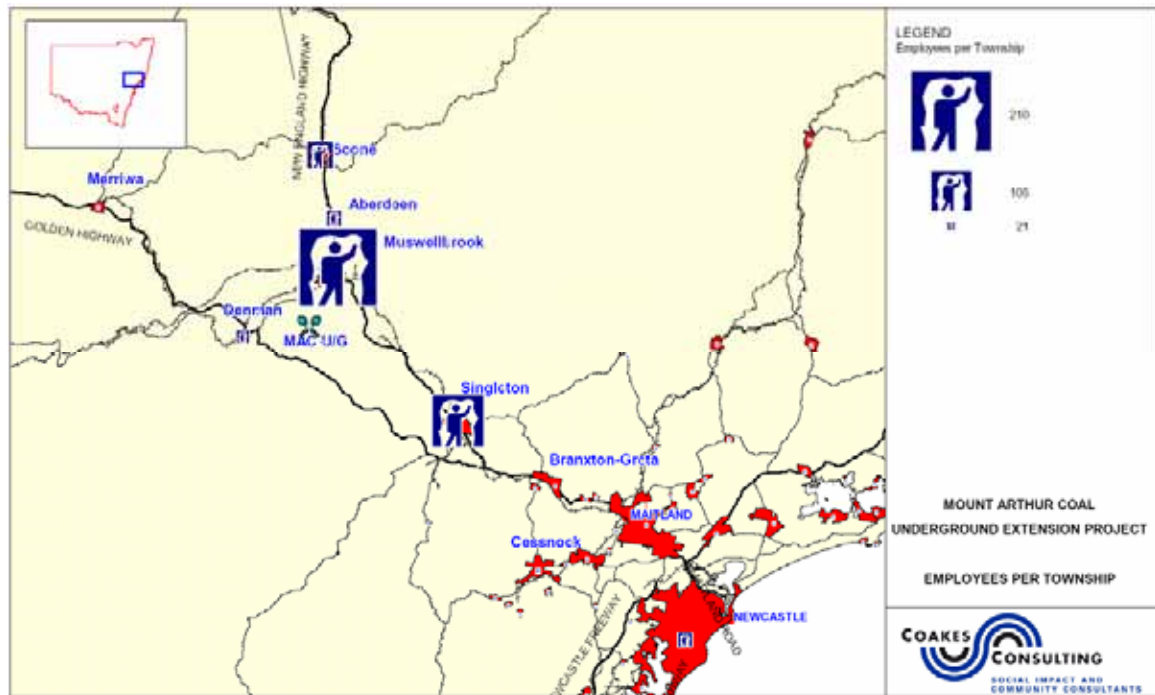


**Figure 6.7. Distribution of Current Mt Arthur Coal Employees by Township**

In addition to the 103 employees predicted to move to the Muswellbrook LGA, 20% of the total workforce, approximately 60 employees, are predicted to be sourced from existing local residents within the LGA. Whilst there will be no direct impacts to local services associated with these 60 employees, it is noted that in total, 163 project operational employees are predicted to reside in the Muswellbrook LGA.

The following section discusses the family level population impacts associated with the influx of the operational workforce for the project.

### 6.3.2 Family Level Impacts Across the Region

In relocating to the area, it is assumed that operational employees will be accompanied by their families. The Mining Industry and Employee Survey (Coakes Consulting, 1999) and the revised 2006 Mt Arthur Coal Employee Survey reports an average family size of approximately 3.5 and thus it is assumed that the new operational employees will have a similar family size.

Table 6.2 shows the predicted family size according to the preferred residential locations outlined in Table 6.1. As the table clearly illustrates, the main population impacts of the project will be experienced in the Muswellbrook LGA, with a potential influx of 361 new community members.

**Table 6.2. Predicted Family Population Impact per Town**

| Town                          | Project Employees | Predicted Family Impact |
|-------------------------------|-------------------|-------------------------|
| <b>Muswellbrook</b>           | <b>89</b>         | <b>311</b>              |
| Denman                        | <b>14</b>         | <b>50</b>               |
| Scone                         | 31                | 109                     |
| Aberdeen                      | 17                | 59                      |
| Singleton                     | 62                | 218                     |
| Other towns across the region | 26                | 92                      |
| <b>Total</b>                  | <b>240</b>        | <b>840</b>              |

As Table 6.2 indicates, the project-related impacts are anticipated to be highest in the Muswellbrook LGA (Muswellbrook and Denman), as these populations share many services and facilities. The towns of Singleton and Scone are anticipated to have the next highest levels of impact. Aberdeen is located geographically between Muswellbrook and Scone, and has few services. The population of Aberdeen accesses services provided in both Muswellbrook and Scone. The balance of the population was distributed across a range of other towns in the region and is therefore not included in the further analysis. Table 6.3 uses the predicted residential location of operational employees (as defined in Table 6.2) and distributes the predicted family impact according to the 2001 ABS age distribution in each respective township.<sup>9</sup>

**Table 6.3. Predicted Population Impacts for Townships of Muswellbrook, Denman, Scone, Aberdeen and Singleton Urban Centre Localities**

| Age ranges   | Denman        |           | Muswellbrook  |            | Scone         |            | Aberdeen      |           | Singleton     |            |
|--------------|---------------|-----------|---------------|------------|---------------|------------|---------------|-----------|---------------|------------|
|              | ABS %         | People    | ABS %         | People     | ABS %         | People     | ABS %         | People    | ABS %         | People     |
| 0-2          | 5.59          | <b>3</b>  | 5.55          | <b>17</b>  | 5.00          | 5          | 4.64          | 3         | 5.46          | 12         |
| 3-4          | 3.32          | <b>2</b>  | 3.89          | <b>12</b>  | 3.82          | 4          | 2.96          | 2         | 4.11          | 9          |
| 5-12         | 16.28         | <b>8</b>  | 15.56         | <b>48</b>  | 14.21         | 15         | 13.92         | 8         | 15.72         | 34         |
| 13-17        | 7.53          | <b>4</b>  | 8.84          | <b>27</b>  | 9.71          | 11         | 10.89         | 6         | 8.50          | 19         |
| 18-24        | 9.72          | <b>5</b>  | 9.12          | <b>28</b>  | 9.21          | 10         | 11.21         | 7         | 9.08          | 20         |
| 25-39        | 22.35         | <b>11</b> | 24.68         | <b>77</b>  | 22.95         | 25         | 21.91         | 13        | 26.21         | 57         |
| 40-49        | 16.60         | <b>8</b>  | 16.36         | <b>51</b>  | 17.35         | 19         | 16.17         | 10        | 16.68         | 36         |
| 50-64        | 18.62         | <b>9</b>  | 16.00         | <b>50</b>  | 17.74         | 19         | 18.30         | 11        | 14.25         | 31         |
| <b>TOTAL</b> | <b>100.00</b> | <b>50</b> | <b>100.00</b> | <b>311</b> | <b>100.00</b> | <b>109</b> | <b>100.00</b> | <b>59</b> | <b>100.00</b> | <b>218</b> |

### 6.3.3 Project Related Impacts on Services

In order to predict impacts on service delivery associated with project population change, it is necessary to assess the current capacity of key community services in the locality.

The social assessment program has involved a detailed review of service provision within the Muswellbrook LGA, being represented by population impacts in the townships of Muswellbrook and Denman; and also key service sectors, namely

<sup>9</sup> At the time of preparation, 2006 ABS Census data on urban centres not available with ABS reporting currently based on a suburban level.

education, health, housing and accommodation, in the townships of Scone and Singleton. As previously noted, it is recognised that there are limited services provided in Aberdeen, with the resident population sharing services in both Muswellbrook and Scone. Furthermore, the anticipated population impact for Aberdeen is relatively low.

Information relating to service capacity and facility thresholds has been obtained and, when used in conjunction with information relating to the current Mt Arthur Coal workforce, provides a baseline from which population impacts associated with the project can be predicted.<sup>10</sup>

In assessing the likely population impacts associated with the Mt Arthur Underground Project across different age categories within the local townships, it is evident that the impact of additional employees and their families may potentially impact the following key sectors:

- Education
- Health
- Housing/Accommodation

The following sub sections outline the potential impacts of the project workforce across these community sectors. Once again as such information is provided as a 'snapshot' at a particular time, such information may be subject to fluctuation and change, and should thus be interpreted in this context.

#### **6.3.4 Education**

Within the Muswellbrook LGA and the townships of Singleton and Scone, a number of public and independent pre-school, primary schools, high schools and tertiary institutions exist. Numerous early childcare and pre-school establishments are also present across the three localities, providing a varying range of private and council or community operated early childhood facilities.

A total population increase of 65 children aged between 0 and 4 years is projected across the three locations. Projected increases were 33, 10 and 22 for Muswellbrook LGA, and Scone and Singleton townships respectively. Table 6.4 indicates capacities available for each of the three locations. When looking at available early childcare capacity for the 0 to 4 age groups as a whole, it appears that projected increases could be accommodated into existing early childcare and pre-school structures with the only exception being Denman, which currently has only one community based facility operating at capacity. However, subsequent discussions with service providers have indicated that there is limited available child care capacity for the 0 to 2 year old age group with long waiting lists experienced for the placement of children within this age group category.

In relation to primary school education, the age distribution in Table 6.3 shows a projected increase of 58 children aged between 5 and 12 years across the townships of Muswellbrook and Denman; 35 in Singleton and 15 in Scone.

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<sup>10</sup> The review of service provision was undertaken in March 2006 and included personal interviews with service providers to assist in assessing the capacity of service providers to manage population change. Updates to capacity based on follow up discussions with a number of service providers in July 2007 have been included where relevant.

Table 6.5 indicates the capacity available across primary schools by locality. Given the capacity available, existing primary schools across the townships specified would have the ability to absorb the predicted number of children resulting from the proposed project workforce.

**Table 6.4. Childhood Care Capacity**

| Education Institution                          | 2006 Enrolments              | Current Capacity                         | Spare Capacity                                  |
|------------------------------------------------|------------------------------|------------------------------------------|-------------------------------------------------|
| <b>Muswellbrook LGA</b>                        |                              |                                          |                                                 |
| Muswellbrook Childcare Centre                  | 30 per day                   | Full                                     | 10 (in 2007)                                    |
| Kate's Kindy Pty Ltd                           | 0 (New)                      | 75                                       | 75                                              |
| Muswellbrook Preschool                         | Approx. 70                   | 60 for five days plus extra 20 on 2 days | Yes. Capacity to expand with demand             |
| ABC Learning Centres PTY LTD Muswellbrook      | Approx. 80                   | Approx 70%                               | 3-5 preschool<br>4-5 pre-kindy                  |
| Denman Children's Centre (Preschool and Kindy) | Approx. 120 (39 max per day) | Full                                     | No. Current expansion plans subject to funding  |
| <b>Singleton Township</b>                      |                              |                                          |                                                 |
| Kate's Kindy Pty Ltd                           | 39 per day                   | 46 per day                               | 7                                               |
| St. Patrick Early Education Centre             | 75                           | 89 per day                               | 14                                              |
| Singleton Heights Preschool                    | Unsure                       | Unsure                                   | Plenty of room for expansion. No waiting lists. |
| Scallywags Preschool                           | 30-33 per day                | 39 per day                               | Approx 10                                       |
| Colleen Gale Children's Centre                 | 42 per day                   | 46 per day                               | 4                                               |
| Singleton Preschool                            |                              | 180 places                               | <20                                             |
| Singleton Christian Childcare                  |                              | 46 per day                               | 16                                              |
| <b>Scone Township</b>                          |                              |                                          |                                                 |
| Scone Early Learning Centre                    | 29 per day                   | 29 per day                               | 0                                               |
| Scone & District Preschool Inc.                | 45 per day                   | 50 per day                               | 5                                               |
| TOTAL                                          | Approx 480                   | Approx 700                               | Approx 170 (not including expansion plans)      |

**Table 6.5. Primary School Capacity**

| Education Institution                                    | 2006 Enrolments | Current Capacity | Spare Capacity |
|----------------------------------------------------------|-----------------|------------------|----------------|
| <b>Muswellbrook LGA</b>                                  |                 |                  |                |
| Muswellbrook Public School                               | 600             | 620              | 20             |
| Muswellbrook South Public School                         | 408             | 620              | 212            |
| St James Primary School                                  | 300             | 350              | 50             |
| Dunmore Lang Christian School                            | 22              | 25               | 3              |
| Denman Public School                                     | 190             | 260              | 70             |
| St Josephs Primary School (Denman)                       | 60              | 90               | 30             |
| Martindale Public School                                 | 20              | 25               | 5              |
| Sandy Hollow Public School                               | 30              | 60               | 30             |
| <b>Singleton Township</b>                                |                 |                  |                |
| Singleton Public School                                  | 557             |                  |                |
| Singleton Christian College (K – Y9)                     | 250             | 476              | 125            |
| St Catherine's Catholic School                           | 387             | 40               | 13             |
| King St Primary School                                   | 505             | 515              | 10             |
| Singleton Heights Public School                          | 590             | 650              | 60             |
| Milbrodale Public School                                 | 26              | 56               | 20             |
| Kirkton Public School                                    | 51              | 61               | 10             |
| Jerry Plains Public School                               | 37              | 50               | 13             |
| Mt Pleasant Public School                                | 58              | 70               | 12             |
| Broke Public School                                      | 34              | 50               | 16             |
| <b>Scone Township</b>                                    |                 |                  |                |
| Aberdeen Public School                                   | 207             | 220              | 13             |
| St Mary's School                                         | 169             | 180              | 11             |
| Scone Grammar Junior School (K-12 NB refer to table 6.6) |                 |                  |                |
| Scone Public School                                      | 484             | 500              | 16             |
| Rouchel Public School                                    | 4               | 25               | 19             |
| TOTAL                                                    | 1680            | 2040             | 360            |

Table 6.3 predicts a project-related increase of 31 people in total aged between 13 and 17 years across the townships of Muswellbrook and Denman; 19 in Singleton and 11 in Scone. Table 6.6 shows additional capacity for students across secondary schools in the defined localities.

**Table 6.6 Secondary School Capacity**

| Education Institution                          | 2006 Enrolments | Current Capacity | Spare Capacity |
|------------------------------------------------|-----------------|------------------|----------------|
| <b>Muswellbrook LGA</b>                        |                 |                  |                |
| Muswellbrook High School                       | 800             | 1100             | 300            |
| St Josephs High School <sup>11</sup>           | 630             | 650              | 20             |
| <b>Singleton Township</b>                      |                 |                  |                |
| St Catherine's Catholic College                | 314             | 400              | 86             |
| Singleton Christian College                    | 547             | 531              | -16            |
| Singleton High School                          | 1340            | 1600             | 260            |
| <b>Scone Township</b>                          |                 |                  |                |
| Scone Public High School                       | 480             | 550              | 70             |
| Scone Grammar Senior School<br>(Includes K-12) | 320             | 480              | 160            |
| TOTAL                                          | 1430            | 1750             | 320            |

The Muswellbrook TAFE services students from across the Upper Hunter region offering a range of courses covering vocational and trade needs. Scone TAFE offers courses focused more on the equine industry and associated rural activities while the Singleton campus of TAFE provides a range of courses including for example general education, arts and media, business, engineering and tourism. The total predicted population aged 18-24 years associated with the Mt Arthur Underground Project is 33 for Muswellbrook and Denman combined; 20 for Singleton; and 10 for Scone. With capacity for an additional 200 student enrolments, it is anticipated the TAFE could absorb additional enrolments associated with an influx of people in this age cohort (Table 6.7).

**Table 6.7. Tertiary Sector Capacity**

| Tertiary Institution | 2006 Enrolments | Current Capacity | Spare Capacity |
|----------------------|-----------------|------------------|----------------|
| TAFE                 | 1300            | 1500             | 200            |

In conclusion, there is sufficient capacity, within the education sector (pre-school, primary, secondary, and tertiary) across the localities specified, to absorb any changes in population impacts associated with the Mt Arthur Underground Project.

<sup>11</sup> Although available capacity for additional students, St Joseph's report that their current specialist facilities such as art rooms, science laboratories and computer are at capacity which has been the subject of a recent funding submission.

### 6.3.5 Health

As has been previously described, Muswellbrook hospital is the largest of the public hospitals located in the Upper Hunter region. Other hospitals in the region include hospitals located in Denman, Merriwa, Scone, Singleton and Murrurundi. The hospitals located in each township and associated nursing homes are supported by a range of community health services and health professionals working across the Upper Hunter region.

**Table 6.8 Health Sector Capacity**

| Health Facility                | 2006 Services | Current Capacity | Spare Capacity |
|--------------------------------|---------------|------------------|----------------|
| Muswellbrook District Hospital | 46 Acute beds | 68 beds (-22)    | Over capacity  |
| Denman Hospital                | 6 Acute beds  | 6 beds           | At capacity    |
| Singleton Hospital             | 56 Acute beds | 56 beds          | At capacity    |
| Scone Hospital                 | 36 Acute beds | 36 beds          | At capacity    |

In relation to health services, it is evident that population influx across age groups associated with the Mt Arthur Underground Project workforce and their families is likely to place pressure on health services within the area. As the profiling work has outlined, the health sector has been identified by residents in the Muswellbrook community specifically, as an area requiring improvement.

While doctor-patient ratios within the area have not been formally accessed, it has been suggested through local media that the Hunter region has a shortage of doctors and is cited as having the fifth worst doctor-patient ratio in the State. It has been quoted that Muswellbrook has a ratio of 754:1 people per full-time equivalent General Practitioner; when it is suggested that the recommended ratio is 200:1 (Muswellbrook Chronicle, 20 March 2006). More recently it has been reported at a symposium of health professionals that the Hunter Valley's critical doctor shortage could be a problem for at least the next decade and that the region's doctor shortage has worsened over the past year, with the GP vacancy rate increasing from 60 to 195 GPs (ABC News, Jun 28, 2007). Even more recently, it has been reported in the media that the "NSW Upper Hunter's critical doctor's shortage is about to get worse" with the announcement that Aberdeen's only GP planned to leave town (ABC News, Aug 1, 2007).

Another area that is reportedly in need of improvement is maternity services and facilities, with the Hunter New England Area Health Service reporting a shortage of midwives in the region. Given that the majority of new employees for the Underground Project are predicted to fall within the 25-39 year age group and consequently at the age which is most likely to be starting families, this has implications for further pressures on existing maternity services.

Concerns regarding the understaffing of the Muswellbrook hospital have also been cited in the local media. Given that the average age of potential employees is approximately 41 years, the issue of hospital beds may be less of an issue with greater strain likely to be placed on General Practitioners and/or other allied health professionals.

The workforce associated with the project is anticipated to place additional pressure on a range of services in the region. Based on the above projection of potential impacts, should the proposal be approved, Mt Arthur Coal will continue to provide Muswellbrook Shire Council and service providers along with the broader community with information regarding the status of the project and the implications of the build up of the construction and operational workforce, through the company's existing consultation mechanisms.

Mt Arthur Coal will in particular seek to work with local government, service providers and also the direct employers of the workforce during the construction phase, to allow services to be provided at an adequate level.

### 6.3.6 Housing

To accommodate the predicted population impacts associated with the Mt Arthur Underground Project (family size impact of 361 people) across the Shire of Muswellbrook, the housing sector must be assessed. The service sector review conducted as part of the social impact assessment has identified availability and affordability of residential and rental housing stock to be an issue in the Muswellbrook area. However, there are a number of initiatives under way to remedy this problem within the locality.

The following table illustrates the availability of land for residential development and the number of lots pending approval in the areas where Project employees are likely to reside.

**Table 6.8. Proposed Housing Developments**

| Proposed Subdivision                            | New Lots      | Approved lots                                                                                                                                                       |
|-------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Muswellbrook LGA</b>                         |               |                                                                                                                                                                     |
| Eastbrooks (South Muswellbrook)                 | 1189 New lots | Stages 1-9 constructed and registered<br>Stage 10 under construction                                                                                                |
| NorthView (Mitchell's Land, North Muswellbrook) | 213 New lots  | Stages 1 And 2 constructed and registered<br>Stage 3 – 47 lots approved                                                                                             |
| St Mary's                                       | 157 New Lots  | Stage 1 – constructed and approved (25 lots)<br>Stage 2A – constructed; almost released (28 lots)<br>Stage 2B – construction contract soon to be released for issue |
| Lou Fisher Place (Parkview Estate)              | 29 new lots   | Approved, constructed and registered                                                                                                                                |
| Cnr Bell and Almond St                          | 25 lots       | Stage 1 approved                                                                                                                                                    |
| Webbers, Ironbark Rd                            | 157 new lots  | 157 lots approved                                                                                                                                                   |
| <b>Singleton</b>                                |               |                                                                                                                                                                     |
| Bridgeman Ridge                                 | 750 new lots  | Approval expected within next 18 months                                                                                                                             |
| Hunter Green                                    | 350 new lots  | As above                                                                                                                                                            |
| Pinnacle                                        | 50 new lots   | As above                                                                                                                                                            |
| Gowrie Links                                    | 350 new lots  | As above                                                                                                                                                            |

| <b>Upper Hunter Shire</b> |                           |                    |
|---------------------------|---------------------------|--------------------|
| Scone                     |                           |                    |
| Figtree Montie Estate     | Further 130 lots proposed | 130 lots developed |
| St Aubins Estate          | 1500 lots proposed        |                    |
| Aberdeen                  |                           |                    |
| Segenhoe Street           |                           | 25 new lots        |
| Aberdeen Heights Estate   | 340 lots proposed         | Stage 1 approved   |

NB: Information current as of July 2007 (Muswellbrook LGA) and August 2007 (other localities).

### **6.3.7 Summary of Population Impacts**

In conclusion, given the stated assumptions, the impact assessment conducted for the Mt Arthur Underground Project indicates that the Shire of Muswellbrook and surrounding localities of Singleton and Scone are likely to be able to absorb the predicted population impacts arising from the construction and operational phases of the project across education and housing sectors, with exceptions being pre-school / childcare facilities in Denman which are currently at capacity. As identified, health services are also currently at capacity and are likely to find it more difficult to cope with the projected population change associated with the project.

An assessment of the cumulative population impacts that may arise from other projects that are currently planned in the Muswellbrook LGA is provided in Section 8

## 7 Economic Impact Assessment

An economic assessment of the project has been undertaken at both the micro and regional level. As highlighted in Section 2.3, survey analysis has been used to determine the economic contribution of the project at the local level, and to develop a profile of the existing Mt Arthur Coal operation and its employees in the region.

In 1999, Coakes Consulting conducted a Mine Industry and Employee Survey which involved the participation of a number of mining operations and their employees within the Muswellbrook area. To our knowledge no further assessment of this kind has been undertaken across the industry in the locality since this time. For the purpose of the current assessment this work has been updated with additional survey information obtained from employees of the Mt Arthur Coal operation (August, 2006) to further define employee residential and expenditure patterns and proportion of local business spend.

The economic impact assessment has also involved multiplier analysis modelling to assess the flow-on effects on income, investment and employment of the proposed project on distant economies. The regional economic impact assessment has been undertaken by Economic Consulting Services.

The economic impacts of the project are likely to occur in two distinct phases - construction and operation with the revenue, expenditure and employment associated with these phases stimulating economic activity for the local and regional economy, as well as for the broader NSW economy.

Before detailing the anticipated economic benefits of the project, existing expenditure patterns are provided as it has been assumed that the operating costs associated with the Mt Arthur Underground Project will be similar to the open cut operation for the purposes of this analysis.

### 7.1 Existing Expenditure Patterns

In relation to sourcing of goods and services from local suppliers, a large proportion of Mt Arthur Coal's existing operating costs (excluding labour), on items such as repairs and maintenance, fuel, plant and machinery hire, stores, contractors and consultants and general expenses; are sourced from within the local region, which is defined as townships within the Upper and Lower Hunter region.

In financial year (05/06) for the existing open cut operations \$122,927,584 of the company's operating costs (excluding labour) was spent within the local region..

In relation to local expenditure by the existing Mt Arthur Coal operation, Figure 7.1 considers the proportion of costs for FY05/06 across relevant operating cost areas. This figure shows that local expenditure (excluding labour costs) is largely spent on repairs and maintenance (71%).

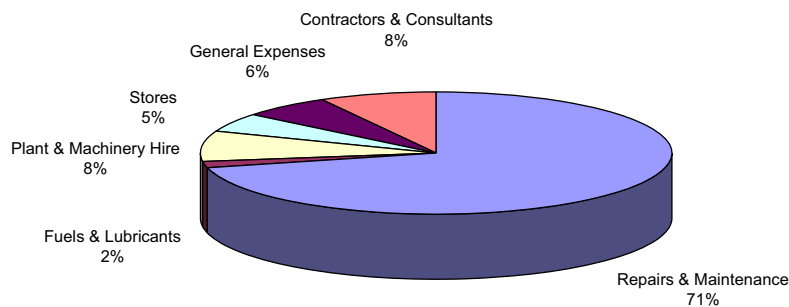


**Figure 7.1. Percentage of Local Spend Across Operating Cost Areas**

Figure 7.2 shows the location and overall proportion of local business expenditure relating to operational costs (excluding labour) where location has been recorded. As the figure shows 32.6% (\$40,129,372) of business expenditure on operating costs is directed to Muswellbrook with 28.2% (\$34,630,917) going to Singleton. Approximately 39% (\$47,798,435) is expended in the Lower Hunter region.

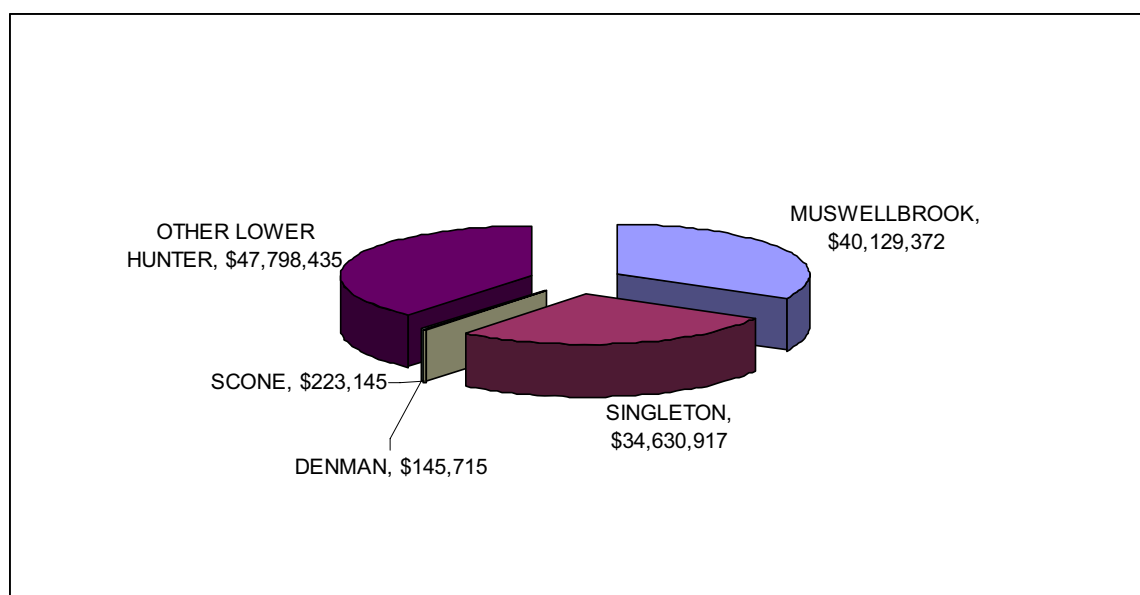


**Figure 7.2. Location and Value of Operating Cost Local Spend (excluding labour)**

Of operating cost expenditure spent locally, high proportions of repair and maintenance costs are expended in the townships of Muswellbrook and Singleton with fuel largely purchased from the Lower Hunter region. All parts and machinery and government charges are spent in Muswellbrook.

## 7.2 Economic Impacts of Employee Expenditure

Employees working on the project, whether they locate in the area for only a short time during the construction phase or settle in the area for the longer operations phase, will have an economic impact through their weekly expenditures.

To determine the likely household expenditure in the area by employees of the proposed Mt Arthur Underground Project, the location and magnitude of household expenditure of employees was modelled using primary data collected from the 2006 survey of existing Mt Arthur Coal employees.

Weekly expenditures have been estimated on the basis that the workforce during the two year construction phase will peak at 470 and will peak at 300 for the 21 years of the mine's operational phase (assumptions are detailed further below). The average rate of earnings is assumed to be \$72,544 per employee. Data from the ABS Annual Household Expenditure Survey estimates that average household expenditure is \$880 a week.

Expenditure in these groupings represents 78% of gross earnings however, this is an average across all incomes, and it is notable that the proportion of income spent on household expenditure declines as incomes increase.

For the purpose of the analysis, it is assumed that household expenditure is 62 % of gross income - the ABS Household Expenditure Survey finds that average household expenditure falls to 59% of income for incomes above \$100,000 a year. It is also assumed that many of the workers on the project will be earning salaries of that order with the average salary during construction estimated to be \$88,000/annum, and during operations, estimated at over \$100,000/annum.

While the population impact prediction analysis presented in Section 6 has assumed that 20% of workers will be drawn from the local area, this economic assessment is aimed at estimating where all employees will spend their incomes based on their location (including those employees drawn from the local area as well as those that move from outside the area).

As with the population prediction work, in order to identify where the workers will be undertaking their weekly spending, it is assumed that the workforce for both the construction and operations phases will be located in local towns in the same proportion as for the existing Mt Arthur Coal workforce. Consequently it is assumed that employee spending is likely to be directed in the township where the employee resides.

The assumptions that have been adopted for the purposes of assessing employee expenditure are as follows:

- The workforce during the construction phase will peak at 470 with construction taking place over a two year period. Given that 470 employees is the peak workforce and there will be a progressive build up to, and tailing off from this peak, it is estimated that there will be an average of 390 employees over the two year construction period.<sup>12</sup>
- The number of employees during the operations phase of the project is expected to peak at approximately 300 employees. As this number will fluctuate throughout the project's life, and for the purposes of providing a

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<sup>12</sup> As the construction workforce will fluctuate over the two year construction phase, it would be over estimating the benefits of employee expenditure if the anticipated number of employee at the peak (470) were used and therefore an average number of employees for this period has been applied.

conservative estimate of the potential economic benefits associated with the expenditure of project employees, an average of 245 employees over the life of the project has been applied for the purposes of estimating employee expenditure.<sup>13</sup>

- Each employee spends an average of 62% of their incomes on a weekly basis in the Hunter economy.
- The Underground Project's operations costs will total approximately \$3 billion over the production years (average of \$143 million a year including labour costs).
- Labour costs (company expenditure on labour/employee salaries) represent 22 per cent of this total; an average of \$31 million earnings for labour.

Based on the above assumptions it has been determined that there will be an annual total of \$21 million for employee expenditure over the two years of construction and approximately \$19.7 million per year for the project's operational phases; providing an overall average employee expenditure over the life of the project of \$19.8 million to the Hunter region.

Employee expenditure is estimated to be spread through the region in accordance with the anticipated location of the workforce (Table 7.1). It shows that, during construction, \$8.2 million of the yearly spend will be made in Muswellbrook, with \$5.3 million in Singleton and \$2.8 million in Scone. During operations, these expenditures are slightly lower, at \$7.6 million, \$4.9 million and \$2.6 million respectively. The average expenditure over the life of the project including construction and operation phases is \$7.7, \$4.9 and \$2.6 millions, respectively.

**Table 7.1. Average Annual Economic Impacts of Employee Expenditures**

| AREA                   | AVERAGE ANNUAL EMPLOYEE SPEND (\$millions) |                 |                 |                 |                 |                 |
|------------------------|--------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                        | CONSTRUCTION                               |                 | OPERATIONS      |                 | OVERALL         |                 |
|                        | DIRECT                                     | MULTIPLIED      | DIRECT          | MULTIPLIED      | DIRECT          | MULTIPLIED      |
| MUSWELLBROOK           | \$8.222                                    | \$12.744        | \$7.617         | \$11.807        | \$7.670         | \$11.888        |
| SINGLETON              | \$5.265                                    | \$8.161         | \$4.878         | \$7.561         | \$4.912         | \$7.613         |
| SCONE                  | \$2.795                                    | \$4.332         | \$2.589         | \$4.013         | \$2.607         | \$4.041         |
| DENMAN                 | \$1.337                                    | \$2.072         | \$1.238         | \$1.919         | \$1.247         | \$1.933         |
| ABERDEEN               | \$1.539                                    | \$2.385         | \$1.426         | \$2.210         | \$1.436         | \$2.225         |
| <b>TOTAL LOCAL</b>     | <b>\$19.158</b>                            | <b>\$29.695</b> | <b>\$17.748</b> | <b>\$27.510</b> | <b>\$17.871</b> | <b>\$27.700</b> |
| <b>OTHER HUNTER</b>    | <b>\$2.106</b>                             | <b>\$10.707</b> | <b>\$1.951</b>  | <b>\$9.919</b>  | <b>\$1.964</b>  | <b>\$6.255</b>  |
| <b>TOTAL HUNTER</b>    | <b>\$21.264</b>                            | <b>\$40.402</b> | <b>\$19.699</b> | <b>\$37.429</b> | <b>\$19.835</b> | <b>\$33.955</b> |
| <b>OTHER NSW</b>       |                                            | <b>\$7.017</b>  |                 | <b>\$6.501</b>  |                 | <b>\$10.278</b> |
| <b>TOTAL NSW</b>       | <b>\$21.264</b>                            | <b>\$47.419</b> | <b>\$19.699</b> | <b>\$43.929</b> | <b>\$19.835</b> | <b>\$44.233</b> |
| <b>OTHER AUSTRALIA</b> |                                            |                 |                 |                 |                 |                 |
| <b>TOTAL AUSTRALIA</b> |                                            | <b>\$47.419</b> |                 | <b>\$43.929</b> |                 | <b>\$44.233</b> |
| <b>IMPORTED</b>        |                                            |                 |                 |                 |                 |                 |
| <b>OVERALL TOTAL</b>   | <b>\$21.264</b>                            | <b>\$47.419</b> | <b>\$19.699</b> | <b>\$43.929</b> | <b>\$19.835</b> | <b>\$44.233</b> |

**N.B Note that all multiplier impacts include the initial direct impacts of the project.**

<sup>13</sup> As in the case of the construction workforce, the operational workforce will fluctuate over the 21 year operational phase with the employment during operations estimated to peak at approximately 300 employees. In order to not over estimate the benefits of employee expenditure by assuming 300 employees for every year of the project's operation phase of 21 years, an average number of employees of 245 per year has been applied for the purposes of calculating benefits associated with employee expenditure.

Every dollar that is spent by households has a multiplier effect through the local and more distant economies. Therefore the flow on impacts of expenditures in the towns such as Muswellbrook and Singleton not only have a multiplier impact in the local town, but also have an impact on other towns within the wider Hunter Region. Consequently, the impact on the Hunter Region is greater than the sum of the impacts on the individual towns in the locality of Muswellbrook.

Furthermore, the economic impacts will not be contained within the Hunter Region. There will also be flow on effects for towns outside of the region. Therefore the local spend during the construction phase of \$19.2 million a year has an additional impact of \$29.7 million within the local towns.

Similarly, while direct expenditure in other parts of the Hunter totals only \$2.1 million, the flow on impacts for the rest of the Hunter are estimated at an additional \$10.7 million. For the rest of NSW, while there is no direct expenditure, it is estimated that expenditures by employees of the coal mine will add \$7.0 million to the rest of the State economy during construction and a further \$6.5 million a year during the operation phase. Total annual flow on economic impacts to the remainder of NSW resulting from employee expenditure and averaged over the Project's life is therefore estimated to be approximately \$10 million.

These annual impacts can be added to give a total figure for anticipated economic benefits over the life of the project attributed to employee expenditure – indicating that employees will directly inject \$456 million into the Hunter Region and NSW economies over the project's lifetime.

When account is taken of the multiplier impacts, the full impact on the Hunter Region is estimated to be \$781 million and for the NSW economy is approximately \$1,017 million (Table 7.2).

**Table 7.2. Economic Impacts of Employee Expenditures Over the Course of the Project**

| AREA                   | TOTAL EMPLOYEE SPEND FOR PROJECT LIFE (\$millions) |                 |                  |                  |                  |                    |
|------------------------|----------------------------------------------------|-----------------|------------------|------------------|------------------|--------------------|
|                        | CONSTRUCTION                                       |                 | OPERATIONS       |                  | OVERALL          |                    |
|                        | DIRECT                                             | MULTIPLIED      | DIRECT           | MULTIPLIED       | DIRECT           | MULTIPLIED         |
| MUSWELLBROOK           | \$16.444                                           | \$25.488        | \$159.959        | \$247.937        | \$176.403        | \$273.425          |
| SINGLETON              | \$10.530                                           | \$16.322        | \$102.437        | \$158.777        | \$112.967        | \$175.099          |
| SCONE                  | \$5.590                                            | \$8.665         | \$54.370         | \$84.274         | \$59.960         | \$92.939           |
| DENMAN                 | \$2.674                                            | \$4.145         | \$26.003         | \$40.305         | \$28.677         | \$44.450           |
| ABERDEEN               | \$3.078                                            | \$4.771         | \$29.943         | \$46.412         | \$33.021         | \$51.183           |
| <b>TOTAL LOCAL</b>     | <b>\$38.316</b>                                    | <b>\$59.390</b> | <b>\$372.713</b> | <b>\$577.705</b> | <b>\$411.029</b> | <b>\$637.095</b>   |
| <b>OTHER HUNTER</b>    | <b>\$4.212</b>                                     | <b>\$6.529</b>  | <b>\$40.971</b>  | <b>\$63.505</b>  | <b>\$45.183</b>  | <b>\$70.034</b>    |
| <b>TOTAL HUNTER</b>    | <b>\$42.528</b>                                    | <b>\$80.803</b> | <b>\$413.684</b> | <b>\$785.999</b> | <b>\$456.212</b> | <b>\$780.955</b>   |
| <b>OTHER NSW</b>       |                                                    | <b>\$14.034</b> |                  | <b>\$136.516</b> |                  | <b>\$236.398</b>   |
| <b>TOTAL NSW</b>       | <b>\$42.528</b>                                    | <b>\$94.837</b> | <b>\$413.684</b> | <b>\$922.515</b> | <b>\$456.212</b> | <b>\$1,017.352</b> |
| <b>OTHER AUSTRALIA</b> |                                                    |                 |                  |                  |                  |                    |
| <b>TOTAL AUSTRALIA</b> | <b>\$42.528</b>                                    | <b>\$94.837</b> | <b>\$413.684</b> | <b>\$922.515</b> | <b>\$456.212</b> | <b>\$1,017.352</b> |
| <b>IMPORTED</b>        |                                                    |                 |                  |                  |                  |                    |
| <b>OVERALL TOTAL</b>   | <b>\$42.528</b>                                    | <b>\$94.837</b> | <b>\$413.684</b> | <b>\$922.515</b> | <b>\$456.212</b> | <b>\$1,017.352</b> |

N.B Note that all multiplier impacts include the initial direct impacts of the project.

### 7.3 Economic Impact of Spending on Materials and Equipment

An additional benefit for the local economy can be attributed to Mt Arthur Coal's expenditure on materials<sup>14</sup> and equipment (excluding expenditure on labour).

Total annual expenditure on materials (excluding labour) is estimated at \$126 million during the construction phase and \$111 million during the operations phase (Table 7.3).<sup>15</sup>

The expenditure on materials during both the construction and operations phases is spread more widely than expenditure by employees due to the fact that materials and equipment will be sourced from a wider area – i.e. outside of the Hunter Region and outside of NSW. It is estimated that during the construction phase approximately 50 per cent of materials will be sourced from outside of the Hunter Region and during the operations phase, this proportion is estimated to reduce to 22 per cent.

**Table 7.3. Average Annual Economic Impacts of Expenditures on Materials and Equipment**

| AREA                   | AVERAGE ANNUAL PROJECT SPEND - EXCLUDING LABOUR (\$millions) |            |            |            |           |            |
|------------------------|--------------------------------------------------------------|------------|------------|------------|-----------|------------|
|                        | CONSTRUCTION                                                 |            | OPERATIONS |            | OVERALL   |            |
|                        | DIRECT                                                       | MULTIPLIED | DIRECT     | MULTIPLIED | DIRECT    | MULTIPLIED |
| MUSWELLBROOK           | \$9.888                                                      | \$16.019   | \$12.253   | \$14.703   | \$12.047  | \$14.818   |
| SINGLETON              | \$7.147                                                      | \$11.578   | \$8.856    | \$10.627   | \$8.707   | \$10.710   |
| SCONE                  | \$0.015                                                      | \$0.024    | \$0.019    | \$0.023    | \$0.019   | \$0.023    |
| DENMAN                 | \$0.010                                                      | \$0.016    | \$0.012    | \$0.015    | \$0.012   | \$0.015    |
| ABERDEEN               | \$0.000                                                      | \$0.000    | \$0.000    | \$0.000    | \$0.000   | \$0.000    |
| <b>TOTAL LOCAL</b>     | \$17.060                                                     | \$27.637   | \$21.140   | \$25.368   | \$20.785  | \$25.565   |
| <b>OTHER HUNTER</b>    | \$45.651                                                     | \$96.531   | \$56.568   | \$83.423   | \$55.619  | \$84.563   |
| <b>TOTAL HUNTER</b>    | \$62.711                                                     | \$124.168  | \$77.708   | \$108.791  | \$76.404  | \$110.128  |
| <b>OTHER NSW</b>       | \$3.723                                                      | \$32.616   | \$4.614    | \$36.096   | \$4.537   | \$35.793   |
| <b>TOTAL NSW</b>       | \$66.434                                                     | \$156.784  | \$82.322   | \$144.887  | \$80.940  | \$145.921  |
| <b>OTHER AUSTRALIA</b> | \$21.761                                                     | \$51.356   | \$26.964   | \$113.028  | \$26.512  | \$107.665  |
| <b>TOTAL AUSTRALIA</b> | \$88.195                                                     | \$208.140  | \$109.286  | \$257.915  | \$107.452 | \$253.587  |
| <b>IMPORTED</b>        | \$37.805                                                     |            | \$2.143    |            | \$5.244   |            |
| <b>OVERALL TOTAL</b>   | \$126.000                                                    | \$208.140  | \$111.429  | \$257.915  | \$112.696 | \$253.587  |

**N.B** Note that all multiplier impacts include the initial direct impacts of the project.

The anticipated economic benefits over the total life of the project (construction and operations) that can be attributed to spend on materials and equipment are provided in Table 7.4. The analysis shows that expenditure on materials, services and equipment will directly inject:

- \$277 million into the Muswellbrook economy;

<sup>14</sup> The term "materials" covers items including equipment and materials for site preparation, conveyors and other earth moving equipment, contractors, accommodation, transport and marketing, and the ongoing use of materials such as repairs and replacement parts, fuel and explosives.

<sup>15</sup> Adding the operations expenditure (\$111 million) to the employee expenditure during the operations phase (\$19.7 million from Table 1) gives a total of \$131 million. While this appears inconsistent with the total operations expenditure of \$143 million discussed above, this is due to the fact that employee expenditure is not the same as the expenditure on labour - employee expenditure during operations is \$20 million, while expenditure on labour is approximately \$31 million.

- \$478 million into the local economy;
- \$1,757 million into the economy of the Hunter Region; and
- \$1,862 into the NSW economy over the life of the project.

When account is taken of the multiplier impacts, the full impact on the Muswellbrook economy is estimated to be \$341 million. There is an estimated overall impact of \$2,533 million for the entire Hunter Region (Table 7.4).

**Table 7.4. Economic Impacts of Expenditures on Materials Over the Course of the Project**

| AREA                   | TOTAL SPEND FOR PROJECT LIFE - EXCLUDING LABOUR (\$millions) |                  |                    |                    |                    |                    |
|------------------------|--------------------------------------------------------------|------------------|--------------------|--------------------|--------------------|--------------------|
|                        | CONSTRUCTION                                                 |                  | OPERATIONS         |                    | OVERALL            |                    |
|                        | DIRECT                                                       | MULTIPLIED       | DIRECT             | MULTIPLIED         | DIRECT             | MULTIPLIED         |
| MUSWELLBROOK           | \$19.776                                                     | \$32.037         | \$257.307          | \$308.768          | \$277.083          | \$340.805          |
| SINGLETON              | \$14.294                                                     | \$23.156         | \$185.973          | \$223.167          | \$200.267          | \$246.324          |
| SCONE                  | \$0.030                                                      | \$0.049          | \$0.399            | \$0.479            | \$0.429            | \$0.527            |
| DENMAN                 | \$0.020                                                      | \$0.032          | \$0.260            | \$0.313            | \$0.280            | \$0.345            |
| ABERDEEN               | \$0.000                                                      | \$0.000          | \$0.000            | \$0.000            | \$0.000            | \$0.000            |
| <b>TOTAL LOCAL</b>     | <b>\$34.120</b>                                              | <b>\$55.274</b>  | <b>\$443.939</b>   | <b>\$532.727</b>   | <b>\$478.059</b>   | <b>\$588.001</b>   |
| <b>OTHER HUNTER</b>    | <b>\$91.302</b>                                              | <b>\$193.061</b> | <b>\$1,187.928</b> | <b>\$1,751.887</b> | <b>\$1,279.230</b> | <b>\$1,944.948</b> |
| <b>TOTAL HUNTER</b>    | <b>\$125.422</b>                                             | <b>\$248.336</b> | <b>\$1,631.867</b> | <b>\$2,284.614</b> | <b>\$1,757.289</b> | <b>\$2,532.949</b> |
| <b>OTHER NSW</b>       | <b>\$7.446</b>                                               | <b>\$65.233</b>  | <b>\$96.894</b>    | <b>\$758.006</b>   | <b>\$104.340</b>   | <b>\$823.238</b>   |
| <b>TOTAL NSW</b>       | <b>\$132.868</b>                                             | <b>\$313.568</b> | <b>\$1,728.761</b> | <b>\$3,042.619</b> | <b>\$1,861.629</b> | <b>\$3,356.188</b> |
| <b>OTHER AUSTRALIA</b> | <b>\$43.522</b>                                              | <b>\$102.712</b> | <b>\$566.244</b>   | <b>\$2,373.592</b> | <b>\$609.766</b>   | <b>\$2,476.304</b> |
| <b>TOTAL AUSTRALIA</b> | <b>\$176.390</b>                                             | <b>\$416.280</b> | <b>\$2,295.005</b> | <b>\$5,416.212</b> | <b>\$2,471.395</b> | <b>\$5,832.492</b> |
| <b>IMPORTED</b>        | <b>\$75.610</b>                                              |                  | <b>\$45.003</b>    |                    | <b>\$120.613</b>   |                    |
| <b>OVERALL TOTAL</b>   | <b>\$252.000</b>                                             | <b>\$416.280</b> | <b>\$2,340.008</b> | <b>\$5,416.212</b> | <b>\$2,592.008</b> | <b>\$5,832.492</b> |

N.B Note that all multiplier impacts include the initial direct impacts of the project.

## 7.4 Economic Impact of All Expenditure Activities

Table 7.5 provides a picture of the overall anticipated economic impact of expenditure activities associated with the Mt Arthur Underground Project. The total economic impact of the project is the sum of the direct and flow on effects of the employee expenditure and the expenditure on materials and services for the mine. The addition shows that the project will have a significant impact on the Muswellbrook economy, as well as the Hunter's regional economy. It is anticipated that local direct expenditure from the project in Muswellbrook will average \$20 million a year over the project's life. The project will also have flow on impacts which generate a further \$7 million a year increase in output for Muswellbrook.

There will also be a significant economic impact on the economy of the Hunter Region with direct expenditure averaging \$96 million a year over the life of the project with a further \$48 million year being generated through flow on effects.

**Table 7.5. Average Annual Economic Impacts of Expenditures from the Project**

| AREA            | AVERAGE ANNUAL PROJECT SPEND - LABOUR AND MATERIALS (\$millions) |            |            |            |           |            |
|-----------------|------------------------------------------------------------------|------------|------------|------------|-----------|------------|
|                 | CONSTRUCTION                                                     |            | OPERATIONS |            | OVERALL   |            |
|                 | DIRECT                                                           | MULTIPLIED | DIRECT     | MULTIPLIED | DIRECT    | MULTIPLIED |
| MUSWELLBROOK    | \$18.110                                                         | \$28.763   | \$19.870   | \$26.510   | \$19.717  | \$26.706   |
| SINGLETON       | \$12.412                                                         | \$19.739   | \$13.734   | \$18.188   | \$13.619  | \$18.323   |
| SCONE           | \$2.810                                                          | \$4.357    | \$2.608    | \$4.036    | \$2.626   | \$4.064    |
| DENMAN          | \$1.347                                                          | \$2.089    | \$1.251    | \$1.934    | \$1.259   | \$1.948    |
| ABERDEEN        | \$1.539                                                          | \$2.385    | \$1.426    | \$2.210    | \$1.436   | \$2.225    |
| TOTAL LOCAL     | \$36.218                                                         | \$57.332   | \$38.888   | \$52.878   | \$38.656  | \$53.265   |
| OTHER HUNTER    | \$47.757                                                         | \$107.237  | \$58.519   | \$93.342   | \$57.583  | \$90.818   |
| TOTAL HUNTER    | \$83.975                                                         | \$164.569  | \$97.407   | \$146.220  | \$96.239  | \$144.083  |
| OTHER NSW       | \$3.723                                                          | \$39.634   | \$4.614    | \$42.596   | \$4.537   | \$46.071   |
| TOTAL NSW       | \$87.698                                                         | \$204.203  | \$102.021  | \$188.816  | \$100.776 | \$190.154  |
| OTHER AUSTRALIA | \$21.761                                                         | \$51.356   | \$26.964   | \$113.028  | \$26.512  | \$107.665  |
| TOTAL AUSTRALIA | \$88.195                                                         | \$255.559  | \$109.286  | \$301.844  | \$107.452 | \$297.819  |
| IMPORTED        | \$37.805                                                         |            | \$2.143    |            | \$5.244   |            |
| OVERALL TOTAL   | \$147.264                                                        | \$255.559  | \$131.128  | \$301.844  | \$132.531 | \$297.819  |

N.B Note that all multiplier impacts include the initial direct impacts of the project.

Table 7.6 provides the overall accumulated economic benefits of the Project.

**Table 7.6. Accumulated Economic Impacts of Expenditures from the Project**

| AREA            | TOTAL SPEND FOR PROJECT LIFE - LABOUR AND MATERIALS (\$millions) |            |             |             |             |             |
|-----------------|------------------------------------------------------------------|------------|-------------|-------------|-------------|-------------|
|                 | CONSTRUCTION                                                     |            | OPERATIONS  |             | OVERALL     |             |
|                 | DIRECT                                                           | MULTIPLIED | DIRECT      | MULTIPLIED  | DIRECT      | MULTIPLIED  |
| MUSWELLBROOK    | \$36.220                                                         | \$57.525   | \$417.266   | \$556.705   | \$453.486   | \$614.230   |
| SINGLETON       | \$24.824                                                         | \$39.478   | \$288.410   | \$381.945   | \$313.234   | \$421.422   |
| SCONE           | \$5.620                                                          | \$8.713    | \$54.769    | \$84.753    | \$60.389    | \$93.466    |
| DENMAN          | \$2.694                                                          | \$4.177    | \$26.264    | \$40.618    | \$28.958    | \$44.795    |
| ABERDEEN        | \$3.078                                                          | \$4.771    | \$29.943    | \$46.412    | \$33.021    | \$51.183    |
| TOTAL LOCAL     | \$72.436                                                         | \$114.664  | \$816.652   | \$1,110.432 | \$889.088   | \$1,225.096 |
| OTHER HUNTER    | \$95.514                                                         | \$199.590  | \$1,228.899 | \$1,815.392 | \$1,324.413 | \$2,014.982 |
| TOTAL HUNTER    | \$167.950                                                        | \$329.139  | \$2,045.551 | \$3,070.613 | \$2,213.501 | \$3,313.904 |
| OTHER NSW       | \$7.446                                                          | \$79.267   | \$96.894    | \$894.521   | \$104.340   | \$1,059.636 |
| TOTAL NSW       | \$175.396                                                        | \$408.406  | \$2,142.445 | \$3,965.134 | \$2,317.841 | \$4,373.540 |
| OTHER AUSTRALIA | \$43.522                                                         | \$102.712  | \$566.244   | \$2,373.592 | \$609.766   | \$2,476.304 |
| TOTAL AUSTRALIA | \$218.918                                                        | \$511.118  | \$2,708.689 | \$6,338.727 | \$2,927.607 | \$6,849.845 |
| IMPORTED        | \$75.610                                                         |            | \$45.003    |             | \$120.613   |             |
| OVERALL TOTAL   | \$294.528                                                        | \$511.118  | \$2,753.692 | \$6,338.727 | \$3,048.220 | \$6,849.845 |

N.B Note that all multiplier impacts include the initial direct impacts of the project.

## 7.5 Job Creation

The project is anticipated to employ up to 470 workers (peak) during the construction phase and up to a further 300 workers during the operations phase. Estimates have already been made in Section 6 with respect to the residential location of future Mt Arthur Underground Project employees based on the residential locations of the current Mt Arthur Coal workforce. For the purposes of conservatively identifying indirect employment benefits, it has been estimated for the purposes of this

economic analysis that an average of 144<sup>16</sup> workers will reside in Muswellbrook during the construction phase and an average of 91 during the operations phase.<sup>17</sup>

Based on these assumptions, Table 7.7 provides anticipated indirect employment benefits. In summary these indirect benefits include:

- the direct employment in Muswellbrook of 144 jobs will be expanded by an additional 132 jobs during the construction phase.
- there will be an estimated 91 residents of Muswellbrook working in mining jobs, and an additional 64 residents finding new employment in jobs created elsewhere in the community.
- the number of jobs created in the Hunter Region is estimated to total 913 during construction and 546 during operations.

**Table 7.7. Estimated Number of Jobs Created by the Project**

| AREA                   | AVERAGE NUMBER OF JOBS CREATED |              |            |            |            |            |
|------------------------|--------------------------------|--------------|------------|------------|------------|------------|
|                        | CONSTRUCTION                   |              | OPERATIONS |            | OVERALL    |            |
|                        | DIRECT                         | MULTIPLIED   | DIRECT     | MULTIPLIED | DIRECT     | MULTIPLIED |
| MUSWELLBROOK           | 144                            | 276          | 91         | 155        | 95         | 165        |
| SINGLETON              | 101                            | 194          | 64         | 109        | 67         | 116        |
| SCONE                  | 51                             | 97           | 32         | 54         | 33         | 58         |
| DENMAN                 | 23                             | 45           | 15         | 25         | 15         | 27         |
| ABERDEEN               | 27                             | 52           | 17         | 29         | 18         | 31         |
| <b>TOTAL LOCAL</b>     | <b>347</b>                     | <b>663</b>   | <b>218</b> | <b>373</b> | <b>229</b> | <b>398</b> |
| <b>OTHER HUNTER</b>    | <b>43</b>                      | <b>250</b>   | <b>27</b>  | <b>173</b> | <b>28</b>  | <b>180</b> |
| <b>TOTAL HUNTER</b>    | <b>390</b>                     | <b>913</b>   | <b>245</b> | <b>546</b> | <b>258</b> | <b>578</b> |
| <b>OTHER NSW</b>       |                                | <b>101</b>   |            | <b>311</b> |            | <b>293</b> |
| <b>TOTAL NSW</b>       | <b>390</b>                     | <b>1,014</b> | <b>245</b> | <b>858</b> | <b>258</b> | <b>871</b> |
| <b>OTHER AUSTRALIA</b> |                                |              |            |            |            |            |
| <b>TOTAL AUSTRALIA</b> |                                | <b>1,014</b> |            | <b>858</b> |            | <b>871</b> |
| <b>IMPORTED</b>        |                                |              |            |            |            |            |
| <b>OVERALL TOTAL</b>   | <b>390</b>                     | <b>1,014</b> | <b>245</b> | <b>858</b> | <b>258</b> | <b>871</b> |

N.B Note that all multiplier impacts include the initial direct impacts of the project.

## 7.6 Impacts on Government Finances

The impacts of the development of the Mt Arthur Underground Project on government finances will take a number of forms.

From a NSW point of view, the most significant are royalties and payroll tax. From a Commonwealth point of view there will also be significant personal income tax and company tax payments.

In NSW the rate of payroll tax is 6 per cent on all salaries paid above a threshold of \$600,000. While it also provides for a number of exemptions from liability for pay roll

<sup>16</sup> Construction workforce of 470 averaged over the two years construction period (equals 390 employees) multiplied by 0.37 (residential distribution of employees in Muswellbrook)

<sup>17</sup> Construction workforce of 300 averaged over the 21 years of the mine's operation (= 245) multiplied by 0.37 (residential distribution of employees in Muswellbrook)

tax, the Grouping Provisions of section 16 of the Act (*NSW Pay-Roll Tax Act 1971*) would seem to ensure that most of the wages and salaries paid for the construction and operations of the Underground project will be subject to payroll tax contributions.

During the construction phase, the work force will peak at 470, at which time payroll tax collections are estimated to be at an annualised rate of \$3 million. The operations workforce is expected to peak at 300 by 2023. At a workforce of 300 the payroll tax collections will reach an annualised rate of \$1.9 million a year.

The stream of pay roll tax collections is estimated to have an undiscounted value over the life of the project of \$36.5 million. At a discount rate of 9 per cent they have a net present value of \$15.4 million. At a more conventional discount rate of 6 per cent, payroll tax collections have a net present value of \$19.7 million (Table 7.7).

The mine will also generate significant royalty collections for the State, and significant personal income tax collections for the Commonwealth with personal income tax collections possibly reaching \$7.6 million per year at the peak levels of employment.

Royalty collections on coal production for the State of NSW are currently set at ad valorem rates of five per cent for deep underground mines, six per cent for underground mines and seven per cent for open cut mines. At a royalty rate of \$3 a tonne, which implies a coal price of \$62.50 a tonne, royalty payments will rise to \$24 million a year at the peak of production. The stream of royalty payments from the Underground Mine has an accumulated value of \$415 million. At a discount rate of 6 per cent, this value is reduced to \$202 million in NPV terms.

**Table 7.7. Estimated Benefits to State and Commonwealth Governments over the Life of the Project**

| SOURCE OF BENEFIT             | WHOLE OF PROJECT LIFE BENEFITS |                                 |                                 |
|-------------------------------|--------------------------------|---------------------------------|---------------------------------|
|                               | NOT DISCOUNTED<br>(\$Million)  | DISCOUNTED AT 6%<br>(\$Million) | DISCOUNTED AT 9%<br>(\$Million) |
| <b>NSW State Revenues</b>     |                                |                                 |                                 |
| Payroll taxes                 | 36.5                           | 19.7                            | 15.4                            |
| Royalties on coal             | 415.4                          | 202.4                           | 149.1                           |
| <b>NSW TOTAL</b>              | <b>451.9</b>                   | <b>222.1</b>                    | <b>164.5</b>                    |
| <b>Commonwealth Revenues</b>  |                                |                                 |                                 |
| Personal income taxes         | 148.4                          | 79.9                            | 62.7                            |
| Personal medicare payments    | 8.0                            | 4.3                             | 3.4                             |
| <b>COMMONWEALTH TOTAL</b>     | <b>156.4</b>                   | <b>84.2</b>                     | <b>66.1</b>                     |
| <b>TOTAL BOTH GOVERNMENTS</b> | <b>608.3</b>                   | <b>306.3</b>                    | <b>230.6</b>                    |

It is estimated that the total direct revenue benefits to the State of NSW will be \$452 million over the life of the project. These revenue flows do not include those that will flow from the businesses that will grow in response to the new demands placed on them by the Underground Project.

In addition to the above, the project will also provide company tax payments and GST payments to the Commonwealth Government.

## 7.7 Summary of Project Economic Benefits

The key benefits of the project include the significant economic benefit to the state and region associated with job creation, capital expenditure, ongoing operational

expenditure, and contributions to community enhancement programs. The project will also have a number of environmental and social benefits.

During the construction phase, the project will employ a peak construction workforce of approximately 470 people and will have an initial capital cost of approximately \$300 million. During operation, the project will employ a peak workforce of approximately 300 people and will have a total operational expenditure of approximately \$3 billion over the life of the project. Some of the key economic contributions of the project are outlined in the table below.

#### Summary of Predicted Key Project Economic Contributions<sup>18</sup>

|                               |                                                   | Direct Project-Related Economic Contribution             |                                                         | Multiplied Flow-on Economic Contribution from Project <sup>b</sup> |
|-------------------------------|---------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------|
| Area of Economic Contribution | Source of Economic Contribution                   | Average Annual Economic Contribution (A\$M) <sup>a</sup> | Total Economic Contribution over Life of Project (A\$M) | Total Economic Contribution over Life of Project (A\$M)            |
| Muswellbrook                  | Employee expenditure                              | 8                                                        | 176                                                     | 273                                                                |
|                               | Operating expenditure (excluding labour)          | 12                                                       | 277                                                     | 341                                                                |
| Hunter Region                 | Employee expenditure                              | 20                                                       | 456                                                     | 781                                                                |
|                               | Operating expenditure (excluding labour)          | 76                                                       | 1,757                                                   | 2,533                                                              |
| NSW                           | Employee expenditure                              | 20                                                       | 456                                                     | 1,017                                                              |
|                               | Operating expenditure (excluding labour)          | 81                                                       | 1,862                                                   | 3,356                                                              |
| NSW Government                | Royalties on coal                                 |                                                          | 415                                                     |                                                                    |
|                               | Payroll tax                                       |                                                          | 37                                                      |                                                                    |
| Commonwealth Government       | Employee personal income tax and Medicare payment |                                                          | 156                                                     |                                                                    |
|                               | Company tax                                       |                                                          | 450                                                     |                                                                    |
| NSW GDP                       | Contribution to NSW GDP                           |                                                          | 2,318                                                   | 4,374                                                              |

NB: <sup>a</sup> Averaged over both the project's construction and operational phases.

<sup>b</sup> Multiplied economic contributions include both the initial direct contribution and flow-on /indirect benefits.

<sup>18</sup> Economic benefits have been rounded to the nearest A\$M.

## 8 Cumulative Impact Assessment

This section discusses the cumulative impacts that may arise from other projects that are currently planned in the Muswellbrook LGA. At the time of developing this report there were two key projects approved in this locality with potential to result in cumulative population impacts. These are the Anvil Hill Project at Wybong, to be developed by Xstrata Coal<sup>19</sup>; and the Mount Pleasant project which received Development Consent 1999, and has not yet commenced operations. The Mount Pleasant open cut coal mine project (Rio Tinto) located west of Muswellbrook received Development Consent in December 1999.

By contrast to these developments, the Anglo Coal Dartbrook underground coal mine (Anglo Coal) located between Muswellbrook and Aberdeen commenced a phased closure program in May 2006 with closure recently completed. Employment figures associated with the Dartbrook operation (2002) noted 204 employees and 90 full-time contractors. Relocation of some of these employees and their families to outside of the region to other projects has the potential to reduce cumulative impacts on community service providers (health, education etc), as well as impacts such as the availability of housing.

The timing associated with the construction phases of the proposed Mt Arthur Underground Project and approved Mount Pleasant and Anvil Hill operations are not predicted to coincide. It is likely that the construction associated with Anvil Hill Mine would be finalised prior to commencement of construction associated with the proposed Mt Arthur Underground Project.

The following cumulative impact assessment therefore presents predicted cumulative impacts should construction of the Mount Pleasant and Mt Arthur Underground Project coincide and should the operational phases coincide for Mt Arthur Underground Project, Mount Pleasant and Anvil Hill. Should the timing of the commencement of construction be confirmed and in the unlikely event that the construction phases of all three projects coincide, there is the potential for an additional contribution to cumulative social impacts, in particular in the areas of short term accommodation for the construction workforce, employee residential accommodation and health service provision.

### 8.1 Construction Phase

The cumulative population impacts associated with the Mt Arthur Underground Project and the Mount Pleasant construction phases are outlined in Table 8.1. The numbers provided below are based on the assumption that 80% of the workforce for the construction phase will be sourced from outside the region.

It has also been assumed that due to the temporary nature of construction, that workers will not be accompanied by families and will stay in temporary accommodation for the construction periods.

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<sup>19</sup> Centennial Coal announced the sale of Anvil Hill to Xstrata Coal on 17 September 2007.

**Table 8.1. Cumulative Impacts of Project Construction Phases**

| Operation                                                              | Predicted Construction Workforce | Peak Predicted Construction Workforce | Beds Required (80%) at Peak |
|------------------------------------------------------------------------|----------------------------------|---------------------------------------|-----------------------------|
| <b>Mt Arthur Underground (proposed)</b>                                |                                  | <b>470</b>                            | <b>376</b>                  |
| Mount Pleasant (approved)                                              | 253                              | 123                                   | 98                          |
| <b>TOTAL (Mt Arthur Underground and Mt Pleasant timing coinciding)</b> |                                  | <b>593</b>                            | <b>474</b>                  |

Note: Residential distribution figures for Muswellbrook Shire obtained from the Mining Industry and Employee Survey (Coakes Consulting, 1999)  
Mt Pleasant workforce projections sourced from Project Application (DoP website, April; 2006)

Based on the assumptions provided above, it is likely that the estimated peak accommodation requirement of 474 beds for the Mt Arthur Underground Project and Mount Pleasant temporary construction workforce can be absorbed adequately, if additional planned accommodation capacity within the Muswellbrook LGA is developed within the project timeframes. This is particularly the case if the construction workforce reside in a similar pattern to Mt Arthur Coal's existing workforce (i.e. 43% within the Muswellbrook LGA townships of Denman and Muswellbrook)

Aside from the proposed expansion of temporary accommodation providers in the area, Muswellbrook Council has indicated that there are a number of private land developers who are also likely to be able to provide suitable permanent housing for employees which indicates that this absorption likelihood is even greater.

## 8.2 Operational Phase

In relation to cumulative impacts for the operational phase, the impact of the operational phases of the three operations, if coinciding, is shown in Table 8.2. This includes the cumulative family impacts associated with the three operations and demonstrates the predicted population change across age groups.

It has been assumed for the purposes of this prediction that:

- Approximately 80% of the operational workforces for each project moves to the region from outside areas;
- Additional employees reside in areas in the same proportions as those provided in the 2006 Mt Arthur Coal workforce survey (Coakes Consulting, 2006); and
- Additional employees will demonstrate the same average family size as that reported in The Mine Industry and Employee survey (Coakes Consulting, 1999) of 3.5.

**Table 8.2. Cumulative Family Impacts of Project Operational Phases: Muswellbrook LGA**

| Age ranges   | 2006 Census Age Frequency % | Projected Family Distribution |            |                | Total- timing coinciding |
|--------------|-----------------------------|-------------------------------|------------|----------------|--------------------------|
|              |                             | Mt Arthur Underground         | Anvil Hill | Mount Pleasant |                          |
| 0-2          | 5.5                         | 20                            | 21         | 41             | 82                       |
| 3-4          | 3.7                         | 13                            | 14         | 27             | 55                       |
| 5-12         | 14.2                        | 51                            | 54         | 106            | 212                      |
| 13-17        | 9.2                         | 33                            | 35         | 69             | 137                      |
| 18-24        | 9.5                         | 34                            | 36         | 71             | 142                      |
| 25-39        | 23.2                        | 84                            | 88         | 174            | 346                      |
| 40-49        | 16.5                        | 60                            | 63         | 124            | 246                      |
| 50-64        | 18.4                        | 66                            | 70         | 138            | 274                      |
| <b>TOTAL</b> | <b>100</b>                  | <b>361</b>                    | <b>381</b> | <b>749</b>     | <b>1491</b>              |

Notes: Residential distribution figures for Muswellbrook Shire obtained from the Mining Industry and Employee Survey (Coakes Consulting, 1999)

Mt Pleasant workforce projections sourced from Project Application (DoP website, April; 2006)

Anvil Hill workforce projections sourced from Project Application (DoP website, June; 2007)

Source: Coakes Consulting (2006)

This analysis suggests a worse case scenario total of approximately 1491 new community members that may potentially move into the Muswellbrook LGA and thus impact service provision.

The key findings associated with cumulative impacts of the Mt Arthur Underground Project, Anvil Hill and Mount Pleasant operations on the Muswellbrook LGA include:

- Potential strain on health services in Muswellbrook which are currently at or over capacity;
- The Shire of Muswellbrook has sufficient land available for residential development) to accommodate the worst case scenario of 1491 people associated with the family impacts of all three operations;
- Youth facilities are likely to have sufficient spare capacity to accommodate worst case scenario of 279 13- 24 year olds associated with the family impacts of all three operations;
- Primary schools in Muswellbrook are likely to have sufficient spare capacity (360 in total) to be able to accommodate worst case scenario of 212 5-12 year olds associated with family impacts of all three operations
- Secondary schools in Muswellbrook are likely to have sufficient spare capacity (320 in total) to be able to accommodate worst case scenario of 137 13-17 year olds associated with family impacts of all three operations
- TAFE services in Muswellbrook are likely to have sufficient spare capacity (200 in total) to be able to accommodate worst case scenario of 142 18-24 year olds associated with family impacts of all three operations

### 8.3 Conclusion

It is important to note that the figures provided above are population predictions only and are based on a number of assumptions. To ensure accuracy of prediction, the cumulative impact assessment for the Mt Arthur Underground Project, will need to be revised as additional information regarding project approvals/closures in the area becomes available.

It should also be noted that any service sectors shown to have limited capacity to accommodate the projected population impacts of the Mt Arthur Underground Project will also have difficulty servicing any further population impacts that might arise from any additional large projects, without suitable growth strategies being implemented. Capacity of service providers is discussed in detail in Section 6.3, which for example, highlights the limited capacity of the health sector to provide for projected population impacts.

Based on the assumptions and predictions provided above, the cumulative impacts on services within the Muswellbrook LGA, if not addressed, may play a significant role in the attraction and retention of staff for the Mt Arthur Underground Project and any other projects (mining or non-mining related) that may develop within the area in the next three to five years.

## **9 Impact Summary**

This section outlines the impacts/changes considered to be of most relevance to the community in relation to the proposed Mt Arthur Underground Project. Social impact areas have been summarised according to Vanclay's (2003) categorisation of impacts as follows.

### **9.1 The Community**

From a community perspective, the assessment has identified a number of impacts at the community level that have the potential to affect community cohesion, stability, character, services and facilities within the project locality.

#### **9.1.1 Community Needs**

The synergies between local residents, local service providers and Muswellbrook Shire Council's perceptions of community need, highlighted the following areas as being of greatest community need:

##### **Health**

- access to specialist medical services and General practitioners
- lack of services for the aged and those with disabilities, particularly in relation to respite care
- rural isolation and effects on children and the elderly in particular

##### **Education / Employment**

- notable skills shortage in the labour market (fewer residents continuing education past Year 10)
- educational opportunities, particularly for young people
- transition from high school to work
- increasingly alienated young people dropping out of work and society (unskilled young people)

##### **General Service Level Enhancement**

- infrastructure and service provision enhancement – particularly vulnerable groups, young, aged, those with disabilities
- need to create a sense of belonging
- need to overcome social isolation, particularly of the young and the elderly
- need for out-of-hours services
- provision of youth entertainment facilities

In general residents were satisfied (reporting adequate satisfaction through to excellent) with each of the community sectors discussed, other than health. It is therefore clear from the consultation that health services and facilities are of greatest concern to the Muswellbrook community.

### 9.1.2 Impacts of Population Change on Service Delivery

Predicted project impacts, with respect to service provision for the Muswellbrook LGA and the localities of Singleton and Scone, also indicate that health is the only community sector unable to meet predicted levels of demand as a result of the project. Health is similarly identified as being in need of improvement, quite aside from the proposed development of the project, by the community.

Figure 9.1 provides a summary of the community sectors most frequently perceived to require greatest improvement by residents in the Muswellbrook area.

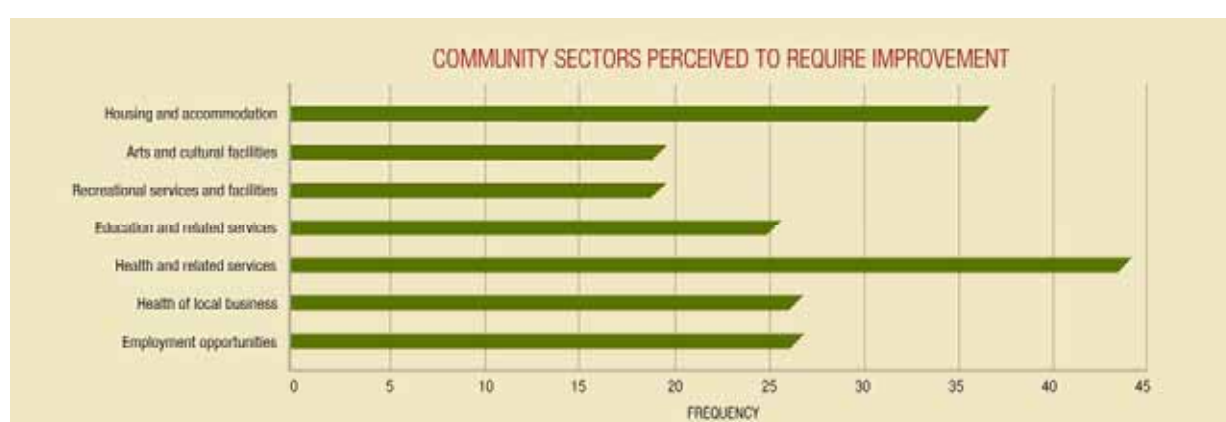


**Figure 9.1. Community Sectors Perceived to Require Improvement**

The majority of respondents interviewed saw a need for improved health and related services, and housing and accommodation facilities, should the development proceed. These two community sectors were more frequently reported than others.

The most important health issues identified included: waiting times to access specialist medical services and local medical practitioners (as has been noted in Section 6.2.4, the ratio of patient to GP is reported to be significantly higher for Muswellbrook than for the State ratio); health issues among youth e.g. obesity, physical or drug abuse, physical or mental disability and social alienation; and provision of appropriate care for the elderly i.e. institutional and 'in-home' care.

From a Local Government perspective, key health issues focused on lack of services for those with disabilities and the aged, particularly in relation to respite care to relieve family carers. In more general terms, but with implications for health specifically, rural isolation was noted as of concern for children and the elderly.

The above issues correlated with those identified by local health service providers, however during the most recent phase of consultation with service providers, a shortage of adequate maternity services and midwifery recruitment was also raised as an area requiring improvement, particularly given the predicted age ranges of the employee workforce, with the majority of employees falling between the ages of 25 to 39 years of age.

While issues relating to housing were also raised (specifically availability and affordability of both residential and rental housing and temporary accommodation shortages), proposed housing developments and planned extensions to temporary

accommodation within the locality are predicted to accommodate population changes associated with the project.

### **9.1.3 Construction Impacts**

As has been highlighted in Section 7.1.2, a sufficient proportion of additional accommodation is available prior to commencement of the construction phase to accommodate the construction workforce.

However, given the temporary and transient nature of this workforce, the influx of new people into the locality may also place pressure on additional services in the region and influence the social fabric of the community. However, local sourcing of the construction workforce, where available, may assist in addressing this issue.

### **9.1.4 The Environment**

Changes in the environment such as the quality of the air and water people use; the level of hazard or risk, dust and noise they are exposed to; their physical safety, and their access to and control over resources may also cause social impacts.

In relation to the Underground Project, residents/landholders in proximity to the project identified a number of environmental issues, these included:

- Dust
- Cumulative Impacts
- Blasting
- Operational Noise
- Visual Amenity
- Groundwater and Surface Water
- Subsidence
- Increase in Traffic (rail and car)

The degree to which issues were perceived of concern related to geographic area. For example, landholders residing in the Antiene area were more likely to raise issues associated with rail noise; whereas on Denman Road issues of water, dust, visual amenity and traffic impacts were frequently cited. Cumulative impacts of mining, general visual amenity and dust were noted as key issues in the Racecourse area, South Muswellbrook and further a field at Roxburgh Road.

Technical environmental assessment has been undertaken to address each of the issues identified above a part of the Environmental Assessment (EA) for the project. Outcomes of these studies can be found in the relevant issue sections of the EA document.

## **9.2 Personal and Property Rights**

Impacts associated with personal and property rights relate to when people are economically affected, or experience personal disadvantage as a result of proposed change. In relation to the Mt Arthur Underground Project, three landholders, located

within the proposed mining lease area for the Underground Project, have the potential to be affected by underground mining. The issue of subsidence is of particular relevance to these stakeholders.

### **9.3 Fears and aspirations**

This impact category relates to stakeholder perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

In this regard, stakeholders consulted raised concerns about the number of current mines operating in the area. The major cumulative issue identified related to environmental impacts such as noise and dust, additional traffic and the changing visual nature of the area.

However, the project was also seen to provide a number of benefits and assist in meeting aspirations for the future of the locality such as local economic development (e.g. housing and retail sectors) and opportunities for further employment for youth. Improvements in other services such as tertiary education were also highlighted as opportunities that could be enhanced.

## 10 Managing Change Associated with the Project

As has been highlighted in Section 2 of this report, a development proposal may bring benefits to particular individuals or groups and negative impacts or costs to others. Consequently, if negative impacts are predicted, it is the role of social impact assessment to determine how such impacts may be ameliorated, mitigated or managed effectively to produce the minimum degree of disruption to those affected.

In response to the perceived issues/impacts raised by the community in Section 4 of the report, and pursuant to the approvals process, Mt Arthur Coal undertook a number of environmental and other relevant studies to assess potential impacts of the proposed Underground Project. Community issues and concerns raised during the first phase of consultation were central to informing the scope of assessments undertaken.

In response to the perceived issues/impacts raised as part of the assessment, Mt Arthur Coal has identified a range of mitigation and amelioration strategies that could be employed to address social impacts and community concerns. The company will also make a contribution to the community pursuant to S94 of the *Environmental Planning and Assessment Act, 1979*.

### 10.1 Mitigating Environmental Effects

With respect to environmental issues raised in relation to the project, these issues have been subject to specific specialist assessment as part of the Environmental Assessment (EA). Consequently mitigation strategies to address specific environmental issues are outlined in each of the relevant sections of the EA. For example, subsidence impacts on properties within the company's Exploration Licence area have been documented and appropriate management strategies identified through the development of individual Private Property Plans.

As highlighted in Section 2.2.1 of this document, a resident Information Evening was held following completion of the environmental studies to present the measures proposed to mitigate against anticipated environmental effects associated with the project. Approximately 170 local residents and landholders in the consultation area surrounding the site (shown in Figure 4.2) were invited to an information evening at Mt Arthur Coal's offices.

Other mechanisms that have been adopted to feedback the results of the Environmental Assessment include ongoing project updates to the Community Consultative Committees for the MAN mining area and Bayswater No 3/Rail Loading Facility (including site inspections), distribution of information sheets summarising the key project impacts and proposed management measures and follow up presentations to community groups to provide a summary of the Environmental Assessment outcomes. During this process, Mt Arthur Coal's Community Matters newsletter, Annual Environmental Management Report (AEMR) and website ([mtarthurcoal.com.au](http://mtarthurcoal.com.au)) have also been used to disseminate information related to the project.

### 10.2 Continuing Community Issues

Feedback with respect to Mt Arthur Coal's community engagement process to date was very positive. Since the development of Mount Arthur North in 2001, the company has adopted a proactive approach to community relations having created a dedicated community relations position at the operation. As part of the

operation's ongoing community relations program, regular contact is undertaken with close neighbours – that is those residents/landholders residing in close proximity to the company's operations - and relevant information provided to address concerns. Such an approach would continue to be adopted in relation to the Underground project, should approval be granted.

Questions and discussions during consultation activities following the presentation of the Environmental Assessment findings have primarily focused on the technical aspects of the proposed mining operations; mining stages and concept plans and the company's existing open-cut operations with minimal concern expressed on the environmental impacts and proposed environmental mitigation measures associated with the Underground Project during the latter consultation stages. Issues related to the environment were primarily focused on dust, noise and visual amenity associated with the existing operations.

One area of substantial ongoing community concern is the perceived lack of existing health services in the local area and the potential impacts on their already strained capacity should the Underground Project proceed. This was further heightened when cumulative impacts are considered in conjunction with the approved Anvil Hill and Mount Pleasant projects.

It is evident from the assessment that the influx of population associated with the Project may potentially place pressure on health services within the local area. The provision of health services are typically the responsibility of the State government, and the projections contained within this report will need to be considered by the relevant government authorities in future planning and in the supply of appropriate services.

The company will make a contribution to the community pursuant to S94 of the *Environmental Planning and Assessment Act, 1979* that will provide opportunities for the community to benefit from the Underground Project. Mt Arthur Coal will seek to make these contributions in a manner that is consistent with the assessment of community need in the broader Muswellbrook community as identified through the project's consultation activities.

### **10.3 Managing the Impacts of Construction**

Given that the workforce during the construction phase is estimated to peak at 470 workers at any one time, managing the impact of the construction workforce in the locality will be required. The assessment of temporary accommodation has indicated the ability of the respective communities to absorb additional population associated with the construction workforce and that temporary accommodation providers have the potential for expansion if required to house the anticipated construction workforce from both the Mt Arthur Underground Project and other approved (but as yet undeveloped) projects. However such providers will require the ability and time to plan for these potential workforces changes.

It is recognised that the development of mine camps or villages will be of less benefit to the local economy than permanent housing. Therefore the Muswellbrook Council are encouraging permanent housing options within the Shire to encourage contractors to reside in permanent housing. This approach has been proposed by the Shire of Muswellbrook as a means of improving the economic benefits to the community and to encourage new residents to socially interact with the existing community.

Mt Arthur Coal will continue to provide Muswellbrook Shire Council and service providers along with the broader community with information regarding the status of

the project and the implications of the build up of the construction workforce, through the company's existing consultation mechanisms.

The influx of the construction workforce is anticipated to place additional pressure on a range of services in the region. Mt Arthur Coal will seek to work with local government, service providers and the direct employers of the construction workforce to allow services to be provided at an adequate level.

## **10.4 Enhancing the Benefits of the Project**

As has been highlighted earlier in this report, a number of benefits associated with the development of the project have been identified by the community. Consequently there are opportunities, should the project be approved, to ensure that benefits associated with the project are maximised for greatest effect.

### **10.4.1 Local Employment**

In relation to local employment, Mt Arthur Coal has a solid record of encouraging and facilitating local employment. Recruitment associated with the Mt Arthur Coal open cut operation has demonstrated a high proportion of locally sourced workers. This philosophy and approach will be continued should project approval be granted with employment of local staff being encouraged wherever possible, however it is recognised that there is a shortage of appropriate skills for underground mining available in the local area and therefore there will also be a need to source employees from outside of the Muswellbrook area.

### **10.4.2 Local Content**

In relation to sourcing of goods and services from local suppliers, a large proportion (48%) of Mt Arthur Coal's existing operating costs, excluding labour, on items such as repairs and maintenance, fuel, plant and machinery hire, stores, contractors and consultants and general expenses is sourced from within the local region. Many of these costs are expended in the townships of Muswellbrook and Singleton.

Should approval for the Underground Project be granted, such an approach would be applied to the project so that economic benefits of the project are maximised at the local level wherever possible.

### **10.4.3 Provision of Services and Facilities**

Mt Arthur Coal recognises that the project is likely to impact on local services and facilities, particularly health and accommodation sectors. The company will be making a contribution pursuant to S94 of the *Environmental Planning and Assessment Act, 1979* that will lead to the enhancement of services and/or facilities in the local community.

## **10.5 Ongoing Partnerships and Community Relations Activities**

Since the development of the Mt Arthur Coal open cut operation in 2001, the company has committed considerable resources to community relations. This has included the appointment of a dedicated community relations officer in 2001, and a comprehensive program of activities has been undertaken.

Examples of ongoing community relations and involvement initiatives are provided in Table 10.1.

**Table 10.1 Community Programs and Activities**

| Program/Activity                        | Examples/Details                                                                                                                                                                                                                                                                                  |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Community Engagement and Communications | <ul style="list-style-type: none"> <li>• Three Community Consultative Committees (Bayswater, Mount Arthur North a joint rail loading CCC with Drayton CCC/Bayswater CCC members.</li> <li>• Community Matters newsletter (distributed every 6 to 12 months)</li> <li>• Website updates</li> </ul> |
| Complaint Management                    | <ul style="list-style-type: none"> <li>• Community Response Line</li> <li>• Near neighbour consultation/activities</li> <li>• Reporting of complaints in Community Matters newsletter, to CCC's and in the Annual Environmental Management Report (AEMR) and other statutory reports</li> </ul>   |
| Community Support                       | <ul style="list-style-type: none"> <li>• Financial sponsorship provided to a number of local sporting clubs, cultural, health, and special interest groups via the Community Fund</li> <li>• Match Giving Program</li> <li>• Partnerships Program</li> </ul>                                      |
| Monitoring                              | <ul style="list-style-type: none"> <li>• Annually publishing of monitoring results through the Annual Environmental Report (AEMR)</li> <li>• Evaluation forms</li> </ul>                                                                                                                          |

Furthermore, the company also has an existing community partnership and contributions program that aims to enhance potential benefits associated with the existing Mt Arthur Coal operation.

Existing community contribution programs include:

- Direct cash contributions via partnerships, programs and support; and
- In kind assistance and donations such as equipment, for example, computers, to recipients including local public schools, sports clubs and business and community associations.

Specific examples of Mt Arthur community contributions and sponsorship include:

- Upper Hunter River Rehabilitation Initiative (UHRRI), a large-scale river rehabilitation and research project that is seeking to restore degraded sections of the Hunter River.

- Maintenance program for the Muswellbrook heated swimming pool; and
- Hunter Life Education, a not-for-profit organisation providing free drug and alcohol education to local schools.

The above contributions are in addition to the company's "match giving" program which provides dollar for dollar matching of financial donations and contributions made by employees to community programs. In 2006, Mt Arthur Coal also initiated the establishment of a community networking group involving local mines. to discuss local issues and facilitate improved communication relating to matters which include, for example, sponsorship. This has the aim to better coordinate funding initiatives and identify options for joint support of programs between mines.

It is anticipated that many of these existing programs will be maintained during the life of the Underground Project.

## 11 Monitoring

A key aspect of any social impact assessment is the identification of specific mechanisms and indicators that can be implemented to monitor any potential impacts associated with the development over time.

As identified in the section above, there are already a number of community relations and stakeholder engagement mechanisms that Mt Arthur Coal currently has in place including:

- two Community Consultative Committees that provide the company with a forum for addressing community issues / concerns and to discuss management of environmental and social issues with a representative community group;
- face to face consultation with immediate neighbours to monitor and assess issues of continuing concern to the them;
- the operation of a 24 hour/7 day a week Community Response Line through which community members can direct any concerns or questions; and
- the Community Matters newsletter which is distributed to the community approximately every six months to twelve months and contains a feedback survey.

The company's commitment to ongoing social assessment and community consultation will continue with variables that the company proposes to monitor presented in Table 11.1.

**Table 11.1 Ongoing Social Impact Monitoring Variables**

| Area                      | Indicator                                                   |
|---------------------------|-------------------------------------------------------------|
| Employment                | Proportional distribution of employment                     |
| Procurement               | Spend on local goods and services                           |
|                           | Distribution of procurement spend                           |
| Human Capital Development | \$ investment in training                                   |
|                           | No. apprenticeships/traineeships offered                    |
| Social Value              | Spend on partnerships and community contributions by sector |
|                           | Workforce support of community programs                     |
| Community Perception      | Awareness/knowledge of mining activities                    |
|                           | Satisfaction with community engagement mechanisms           |
| Environment               | Number of complaints by issue and location                  |

## 12 Conclusion

In conclusion, the socio-economic assessment has identified a range of perceived community issues associated with the Mt Arthur Underground Project. These issues have been documented and, where relevant, appropriate strategies identified and proposed by the company to address the issues raised.

The company's proposed strategies are as a result of a rigorous social assessment and consultation process and the results of environmental assessments and other relevant studies. Issues raised by the community during the first phase consultation process were key to informing the scope of these assessments and studies to ensure that all issues and concerns were adequately addressed. In addition, the resident information evening and distribution of project information sheet (and accompanying feedback form) which both summarised the results of the Environmental Assessment and identified proposed management strategies were used as mechanisms in further obtaining community feedback in relation to proposed strategies. Presentations to various community groups on the outcomes of the Environmental Assessment and its various technical studies also provided an opportunity for further comment.

As is the case with developments of this kind, the perceived social impacts/ issues are greatest for those living in closest proximity to the proposal, or those who perceive they will be most directly impacted by the development. Consequently, should approval of the project be granted, the company is committed to maintaining its ongoing dialogue with local residents and service providers throughout the operation of the project in relation to issues of relevance and importance to the community. An appropriate social impact monitoring program will also be developed to assess the occurrence or non-occurrence of perceived impacts.

While a number of social and environmental issues have been raised by local landholders in proximity to the development, consulted stakeholders appeared more accepting of the proposal due to the potential economic benefits of the project at a local and regional level and the minimisation of environmental impacts due to the use of underground mining techniques.

The population impacts on services within the LGA associated with both the Mt Arthur Underground Project and other approved but at yet undeveloped projects (Mt Pleasant and Anvil Hill) appear that they can be adequately managed for all sectors except health.

The availability and affordability of residential and rental housing stock has also been a historic problem within the Muswellbrook LGA. In recognition of the substantial growth that will take place due to project development, the Shire is currently looking at ways to address this issue, including for example, the identification of private land developers who can provide suitable permanent housing for the majority of the mining workforce. This is proposed as a mechanism to provide added economic benefits to the local economy and encourage any new residents to socially interact with the existing community.

These proposed housing arrangements will require further assessment and consultation with the local Council should the proposal be approved and the timing of land developments confirmed. As such, Mt Arthur Coal will continue further consultation with both the Muswellbrook Shire Council and temporary accommodation providers on this issue.

In recognition of the potential issues identified by the community and service providers in the Muswellbrook LGA and surrounding areas, Mt Arthur Coal supports the direction of s94 contributions in a manner that addresses the areas of identified community needs.

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## **14      Annexures**

Annexure 1: Project Information Sheet 1

Annexure 2: Project Information Sheet 2

Annexure 3: Project Information Sheet 3

Annexure 4: Information Evening Display Posters



# Mt Arthur Coal

## Underground PROJECT

### BACKGROUND

In 2001 the Mount Arthur North mine commenced development, following an extensive social and environmental assessment process. As part of this process residents in proximity to the development and key stakeholder groups were actively involved in project planning and a range of changes were made to the project to address community issues and potential impacts.

The current Mt Arthur Coal operation includes the Mount Arthur North mine and the Bayswater Colliery. The former Bayswater Colliery has been operating in the community since the late 1950s when the original

Bayswater No.2 underground mine commenced operation, later becoming open cut. The Bayswater No.3 open cut mining area started operations in 1995 to progressively replace the No.2 mine, which ceased operations in 1998. Mount Arthur North commenced coal production in 2002.

Mt Arthur Coal is aiming to produce 15 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal by 2007 and has current approvals to produce up to 20 Mtpa. The coal is either shipped to export markets from the Port of Newcastle or is sold to power generators in NSW.

### PROJECT INFORMATION SHEET

EDITION 1:  
NOVEMBER 2005



# THE PROPOSAL

In order to meet increased export demand for coal, Mt Arthur Coal is currently investigating the potential for underground mining in an area formerly known as Bayswater No.3 and to the west, in the adjacent Exploration area.

The proposed underground operations would increase the current 15 Mtpa ROM production by a further 6-8 Mtpa ROM. This would bring the total planned future coal production to potentially 23 Mtpa ROM. The proposed underground operations could potentially employ up to 250 additional people, when fully operational.

The proposed underground mine would use Mt Arthur Coal's existing infrastructure, such as the coal preparation plant and the rail loading facilities. Access to the underground mine would be through the existing Bayswater No.3 open cut pit.

To better understand geological and coal quality details of the resource, the company is proposing to develop an exploration tunnel (adit) completely within the coal seam. The location of the proposed tunnel is illustrated on the plan below. The adit will require temporary facilities, which will be established in an existing open cut void in the Bayswater No.3 mining area.

Given that the adit is only a tunnel, no subsidence is predicted as a result of its development. Approximately 300,000 tonnes of coal will be produced and tested for coal quality providing detailed information about the nature of the resource.

The proposed exploration adit will require a separate approval from the Department of Planning, and if approval is granted would commence in late 2006 and take approximately 18 months to complete.



## WHY AN UNDERGROUND MINE?

Underground mining has been chosen as the preferred mining method due to the depth of the coal resource and the number of coal seams.

Underground methods also result in substantially less disruption to surface land use and vegetation. Given the nature of land use in the area, that is open grazing land, mining is not expected to have any major effects on the surface land use. Furthermore, the proposed mine plan avoids mining under the Hunter River floodplains and Saddler's Creek.

## HOW ADVANCED IS THE PLANNING PROCESS?

The feasibility of the Mt Arthur Coal Underground Project is currently under investigation, in line with the broader BHP Billiton internal assessment process. Given the relationships that exist between the company and the community, one of the main objectives of the feasibility work is to clearly identify and understand any potential issues in relation to the project and to ensure that these issues are incorporated in the early stages of mine planning.

Once this work is complete, planning approvals will be sought from the NSW Minister for Planning (facilitated through the Department of Planning) under the Environmental Planning and Assessment Act 1979. Consequently, the project will require that a detailed Environmental Assessment (EA) be prepared. This work is to be undertaken by Umwelt, environmental consultants.



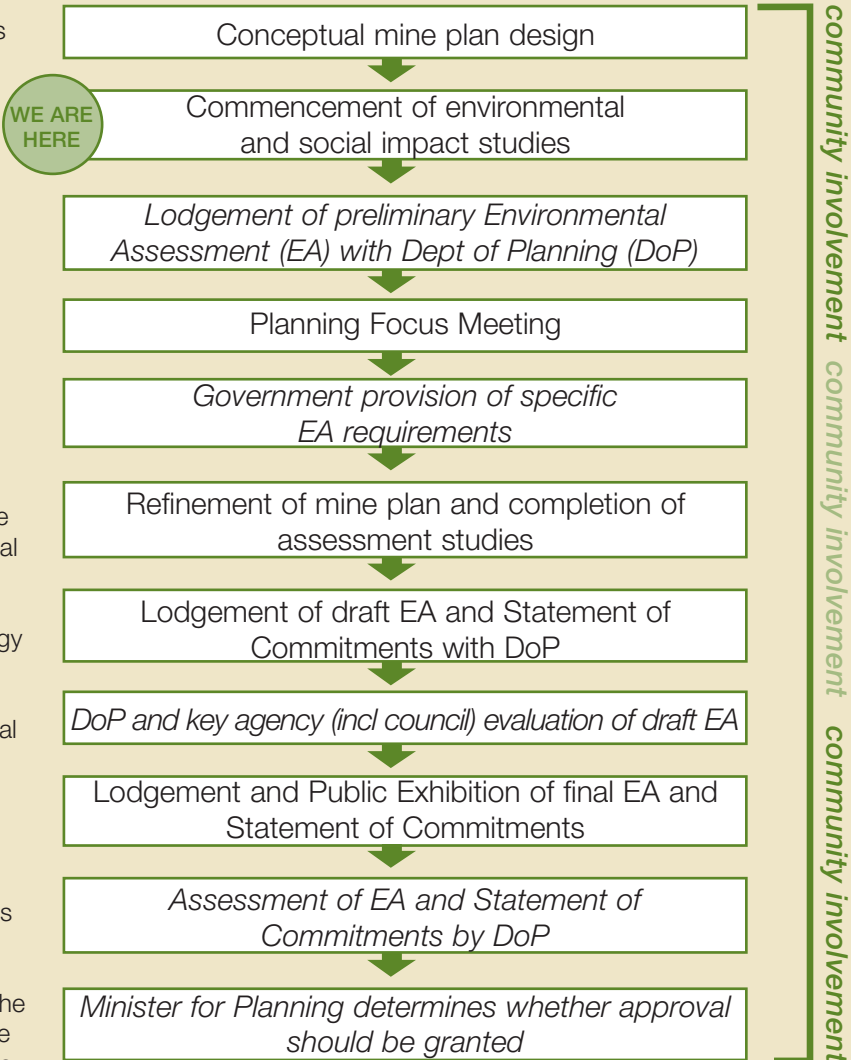
# HOW ADVANCED IS THE PLANNING PROCESS? (CONTINUED)

Specialist studies to be undertaken as part of the EA include:

- > Socio-economics
- > Subsidence
- > Flora and fauna
- > Cultural heritage
- > Surface water
- > Groundwater
- > Noise
- > Air quality

The socio-economic component of the EA will involve consultation with members of the local community (e.g. employees, local landholders, government, community groups and other interested stakeholders) over the next 6 months to ensure that the social impacts associated with the proposal are documented and where possible addressed through appropriate strategy development. This work will be undertaken by Coakes Consulting, who were involved in the original Social Impact Assessment (SIA) and consultation process for the Mount Arthur North mine development.

The following flow chart summarises the key steps involved in the approvals process. As highlighted community involvement is a key part of the process. However once lodged with the Department of Planning, the EA will be placed on public exhibition. During this period the community will be able to make further submissions to the Department of Planning on the project, which will be considered by government in relation to the application.



*Italics = Government review*

It is anticipated that the process will take approximately 18 months to complete, with the application being lodged in the last quarter of 2006.

## FURTHER INFORMATION

If you would like further information on any aspect of the proposed Underground project and would like to be involved in the SIA and consultation program. Please contact:

Shannon McKiernan Phone 0427 016 029  
Coakes Consulting

Narelle Wolfe Phone 02 6542 4840  
Mt Arthur Coal

Resourcefully Operated by BHP Billiton



Thomas Mitchell Drive  
PMB 8 Muswellbrook  
NSW 2333

Facilitated by:



PO Box 30  
Bowral  
NSW 2576



Underground PROJECT

PROJECT INFORMATION SHEET  
EDITION 2:  
APRIL 2006

BACKGROUND

This information sheet summarises the results of the second phase of the Social Impact Assessment (SIA) and community consultation program relating to the Mt Arthur Coal Underground Project – that is the identification and documentation of key stakeholder issues and concerns relating to the proposal.

The Social Impact Assessment program provides an opportunity for the community to participate in the project planning process and ensures that community and social and economic issues are incorporated in the Environmental Assessment (EA) for the proposal.

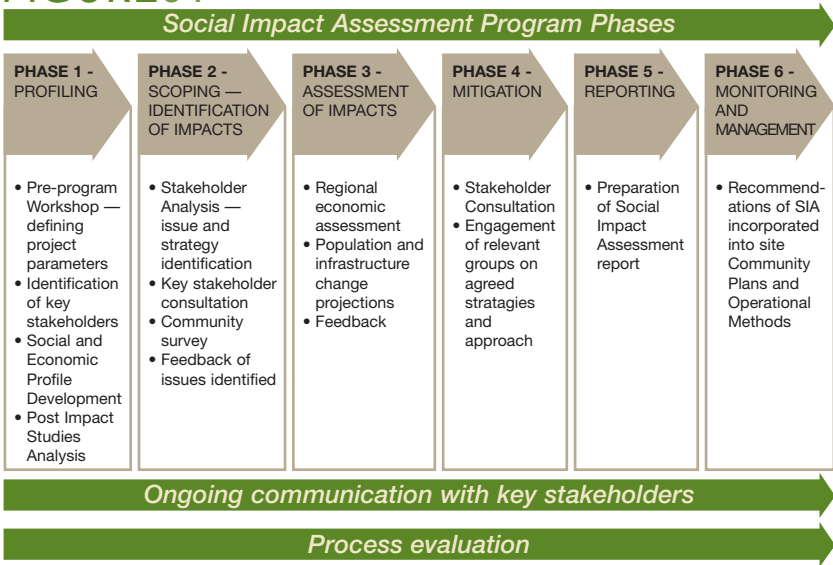
The Social Impact Assessment has a number of distinct phases as outlined below.

To identify stakeholder issues, as part of Phase 2 of the

program, personal interviews have been undertaken with over 100 stakeholders including local residents/landholders living in proximity to the site, local government, environment groups and community organisations. Consultation with environmental and community groups is still being undertaken at present.

A comprehensive assessment of service providers in the areas of health, housing and accommodation and education is also being undertaken in this phase to assess the social impacts of the proposal on community sectors broadly. The results of this consultation to date have been summarised in this information sheet. To maintain the confidentiality of participants who have been involved, issues have been categorised into a number of issue themes.

FIGURE01



# KEY STAKEHOLDER INTERVIEWS

Over 100 interviews and group presentations were undertaken across the Muswellbrook and Denman communities between November 2005 and March 2006.

The interviews and presentations have been carried out with a number of stakeholder groups which include:

- > Local Landholders/Tenants – living in close proximity to the project site
- > Government Agencies and Political Representatives
- > Special Interest Groups – those groups with a particular interest in the proposal at regional and local levels e.g,
  - environmental groups,
  - professional and trade associations,
  - community groups and organisations
- > Service providers and local businesses i.e.
  - local schools,
  - hospital and community health services,
  - hotels/motels,
  - businesses in the Muswellbrook industrial estate.

# SUMMARY OF FINDINGS

In the key stakeholder analysis, dust levels and the potential for cumulative impacts with other mines were the most frequently identified issue themes. Other issues raised included noise from the proposed mining operation, impacts of subsidence and the potential loss of the areas natural features.

Each of the issue themes identified is described below and some quotes obtained from the interview transcripts have been used to highlight the issues raised.

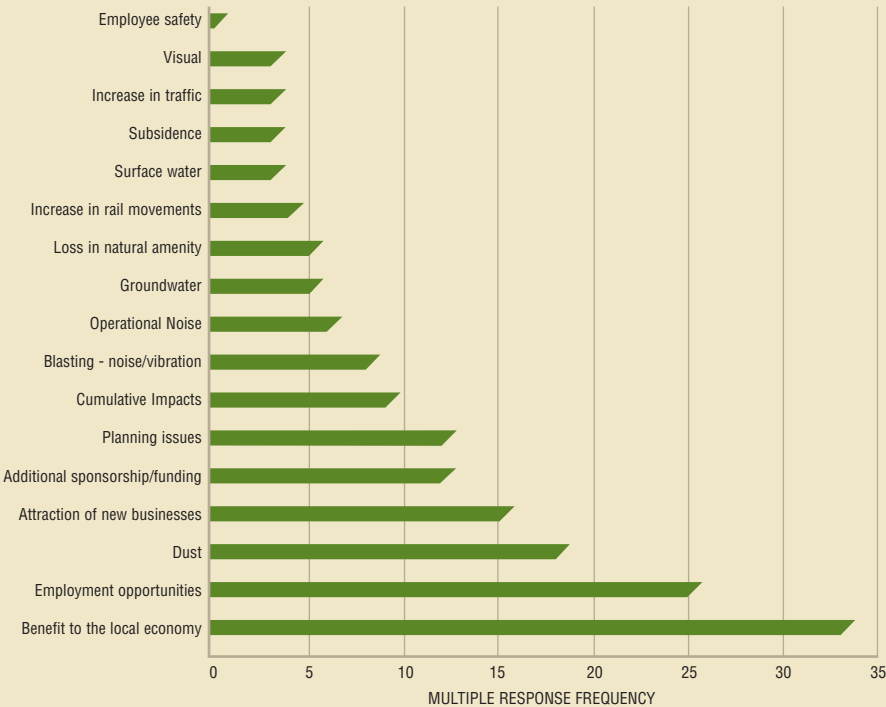
Over two-thirds of respondents raised potential benefits of the project such as; improved local economy, employment opportunities, and the potential to attract new business to the area. A number of respondents also had no issues or concerns regarding the project.

In general, visual and dust impacts were perceived by many respondents as less critical given the underground nature of the proposal. In addition, issues raised throughout the consultation program were closely associated with the geographic location of respondents.

# ALL ISSUES

The first round of consultation aimed to introduce the proposal to the community and to identify and document community issues. Figure 2 illustrates the key issues arising from the initial consultation process. *Please note: several respondents had raised multiple issues with the proposal.*

FIGURE02 COMMUNITY ISSUES - MT ARTHUR COAL UNDERGROUND PROJECT



## POTENTIAL BENEFITS

When asked about potential benefits associated with the proposal, over two-thirds of respondents outlined the potential benefit of the project to the local economy, opportunities for further employment, and the potential attraction of new business to the area.

“It will be good if the workers live and spend money in town”.

“My kids may have a job there one day”.

“May bring in some new underground mining businesses to the area”.

## DUST

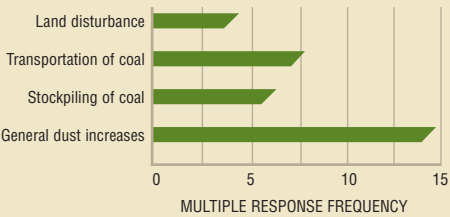
A number of residents were concerned that a new mine could increase the dust levels in the area. However, the majority of respondents felt that given the mine was an underground operation, dust impacts would be reduced. Specific issues relating to dust included: stockpiling of coal, transportation of coal, and exposed areas of land on the project site.

“It is black dust, coal dust, another mine can only make it worse”.

“Muswellbrook is always so dusty, but it is a mining town”.



FIGURE03 DUST IMPACTS



## CUMULATIVE IMPACTS

Residents raised concerns about the existing number of mines in the region. The major cumulative issue identified related to environmental impacts such as noise and dust. Cumulative issues associated with additional traffic and the changing nature of the area, (i.e from grazing and natural views to views of mining operations) were also identified.

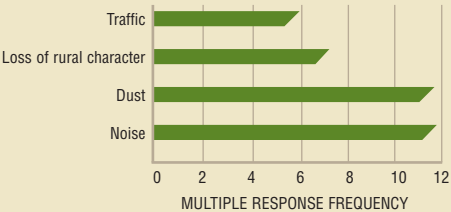
- “Everywhere I look I see a mine”.
- “It is not just Mt Arthur Coal noise, but all the other mine noise as well”.
- “I am worried that a lot of mines are in the area”.

## BLASTING

In relation to blasting, existing issues of vibration and noise associated with blasting in the area from various mining operations, were raised during consultation.

- “I don’t want any more blasts”.
- Stakeholders were also interested in obtaining additional information about blasting associated with an underground operation i.e. Is there a need to blast in underground mining projects and to what extent?

FIGURE04 CUMULATIVE IMPACTS



## UNDERGROUND FACT 1

Blasting techniques used in open cut operations are very different to underground mining techniques. For underground mining, extraction of coal is carried out by machines cutting rock rather than blasting. Underground blasts are very small and only undertaken in rare circumstances such as the need to break down oversized rock. Typically, there are no surface effects from these blasts due to the depth of the mining operation below ground.



## OPERATIONAL NOISE

A number of residents were also concerned that noise from machinery and infrastructure required to run an underground mine might also impact on them, particularly noise from trucks and noise from exhaust fans.

“What sort of noise does the machinery make?”

“Will I be able to hear generators and stuff like that?”

## WATER ISSUES

Some residents raised issues associated with other environmental effects within the project area. In particular, water on and off-site such as groundwater impacts and surface water run-off.

For example, some respondents asked about the flow of water off site to the Hunter River in heavy rainfall and were concerned about water quality impacts to local waterways including the Hunter River and Saddlers Creek. Concerns were also raised as to how water would be managed on the site.

“As long as it does not go near the river I am happy”.

“We use the river all the time so I want it to stay like it is”.



## UNDERGROUND FACT 2

The proposed mine plan avoids mining under the Hunter River and Saddlers Creek. The Mt Arthur Coal mining operation aims to protect water quality in the Hunter Valley by:

- > Sensitive mine planning in respect to ground and surface waters;
- > Extensive recycling of mine water on the site; and
- > Independent environmental studies to assess all water quality impacts.

Mt Arthur Coal believes these actions will ensure the environmental value of the Hunter River and interests of water users are protected.

## SUBSIDENCE

During the consultation, respondents were told about potential impacts of subsidence associated with underground mining operations. As a result, issues regarding the degree of subsidence, how it would look from personal residences or roadways and the impacts to surface water flows were raised during the process.

“The issue is really how much the land subsides”.

“If it is not near my place, I am not worried”.

## RAIL MOVEMENTS

During the consultation process, respondents were advised of a potential increase in rail movements associated with underground mining operations. As a result, issues regarding the capability of the railway line to handle extra traffic and an increase in rail noise were raised by some of the respondents.

“Can the rail line support more trains, it is already full of trains”.

“They put a barrier in last time which worked”.

## LOSS OF NATURAL AMENITY

Some residents also expressed issues associated with potential impacts on the natural amenity of the area, in particular, environmental effects associated with the underground project and its operations.

“They have always carried out operations responsibly; I hope it remains the same”.

“More productivity can only mean more noise and dust”.

“You can never get back to that peaceful rural environment”.

## PLANNING ISSUES

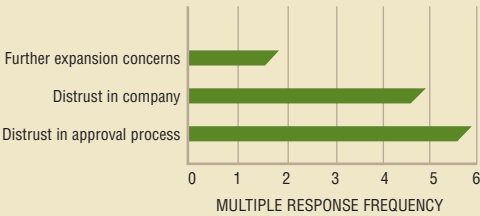
In relation to the underground mining proposal, a number of planning issues were identified by key stakeholders. These included a lack of trust in the development approval process, lack of faith in the company’s ability to comply with approval conditions and further expansion concerns should the underground project be given the go ahead by government.

“At the end of the day it is up to the government”.

“It is good we are being asked now before it being submitted”.



FIGURE05 PLANNING ISSUES



## ADDITIONAL ISSUES

Some long-term residents of the area asked questions about the heritage/history associated with the land proposed for the underground project. In particular, if any works were to be carried out near Mt Arthur itself.

“As long as you don’t impact my view of Mt Arthur”.

Some residents raised the issue of rehabilitation, in particular the company’s plans for rehabilitation of the site should the proposal be approved.

“At the end of it all I hope it looks like it used to”.

## LOCATIONAL ISSUES

Issues raised throughout the consultation program were closely associated with the geographic location of respondents. The proximity to local infrastructure (e.g. railway line), the co-location of particular industry sectors (e.g. irrigators) and the natural geography of the land (e.g. overlooking the proposed mine site) were significant factors underlying issues associated with the project.

**FIGURE 06** CONSULTATION AREAS IN RELATION TO THE LEASE BOUNDARIES AND PROPOSED MINING AREA



## REGIONAL OPPORTUNITIES

Respondents were also asked to comment on the community in regard to the following topics:

- > Opportunities for employment
- > Health of local businesses
- > Roads, public transport
- > Health services and facilities
- > Recreation services and facilities
- > Arts and cultural services
- > Educational and school services and facilities
- > Other community services and facilities.

The majority of respondents saw a need for improved health services, both public and private and educational facilities in the future. Several residents identified the need to encourage more education in trades and mining related professions.

There was a mixed response to the health of local businesses. Some saying that the shopping centre was thriving, while other residents were concerned businesses in the Main Street were closing down.

Most of the respondents were positive regarding the potential for new developments in their community such as new housing (subdivisions) and business development (more opportunities for accommodation, retail).

With regard to potential development in the area, more than half of those surveyed wanted the natural amenity of the area to be taken into consideration when designing all components, should the project proceed.

### THANK YOU

Thank you to all participants who gave up their time to discuss their issues with Mt Arthur Coal or Coakes Consulting representatives – we look forward to further contact in subsequent phases of the program and receiving your feedback form.

## WHAT'S NEXT

During phase two of the Social Impact Assessment and community consultation program, participants have requested additional information on the Mt Arthur Coal Underground proposal relating particularly to the development approval process (flow chart below), environmental effects and management strategies.

The next phase of the program will involve feedback on this information to individuals and groups who have expressed an interest in further involvement.



*Italics = Government review*

## FEEDBACK FORM AND FURTHER INFORMATION

We have enclosed a 'Fax Feedback Form' with this information sheet to obtain any comments or feedback that you may have on the information presented. Please note your issues/comments on the form provided and fax it to Coakes Consulting on 02 4862 3936 or alternatively see postal details below. It is only through your comments that we can continually improve our consultation efforts.

[www.mtarthurcoal.com.au](http://www.mtarthurcoal.com.au)

Facilitated by:



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PMB 8 Muswellbrook NSW 2333

Please contact us if you would like further information on any aspect of the proposed Underground project and would like to be involved in the SIA and consultation program.

Resourcefully Operated by BHP Billiton



Mt Arthur Coal

# Underground PROJECT

## BACKGROUND

Mt Arthur Coal proposes to establish an underground coal mine at the existing Mt Arthur Coal site, south of Muswellbrook in the Upper Hunter Valley.

Mt Arthur Coal is a wholly owned subsidiary of BHP Billiton's Hunter Valley Energy Coal. The Mt Arthur Coal open cut coal mine operations presently consists of:

- > Bayswater No. 2 area - coal extraction now complete;
- > Bayswater No. 3 area - production commenced in 1995; and
- > Mt Arthur North (MAN) area - production commenced in 2002.

The proposed underground mine will be located within the existing Bayswater No. 3 Mining Lease areas and adjacent Exploration

Licence area. Details of the proposed Mt Arthur Underground Project were included in Project Information Sheet Edition 1, which was distributed to the community in November 2005. Feedback on the issues raised by the community was provided in Project Information Sheet Edition 2, in April 2006. Since this time, the project design has been refined to take into account the issues raised by the community and the findings of the environmental studies.

The purpose of this Project Information Sheet Edition 3 is to summarise the key findings of the environmental studies undertaken as part of the Environmental Assessment (EA) and to update the community on the status of the proposal.



## WHAT YOU TOLD US

Between November 2005 and March 2006 over 100 residents, community groups, business groups government agencies and service providers, in Muswellbrook and Denman were interviewed regarding the project. As a result of that consultation process, a number of community and environmental concerns were identified in relation to the Underground Project.

The potential benefits of the project such as improved local economy, employment opportunities, and the potential to attract new business to the area were the major interest areas noted by those consulted.

Dust levels and the potential for cumulative impacts with other mines were some of the most frequently identified concerns. Other concerns raised included noise from the proposed mining operation, impacts of subsidence and the potential loss of the areas natural features.

Concerns raised throughout the consultation program were closely associated with the geographic location of the respondents. For example, people in the Antiene area were more likely to raise concerns about noise and property values; whereas those on Denman Road raised concerns about water, dust,

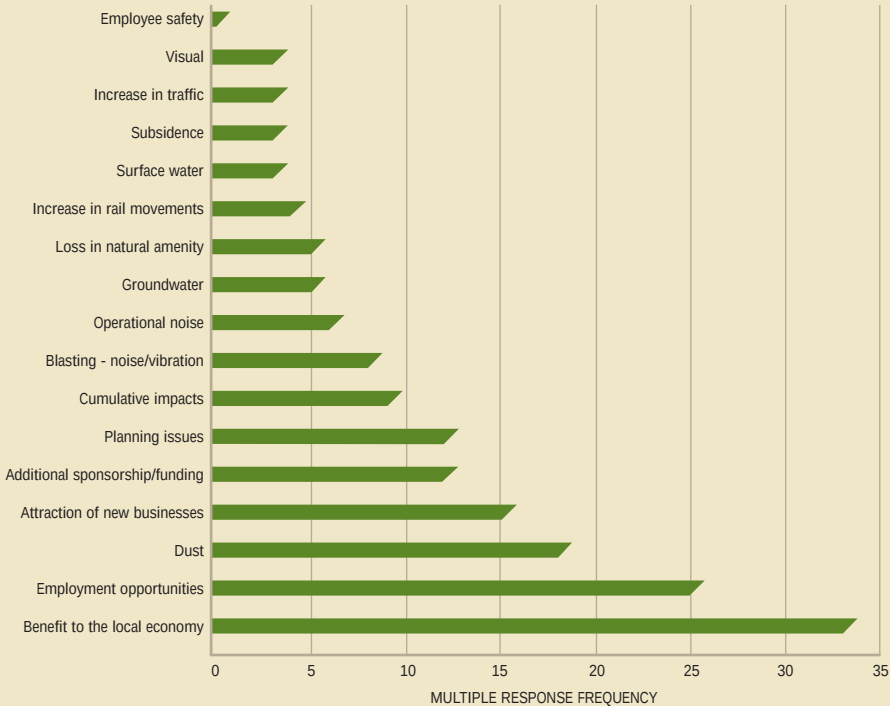
the look of the area and traffic. The key concerns for people in the Racecourse area, South Muswellbrook and Roxburgh road were the cumulative impacts of numerous mining operations in the area, the way the area looked and dust.

A detailed outline of the concerns raised by the community during consultation activities was provided in Project Information Sheet Edition 2, distributed to the community in April 2006. These views have had a key role in informing the detailed environmental studies conducted as part of the EA for the Underground Project.

## ALL CONCERNS

The first round of consultation introduced the proposal to the community and identified and documented community concerns. Figure 1 illustrates the key issues arising from the initial consultation process. *Please note: several respondents had raised multiple issues with the proposal.*

FIGURE01 COMMUNITY CONCERNS - MT ARTHUR UNDERGROUND PROJECT



# THE UNDERGROUND PROJECT

## AN UPDATE ON THE PROPOSAL

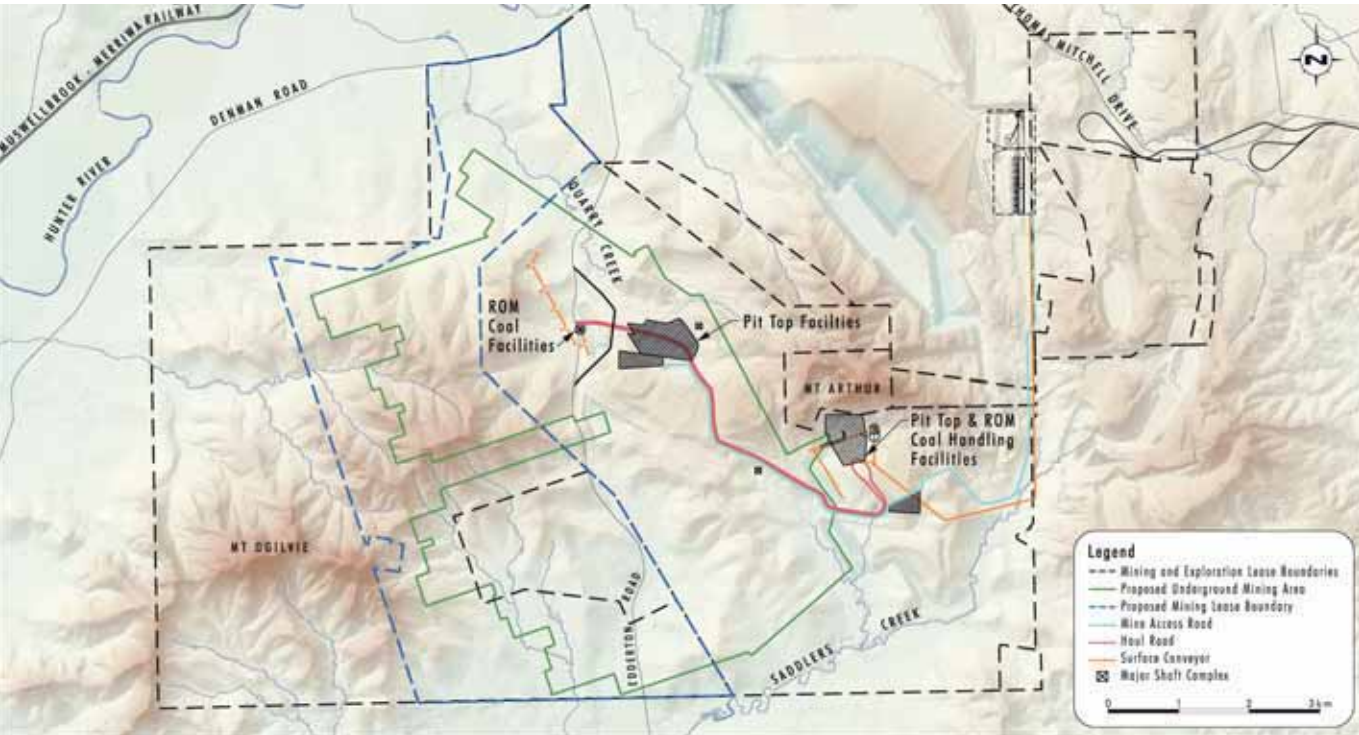
### CONSTRUCTION PHASE

The proposed underground mine will use much of Mt Arthur Coal's existing infrastructure such as the coal preparation plant and rail loading facility. Upgrades to these facilities will be required and some new infrastructure will also need to be built including:

- > pit-top facilities including office, workshop, store and bathhouse facilities near the underground mine entrances;
- > coal handling systems including stockpiling, conveyors and a coal sizing facility to transport coal to the existing coal handling and preparation plant;
- > an extension of the Mt Arthur Coal site access road; and
- > various other minor infrastructure such as site services, ventilation and borehole facilities, gas drainage infrastructure, water storage dams and dewatering facilities.

The construction phase of the project will last for approximately two years and will employ up to 470 people. Most construction will be undertaken during the day, up to seven days a week and manage to minimise environmental impacts.

FIGURE02 MINING AREA AND KEY PROJECT INFRASTRUCTURE



## OPERATIONAL PHASE

Mt Arthur Coal is seeking approval for an initial 21 years of underground mining with the project expecting to produce approximately eight million tonnes per annum (Mtpa) run-of-mine (ROM) coal.

Once operational, it is expected that the Underground Project will employ around 300 people and operate 24 hours, seven days a week consistent with the current operation.

We expect that for the first 15 years, mining will be undertaken using the underground “punch longwall” technique with direct access to each longwall panel from existing and approved open cut pits. Later mining may be either “punch longwall” or conventional longwall accessed via some of the original entries. Much of the surface infrastructure required for the project will be located within existing and approved open cut pits.

### WHY SELECT THIS SITE FOR THE PROPOSED UNDERGROUND PROJECT?

The proposed site for the Underground Project is shown in Figure 2. While this site has been selected for its coal resources, the associated benefits of mining at this particular site include:

- > most land in the project area is already owned by Mt Arthur Coal and has been cleared of native vegetation as part of past farming practices;
- > underground mining areas can be accessed through existing open cut voids on site;
- > the majority of mining infrastructure required for the project already exists at the Mt Arthur Coal site, limiting additional construction requirements; and
- > much of the surrounding land is owned by other mining companies and Macquarie Generation.

## ECONOMIC BENEFITS

During the consultation process, many respondents raised the issue of the extent to which the proposal would benefit the local economy. An economic assessment was conducted and identified a number of significant economic benefits to Muswellbrook, the Hunter Valley region and to the State of NSW. The key economic benefits of the project include:

- > employment for a peak of approximately 470 people over the two year construction period;
- > a peak of approximately 300 full time jobs once operational;
- > expected contribution of approximately \$7 million per year to the Muswellbrook economy through employee expenditure, and anticipated to total in excess of \$170 million over the life of the project;
- > expected contribution of approximately \$12 million per year over the life of the project to the Muswellbrook economy; and anticipated to provide in excess of \$70 million per year to the Hunter Valley economy through operating expenditure; and

- > expected contribution of around \$725 million to the State and Federal Governments through taxes and royalties over the 21 years of the project.

These economic benefits are in addition to those already provided and will continue from the existing open cut operation.

# THE ENVIRONMENTAL STUDIES

Over the past three years, a range of detailed technical environmental studies have been undertaken in order to understand the potential impacts of the proposed underground mine and to inform the projects design. These studies are now almost complete and are being used in the preparation of the Environmental Assessment for the project by Umwelt (Australia) Pty Ltd.

The key findings of each of the major studies are discussed in the following sections. Many of these issues were raised during the community consultation process.

## DUST

The impact of dust from expansion activity at Mt Arthur Coal was a key concern raised by the community throughout the consultation process. To assess the potential air quality impacts associated with the project, a detailed air quality assessment has been undertaken.

Modelling of predicted dust emissions from the Underground Project has shown that the project will result in minimal contribution to local dust levels and will be significantly less than the dust goals and criteria set by the NSW Government's Department of Environment and Climate Change (DECC).

### PROPOSED MANAGEMENT STRATEGIES

Although the project will result in a minimal contribution to local dust levels, a range of dust controls will be used to minimise dust from the project including:

- > minimise new disturbance leveraging off existing mining areas and facilities;
- > dust controls on coal handling equipment;
- > spray systems for suppressing dust from coal stockpiles; and
- > ongoing dust monitoring and reporting of results.

## GREENHOUSE GAS EMISSIONS

A detailed assessment of greenhouse gas emissions has been undertaken to consider emissions from the project itself and from the end use of the coal produced. The assessment has found that the greenhouse gas emissions produced by the project itself are significantly less than the Australian underground coal mining industry average.

BHP Billiton has recently released its revised Climate Change Policy which commits to reducing energy use across its operations by 13% and greenhouse gas emissions by 6% by 2012. The Policy also commits to contributing \$300 million to greenhouse gas emission reduction research and projects (internal and external) by 2012. Building on this commitment, a number of controls are proposed as part of the project to limit greenhouse gas emissions including the development and implementation of internal energy conservation plans and further investigation into control measures such as methane capture.



## NOISE

Noise was a concern raised by a number of local residents and a detailed study was undertaken to assess the potential impacts of noise from the project on surrounding residential locations.

This study found that the Underground Project will make minimal contribution to existing noise levels and will be within the noise criteria set by DECC at surrounding residential locations. Potential rail noise impacts in the Antiene area are the subject of further detailed investigation to determine the impact of additional rail movements associated with the Underground Project. The outcomes of this assessment will be discussed with the relevant landowners.

### PROPOSED MANAGEMENT STRATEGIES

- > Noise minimisation has been considered as a key component of the design of the Underground Project, including location of surface infrastructure within open cut pits, where possible.
- > Mt Arthur Coal will also undertake ongoing monitoring and reporting of noise control effectiveness.

## SUBSIDENCE

A detailed assessment has been undertaken to identify the predicted levels of subsidence associated with the Underground Project and to assess the potential impacts of subsidence on surface infrastructure and the environment. The extent of predicted subsidence is shown on Figure 4.

The key findings of the subsidence assessment are outlined below:

- > no privately owned houses or building structures will be affected by subsidence;
- > there will be no mining beneath the Hunter River or Saddlers Creek and subsidence will not affect these watercourses;
- > in some areas above the underground mining area subsidence will result in cracking of the ground surface and some localised changes to surface water drainage, however, the majority of subsidence impacts will occur on Mt Arthur Coal owned land; and
- > sections of Edderton Road will be affected by subsidence and will be repaired progressively as subsidence occurs in consultation with local Council.

### PROPOSED MANAGEMENT STRATEGIES

- > Mt Arthur Coal will repair surface cracking by infilling or cultivation, deep ripping and revegetating the affected area. Any changes to drainage flows will be remediated.
- > Subsidence management measures will be put in place to prevent adverse impacts on potentially affected services including powerlines and telecommunications lines.
- > Detailed subsidence management plans will be prepared for each stage of the project identifying specific subsidence management measures to be implemented for each mining area.





# WATER

Concerns raised by the community about water during consultation centred around potential surface and groundwater quality impacts, including impacts on local waterways, such as the Hunter River and Saddlers Creek.

The key findings are discussed below:

## GROUNDWATER

We don't expect that there will be any change to regional groundwater quality is predicted as a result of the project. The project will not mine beneath the Hunter River or Saddlers Creek.

Underground mining will result in groundwater seepage into the mine workings. This will result in some drawdown of the water table above and adjacent to the mining area. This drawdown will not extend beneath the Hunter River alluvial zone and will not impact significantly on the Saddlers Creek alluvial zone.

Groundwater bores owned by one private land owner will be affected by the drawdown of the water table. Mt Arthur Coal is discussing measures to manage these impacts with the affected land owner. Bores located within the Hunter River alluvial lands will not be affected by the Underground Project.

### PROPOSED MANAGEMENT STRATEGIES

- > Mt Arthur Coal will expand its existing groundwater monitoring network and undertake regular analysis of groundwater monitoring data to review modelled groundwater impact predictions.

## SURFACE WATER

The project has been designed to ensure that clean water runoff is separated from the runoff that is collected within mining and infrastructure areas. Runoff from mining and infrastructure areas will be collected in the mine water management system and recycled on site. The existing on site mine water management system for the open cut operations will only require minor changes to accommodate the Underground Project.

Subsidence is predicted to impact on some ephemeral drainage lines (flow only after rainfall) above the proposed underground mining area. These drainage lines are generally degraded and have already been cleared of the majority of fringing riparian vegetation due to past agricultural practices. Potential impacts include changes in drainage patterns and subsidence cracking.

Given the existing degraded condition of these drainage lines, the predicted subsidence impacts can be repaired without having a significant impact on drainage patterns, land use or ecological values.

### PROPOSED MANAGEMENT STRATEGIES

- > The Underground Project has been designed to avoid impacts on the Hunter River and Saddlers Creek, and associated alluvial areas.
- > Remediation works will be carried out to rectify subsidence impacts on local drainage lines.
- > Integration and leverage from existing mine water management system.





## WATER USE

The Underground Project will result in an increase in water use early in the project's life. However, as modelled in the Environmental Assessment it is not expected Mt Arthur Coal will require any additional water access licenses specifically for the project. Demand for water will reduce as the project progresses due to increasing groundwater inflows into the mine workings. This water will be recycled to reduce Mt Arthur Coal's overall water use.

### PROPOSED MANAGEMENT STRATEGIES

Mt Arthur Coal is committed to managing operations to conserve water and will continue to:

- > maximise on site water storage and water recycling;
- > re-use mine water;
- > utilise treated effluent from external suppliers where available; and
- > minimise consumption and losses where feasible.

## TRAFFIC

Traffic was not a priority issue raised by the community during consultation, however, it was of concern to some people. A detailed traffic assessment has been conducted to assess both the direct traffic impacts of the proposal and the projected cumulative traffic impacts associated with the Underground Project and other major approved or proposed mining operations.

The assessment found that although the project will result in an increase in local traffic volumes during the construction and operational phases of the project, increases in traffic volume are not predicted to significantly impact on existing traffic conditions and no road upgrade works are required.

Sections of Edderton Road will require repair and maintenance works as a result of subsidence impacts.

Coal from the Underground Project will be transported by rail using Mt Arthur Coal's existing rail facility. Some upgrades will be required to the existing rail spur to improve rail traffic flow.

### PROPOSED MANAGEMENT STRATEGIES

- > Appropriate traffic controls, including temporary road diversions, will be established on Edderton road, in consultation with Muswellbrook Council, whilst the road is being subsided or repaired.
- > Access for the majority of employees to site will be via existing mine access routes off Thomas Mitchell Drive.



## ABORIGINAL CULTURAL HERITAGE

A comprehensive Aboriginal archaeological assessment was undertaken to identify and assess the nature and significance of Aboriginal cultural heritage within the project area in conjunction with 18 registered Aboriginal stakeholder groups.

A total of 77 Aboriginal heritage sites were identified within the study area, including one scarred tree, 46 artefact scatters and 30 isolated finds (single artefacts). A number of these sites will be disturbed by the Underground Project for construction of surface infrastructure or subsidence remediation activities. The artefacts at these sites will be salvaged in consultation with the local Aboriginal community while the remaining sites will be left undisturbed.

To offset the disturbance of these sites, Mt Arthur Coal proposes a number of strategies.

### PROPOSED MANAGEMENT STRATEGIES

- > Establishment of *Saddlers Creek Conservation Area* to protect 295 hectares of land of high significance along Saddlers Creek.
- > Establishment of a Management Committee comprised of representatives from Aboriginal groups to provide ongoing management of this conservation area and the remaining sites within the project area.
- > Other management measures including the establishment of a “keeping place” for salvaged relics and training on artefact recording for Aboriginal groups.

## HISTORIC HERITAGE

Eight sites of local heritage significance were identified within the project area, all on Mt Arthur Coal owned land. Several of these sites will be impacted by subsidence and the sites will be recorded in detail prior to impact. The main Edderton Homestead building will not be affected by subsidence and the existing Conservation Management Plan process for this area will provide appropriate ongoing management and maintenance requirements for conservation of the homestead and surrounding buildings.

## ECOLOGY: FAUNA AND FLORA

Much of the Underground Project area has been previously cleared for grazing or mining, however, some areas of woodland remain.

A comprehensive ecological survey and assessment was undertaken to assess the impact of the Underground Project on native flora and fauna. The ecological survey recorded eight threatened fauna species within the woodland areas including five bats, two woodland birds and one glider. Also recorded was one threatened grass species, two endangered flora populations and one Endangered Ecological Community.

The assessment concluded that the project will not have a significant impact on threatened species, populations or communities or their habitats due to the small amount of clearing and disturbance in woodland areas as a result the project.

A range of management measures will be put in place to further reduce potential impacts.

### PROPOSED MANAGEMENT STRATEGIES

- > *Saddlers Creek Conservation Area* - approximately 295 hectares of land along Saddlers Creek will be protected to conserve important habitat areas
- > A specific management strategy will be developed for working near significant flora specie.
- > Reestablishment of habitat areas affected by the project, including relocation of salvaged tree hollows and construction of nest boxes.
- > Ongoing monitoring of flora and fauna within the project area.

**FIGURE 05** SADDLER'S CREEK PROPOSED CONSERVATION AREA MAP



**VISUAL AMENITY : THE WAY THE AREA LOOKS**

As the project involves underground mining, and due to careful placement of surface infrastructure, it is considered that the visual impact of the project will be minimal.

The majority of surface infrastructure associated with the Underground Project will be located within existing or approved open cut pits and will not be visible outside the project area. A small number of elevated locations will potentially have distant views (>10km) of mining infrastructure associated with the project including:

- > elevated residences at Roxburgh Road; and
- > locations along the Golden highway and one residence south of the Golden Highway.

Some areas of subsidence remediation works will be visible but these will be short-term in nature and the visual impact will be minimal.

**PROPOSED MANAGEMENT STRATEGIES**

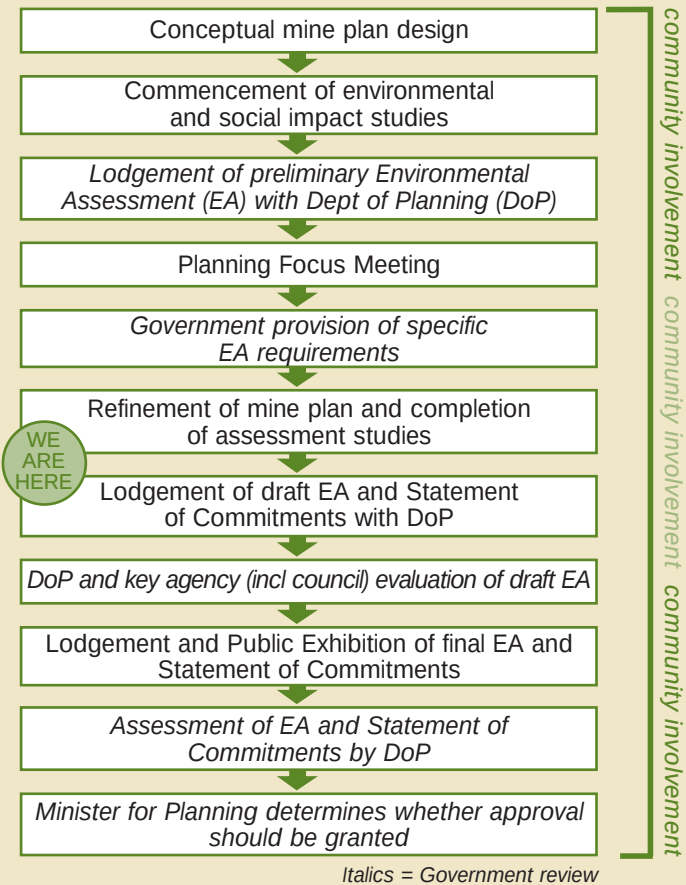
- > Where significant infrastructure is potentially visible from public locations, tree planting and screening bunds (large revegetated earth mounds) are proposed to shield or filter views of this infrastructure.
- > All lighting is to be located and directed so as to not directly impact on residential or road locations.
- > All buildings, potentially visible to the public, will be coloured in natural tones.

## WHERE TO FROM HERE?

The environmental studies are nearing completion and the Environmental Assessment report is in the process of being completed. However, prior to finalisation of the Environmental Assessment, further consultation is being undertaken with residents and key community groups to provide feedback on the studies completed to date and seek feedback on any further issues. This consultation will involve meetings with various community members who are encouraged to discuss the project and any issues they may have with the Mt Arthur Underground Project team, the environmental consultants Umwelt, and the social consultants Coakes Consulting (see contact details below).

Information and feedback collected as part of the consultation program will be reported in the Environmental Assessment.

Once the Environmental Assessment report is finalised, it will be submitted to the NSW Department of Planning for assessment and placed on public exhibition for 30 days to allow public comment. The Department of Planning will then review the documentation and all government and public submissions, prior to making a recommendation regarding the project to the NSW Minister for Planning. The Minister for Planning will then make a decision regarding the Project Application.



## FURTHER INFORMATION AND ONGOING COMMUNITY INVOLVEMENT PROGRAM

If approval is granted, Mt Arthur Coal will be undertaking a process to continue working with the community to monitor and address the issues that have been raised. In the meantime, if you would like any further information on the proposal or have a question or comment about anything contained in this Project Information Sheet, please contact:

**Mt Arthur Coal**  
Matt Cooper Mt Arthur Underground Project Director  
Phone 02 6542 4700 or Matt.Cooper@bhpbilliton.com

**Environmental Assessment**  
John Merrell Umwelt Environmental Assessment Project Manager  
Phone 02 4950 5322 or jmerrell@umwelt.com.au

**Community Consultation:**  
Karen Lamb Coakes Consulting  
Phone 0417 454 727 or karen@coakesconsulting.com



[www.mtarthurcoal.com.au](http://www.mtarthurcoal.com.au)

We would like to thank you for your participation in the community involvement process to date and look forward to your continued input.

Resourcefully Operated by BHP Billiton

# Mt Arthur Underground Project Community Information Day

## Welcome to the Mt Arthur Underground Community Information Day

### **We would like to:**

- Provide you with an update on the status of the project
- Share the outcomes of the Environmental Assessment...  
and provide you with an opportunity to offer feedback on the project.
- Understand your preferences for ongoing community engagement.



# What is the Mt Arthur Underground Project?

We are proposing an underground mine located within Mt Arthur Coal's existing Bayswater No 3 mining area and adjacent Exploration Licence area

## Construction Phase

- Infrastructure to be built over 2 years and **employing ~470 people**
- Minor upgrades to existing coal preparation plant and rail loading facility
- New surface infrastructure predominantly located within existing or approved open cut pits
- New pit-top facilities near underground mine entrances: workshop, store and bathhouse facilities
- Additional coal handling systems: stockpiling, conveyors and coal sizing facility
- Extension of Mt Arthur site access road and installation of services: ventilation and borehole facilities, powerlines, water pipelines and dams
- Most construction during daylight hours, up to 7 days a week



Existing Mt Arthur Coal CHPP

## Operational Phase

- Employ about **300 people**
- Approximately 8 million tonnes of coal per annum over 21 years
- Underground longwall mining in five coal seams
- Mining access from existing and approved open cut pits
- Using existing coal preparation plant and rail loading facility
- Operating 24 hours, 7 days a week



# Why select this particular site?

## Proposal minimises environmental and social impacts

- Mt Arthur Coal's existing Environmental Management System would be applied to minimise the potential for environmental impacts
- **86% of the land in the project area is owned by Mt Arthur Coal** and most has already been cleared of vegetation as part of past farming practices
- A lot of the mining infrastructure needed for the project already exists on the site, which limits the amount of additional construction required
- The majority of additional infrastructure can be **placed within existing disturbed mining areas**
- Access to the underground mine will be through existing or approved open cut pits
- Much of the surrounding land is owned by mining companies and Macquarie Generation
- **No privately owned houses or buildings will be affected by subsidence**



# Community Engagement and Involvement

## Assessing issues

- Mt Arthur Coal has a rigorous internal process of assessing social, economic and environmental issues associated with their planning and development. This is aimed at maximising opportunities associated with the development, while minimising any negative impacts



## Ongoing community involvement

- Distribution of Project Information Sheet Edition 1 (Nov 2005) to outline the proposal and community involvement program
- A program of consultation with landholders in proximity to the site, community groups, government agencies, service providers and business groups to understand issues and concerns.
- Distribution of Project Information Sheet Edition 2 (Apr 2006) to feedback to the community your issues and concerns.
- Distribution of Project Information Sheet Edition 3 (July 2007) to summarise outcomes of studies conducted as part of the Environmental Assessment.
- **Community Information Day** to feedback outcomes of the Environmental Assessment and to provide an opportunity for any feedback on suggested strategies and management plans
- Bimonthly project updates to the mine Community Consultative Committees (CCCs)
- Ongoing information sharing and issues monitoring via a variety of mechanisms



# Your Feedback

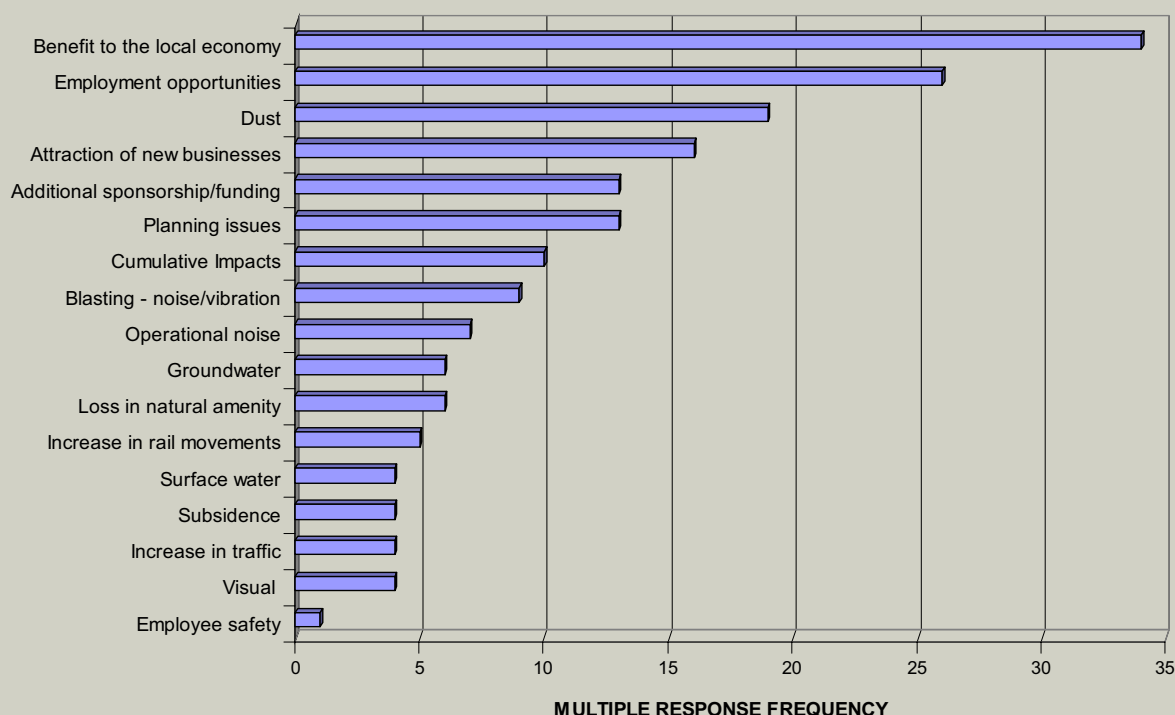
## Project benefits most frequently raised:

- Benefit to the local economy
- Opportunities for further employment
- Attraction of new businesses to the area

## Key issues of concern:

- Increased levels of dust from stockpiling and transportation of coal and exposed areas of land
- Concerns about the planning process
- Potential for cumulative impacts with other mines
- Noise from blasting, machinery, mining infrastructure, trucks, trains and exhaust fans
- Impacts on groundwater and changes in surface water quality related to run-off and impacts to Hunter River and Saddlers Creek
- Loss of natural amenity

COMMUNITY ISSUES - MT ARTHUR UNDERGROUND PROJECT



# Dust

## What the Air Quality Assessment told us

### What you told us

Community comments relating to dust focused on stockpiling of coal, transportation of coal, and exposed areas of land on the project site

*"It is black dust, coal dust, another mine can only make it worse"*

*"Muswellbrook is always so dusty, but it is a mining town"*

### What the air quality assessment told us

A comprehensive air quality assessment was undertaken in accordance with guidelines set by the NSW Department of Environment and Climate Change (formerly DEC/EPA).

Dust modelling was used to predict the potential air quality impacts of the project.

### Results indicate that

The project will result in **minimal contribution to local dust levels** and will be significantly less than air quality criteria at all residential and vacant private land locations.

### The key features of the project which will minimise dust impacts include:

- the project involves underground mining and therefore surface disturbance will be minimal
- the majority of coal will be transported by conveyor, not trucks
- coal will be damp when it is brought to the surface, not dry

### Dust management controls

Mt Arthur Coal will implement a range of controls including:

- dust controls on coal handling equipment;
- spray systems for suppressing dust from coal stockpiles;
- haul road dust suppression;
- rehabilitation of existing mining areas;
- ongoing dust monitoring; and
- reporting of results.



# Noise

## What the Noise Assessment told us

### What you told us

Community comments relating to operational and traffic noise included: exhaust fans, rail movements, machinery and mining infrastructure/facilities.

*"I don't want large fans buzzing, keeping me up all night"*

*"It is not that bad at the moment but more coal means more coal trains and more noise"*

### What the noise assessment told us

A detailed study has assessed the potential noise impacts on surrounding residential areas from proposed underground mine operations, road traffic and rail movements.

Noise modelling was used to predict noise levels at different locations and assessed against criteria set by the NSW Department of Environment and Climate Change.

The model considered:

- noise from Mt Arthur Coal's combined operations
- Worst case operational scenarios - winter nights at peak production
- Existing ambient noise levels

### Results indicate that

Operational and traffic noise from the project will make **minimal contribution to existing noise levels** and will be within the noise criteria set by DECC at surrounding residential locations.

Further detailed investigation is being undertaken to determine the impact of additional rail movements in the Antiene area.

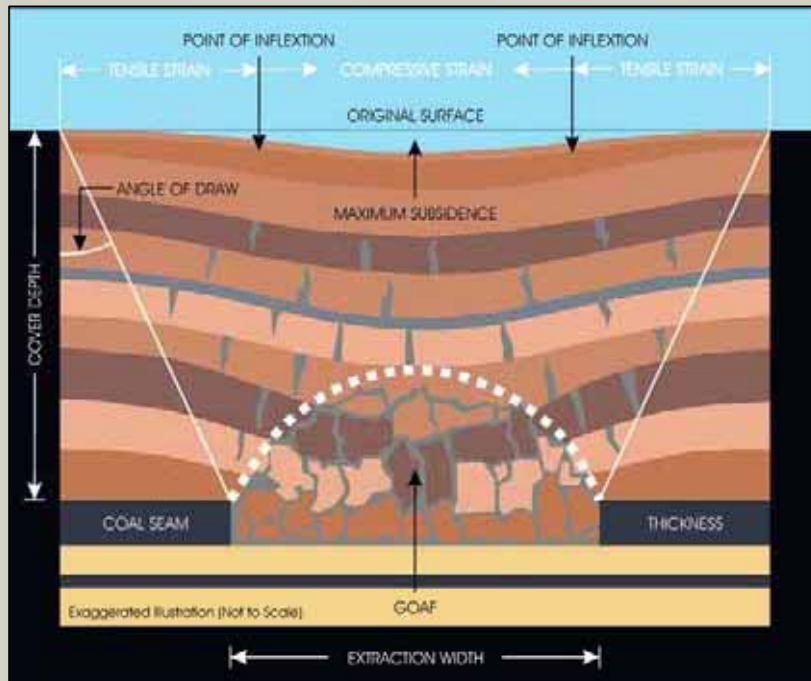
### Mt Arthur Coal's noise management techniques:

- Noise minimisation has been considered in the design of the project, including location of surface infrastructure within open cut pits, wherever possible
- Location of infrastructure away from residential locations
- Ongoing monitoring and reporting of noise control effectiveness



# Subsidence

## What the Subsidence Assessment told us



### What is Subsidence?

Subsidence is the vertical and horizontal movement of the ground as a result of underground mining. Longwall mining removes coal from a series of panels within a coal seam. As the coal is removed, the roof behind the mine workings is allowed to collapse, causing sagging of the ground surface above.

- **No privately owned houses or buildings will be affected by subsidence**
- Vacant land within three private landholdings will be affected by subsidence
- The majority of subsidence impacts will occur on Mt Arthur Coal owned land
- There will be no **mining beneath the Hunter River or Saddlers Creek and subsidence will not impact on these watercourses**
- In some areas, subsidence will result in cracking of the ground surface or localised changes in surface water drainage
- Edderton Road will be affected by subsidence and will be repaired progressively as subsidence occurs

### Subsidence Management

- Subsidence cracking will be repaired by infilling, cultivation, deep ripping and revegetation of the affected area. Changes to drainage flows will be repaired
- Measures will be installed to prevent adverse impacts on services including powerlines and telecommunications
- Detailed subsidence management plans will be developed for each stage of the project

# Water

## What the Water Assessment told us

### What you told us

Community comments focused on changes in the quality of local waterways including impacts to Hunter River and Saddlers Creek from Mine water run-off.

*"I sure hope that all the rainwater can stay on your land and not run into the river"*

*"My livelihood is that river"*

### What the water assessment told us

Assessments were undertaken of the potential impacts on surface water quality and quantity, and groundwater.

### Surface water

- Quality: The project has been designed to separate clean water runoff from mining and infrastructure area runoff. Runoff from mining and infrastructure areas will be collected and recycled on site.
- Quantity: **Mt Arthur Coal currently has sufficient water sources** to cater for this project and will not require any additional Hunter River licences for the project.
- Mt Arthur Coal is committed to managing operations to conserve water through water recycling; mine water reuse; and use of treated effluent.
- Subsidence may impact on some ephemeral drainage lines (flow only after rainfall) by changing drainage patterns and subsidence cracking.
- Remediation works will be carried out to rectify drainage impacts.

### Groundwater

- **No mining beneath the Hunter River or Saddlers Creek**
- **No change** in regional groundwater quality
- Bores located within the Hunter River alluvial lands will not be affected.



# Greenhouse Gas Emissions

## What the Greenhouse Assessment told us

A detailed assessment of greenhouse gas emissions has considered the emissions from the project and emissions for the end use of the coal produced.



### Results indicate that

Greenhouse gas emissions produced by the project itself are **significantly less than the Australian underground coal mining industry average**.

BHP Billiton is committed to reducing energy use and greenhouse emissions across its operations and has **committed \$300M to greenhouse gas emissions reduction research** and projects by 2012.

The Underground Project will develop and implement **energy conservation plans** and investigate control measures such as methane capture



# Other Environmental Studies

## Native Flora and Fauna

- Much of the Underground Project area has been previously cleared for grazing or mining, however some areas of woodlands remain. Several threatened species were recorded within the woodland areas.
- An ecological survey and assessment concluded that **the Underground Project will not have a significant impact on threatened species, populations or communities** or their habitats due to the small amount of clearing and disturbance in woodland areas required for the project.



## Traffic

- An assessment considered traffic impacts of the proposal and the projected cumulative traffic impacts with other major approved or proposed mining operations.
- Increased traffic volumes are not predicted to significantly impact on existing traffic conditions and no road upgrade works will be required.

## Visual Amenity

- The visual impact of the project will be minimal due to:
- Underground mining, and careful placement of surface infrastructure;
  - Majority of surface infrastructure to be located within existing or approved open cut pits.
- Use of tree planting or screening bunds (large earth mounds) to shield or filter views.

## Cultural Heritage

- An Aboriginal archaeological assessment was undertaken in conjunction with the 18 registered Aboriginal stakeholder groups.
- A total of 77 Aboriginal heritage sites were identified within the study area. Potentially disturbed artefacts will be salvaged in consultation with the local Aboriginal community.
- Other management measures include the creation of Saddlers Creek Conservation Area and funding a "Keeping Place".



# Cumulative Impacts

## What you told us

Community comments focused on the number of current mines in the region and associated cumulative environmental impacts such as noise and dust.

*"I am worried that a lot of mines are in the area".*

*"It is not just Mt Arthur Coal noise, but all the other mine noise as well"*

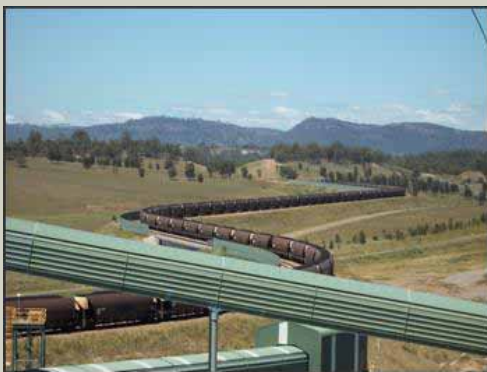
*"It never used to be this dusty, the more mines that start, the more dust on my house"*

**Cumulative impacts can be controlled to a much greater extent in an underground operation,** however Mt Arthur Coal is well aware of the sensitivity of the community to cumulative impacts from continued mining in the Hunter Valley.



All environmental studies examined the impacts of the Underground Project alone, as well as the cumulative impacts with other mining operations.

The project combined with other developments in the area meets relevant cumulative impact criteria.



# Economic Benefits

## What you told us

The benefits of the project to the local economy was the most frequently identified issue relating to the project.



## The key economic benefits of the project include:

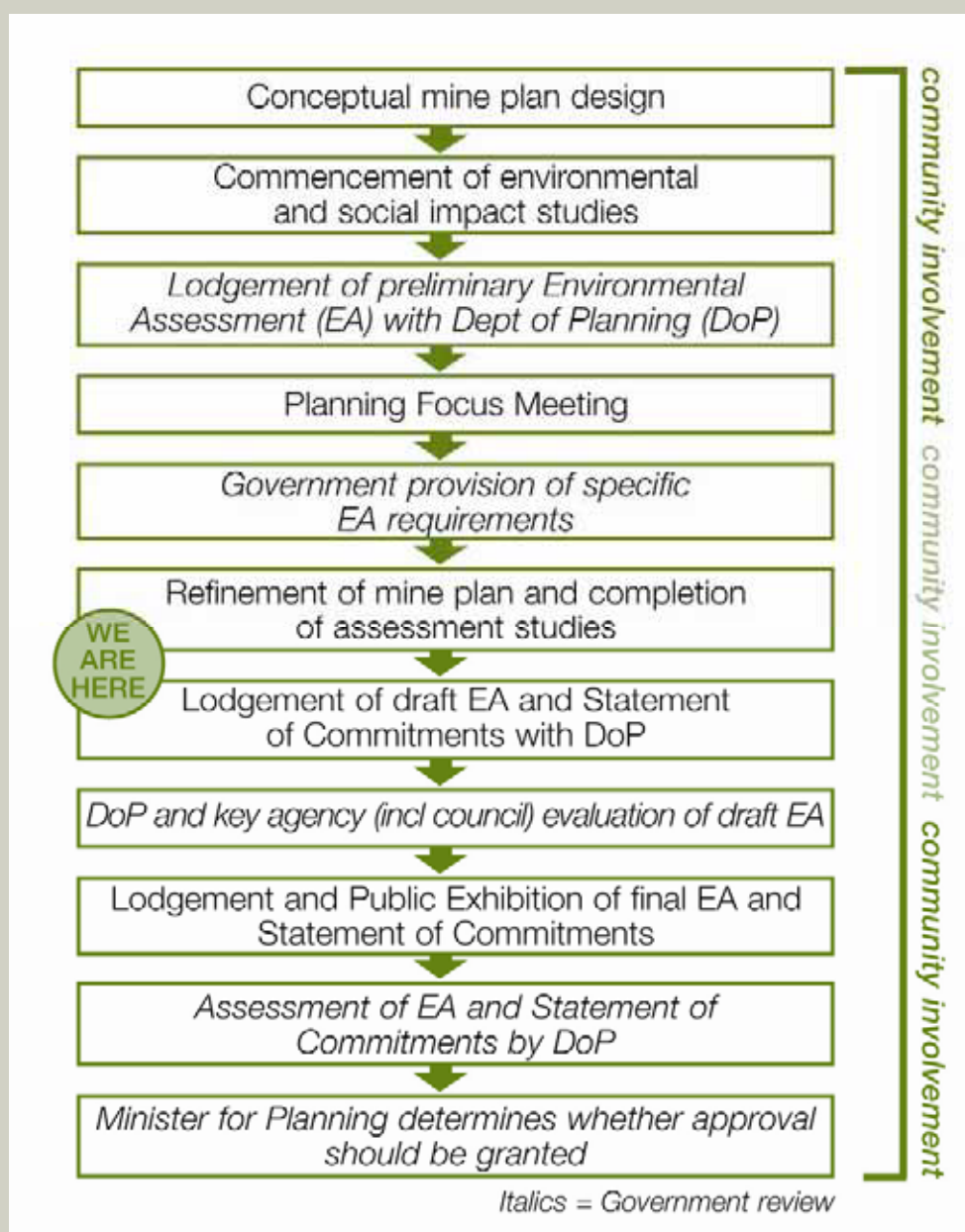
- **\$300M** capital cost
- Employment for approximately **470 people** over the 2 year construction period
- Approximately **300 full-time jobs** once operational
- Contributions in excess of approximately \$170M over the life of the project to the Muswellbrook economy through employee expenditure
- Contributions in excess of approximately \$270M over the life of the project to the Muswellbrook economy through operating expenditure
- Contribution of approximately \$1,757M over the life of the project to the Hunter economy through operating expenditure
- These benefits are in addition to those derived from the continuing operation of the existing Mt Arthur Coal open-cut operation



# Where are we now?

## Next steps

The Underground Project requires approval from the NSW Minister for Planning under the *Environmental Planning and Assessment Act 1979* before it can be developed. The Environmental Assessment for the project will be lodged soon for agency review for adequacy prior to being placed on public exhibition for 30 days.



# Ongoing Involvement

If approval is granted, the Mt Arthur Underground Project Team will continue working with the community to address the issues that have been raised.

## Your input

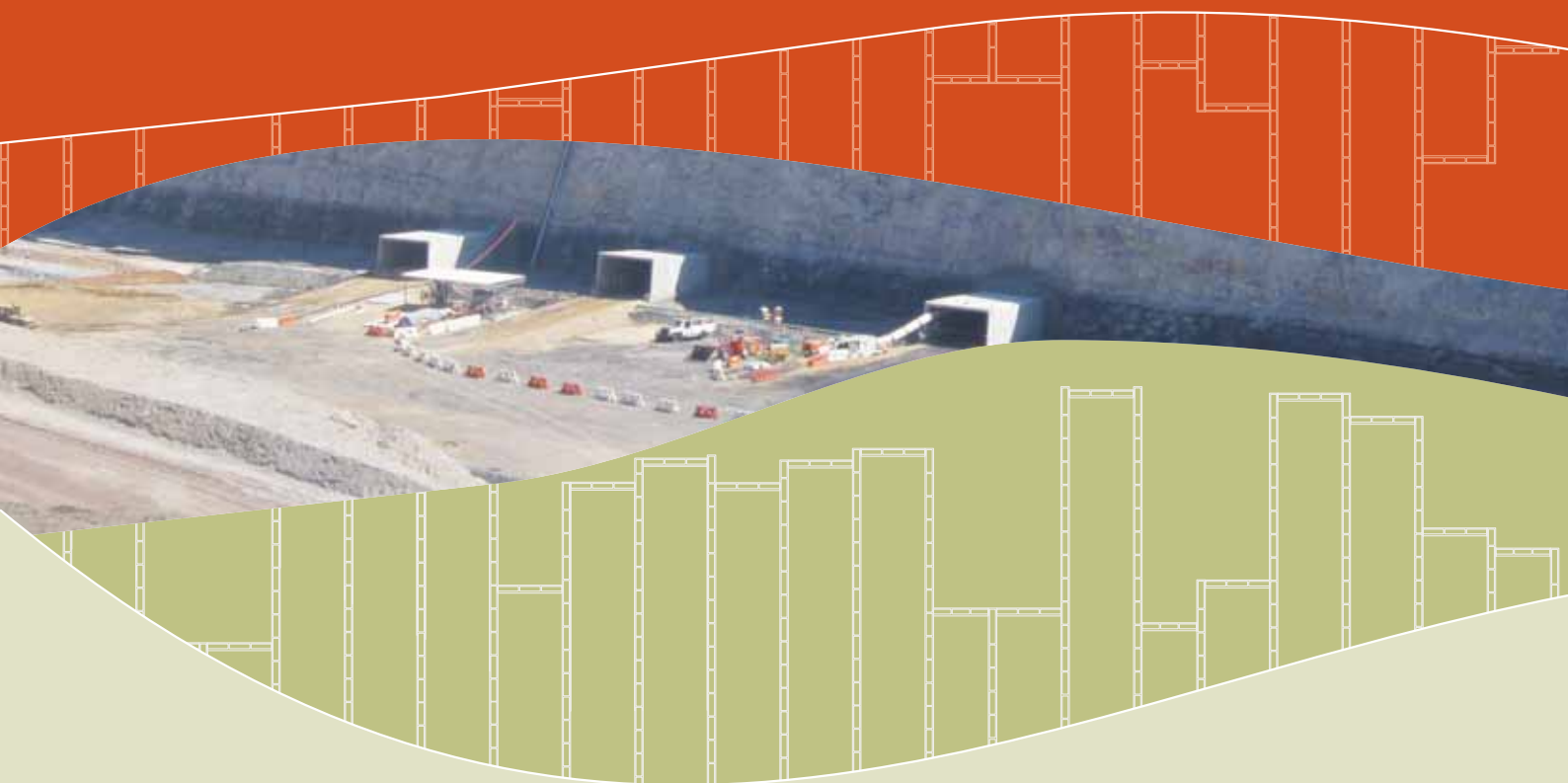
- **We would appreciate your feedback** and comment in relation to the suggested strategies that have been raised. Please write your comments on the feedback sheets provided.

## Ongoing community involvement program

- **We value your input** in terms of our ongoing community involvement program. Please indicate, by placing a sticker next to your preferred option(s), the mechanisms you would prefer us to use in keeping you informed / involved.



| Method                                                               | Feedback |
|----------------------------------------------------------------------|----------|
| Quarterly / bi-annual Community Information Sheet / Newsletter       |          |
| Community Consultative Committee meetings                            |          |
| Mt Arthur Coal website and free call 24-hour Community Response Line |          |
| Annual consultation:<br>–Telephone<br>–Face to face                  |          |
| Other (please complete 'other mechanisms' sheet)                     |          |



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