APPENDIX 5

Social Impact and Opportunities Assessment

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SOCIAL IMPACT AND OPPORTUNITIES ASSESSMENT

Mount Owen Continued Operations Project

FINAL

October 2014

GLENCORE

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FINAL

October 2014

Prepared by
Umwelt (Australia) Pty Limited

on behalf of
Mount Owen Pty Limited

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Executive Summary

This report documents the results of a Social Impact and Opportunities Assessment (SIOA) undertaken by Coakes Consulting and Umwelt on behalf of Mount Owen Pty Limited as part of an Environmental Impact Statement (EIS) for the Mount Owen Continued Operations Project.

The Mount Owen Complex is located within the Upper Hunter Valley of New South Wales (NSW), approximately 20 kilometres north-west of Singleton, 24 kilometres south-east of Muswellbrook and to the north of Camberwell Village. There are approximately 240 properties located in the vicinity of Mount Owen (the immediate Area), that comprise the State Suburbs of Bridgman and Camberwell.

Community involvement has been a key component of the study, with discussions held with 356 stakeholders' utilising a range of engagement and communication methods (e.g. personal interviews, surveys, community open days, provision of five Community Information Sheets). As part of the community involvement program, four rounds of consultation have been undertaken with local landholders residing in close proximity to the Project, as well as consultation with regional stakeholders, including service providers, community and environmental NGOs, local government representatives etc.

During consultation, landholders discussed a number of issue themes in relation to the Project. Conversations focused on the cumulative aspects of these issues on social amenity, with landholders identifying cumulative impacts as the most challenging associated with living in an area with a number of active mining operations present. Places of local value (i.e. social, physical, natural, and/or economic value), as identified by community stakeholders included local waterways, local roads, community facilities, the local school, mining operations and private residences.

Regional stakeholder issues also focused on the cumulative effects of mining across the region. While earlier consultation highlighted pressures on regional housing and accommodation and the development of a two-speed economy as issues of relevance, these issues appear to be currently eased by the ongoing downturn in the regional mining sector (including continued report of job losses) and a substantial increase in housing availability in the region. As such, the potential for positive impacts related to the generation of local employment, opportunities for local businesses, skills development and training and company investment in social infrastructure are now more critical.

The Project includes major upgrades to local roads and other infrastructure which are expected to improve traffic flows and improve road safety in the local area. These upgrades (along with other construction associated with the Project site) will be undertaken over an 18 month period by a construction workforce of approximately 330 workers. Workforce modelling undertaken as part of the SIOA, predicts that up to 60 per cent of the construction workforce is likely to be sourced locally, but even under a worst case scenario, that any incoming temporary workers will be able be accommodated within the Singleton local government area (LGA) and neighbouring LGAs, without creating housing stress or other pressure on community services and infrastructure.

Technical studies for the Project have determined that impacts associated with noise, dust and blasting can be effectively managed with a combination of project design changes, modification to operations to minimise impact, and through the implementation of appropriate mitigation measures; however, there is no doubt that for some stakeholders residual concern remains.

Three private residences are predicted to experience air and/or noise impacts above relevant regulatory levels, and thus will be entitled to acquisition rights. Whilst any residential acquisitions, no matter the number, have potential to concern some local community members, the direct population impacts from these three potential acquisitions, including the potential for flow-on impacts to community sustainability and social infrastructure (e.g. Mount Pleasant Public School and Glennies Creek Rural Fire Service), are considered to be negligible.

The Project has been designed to avoid disturbance to natural places valued by the community, namely local waterways and the Ravensworth State Forest. The company's long term planning toward sustainable post mining land use options, including conservation of native woodland areas that connect to existing native vegetation areas, as well as rehabilitation of areas suitable for sustaining potential future agricultural activities, such as grazing, is considered to reduce the potential for land use conflict as a result of the Project. However, specific elements of land management on mine owned land, such as weed and pest control, were identified by some landholders as an ongoing concern and provides an opportunity to further develop proactive relationships with neighbouring landholders through the implementation of ongoing engagement mechanisms at the site level (such as a local land management working group, or increased focus on land management issues as part of the mine's Community Consultative Committee).

Economic impacts of the Project were viewed positively by those consulted, with almost all landholders identifying employment and stimulation of local business as key benefits of the Project. However, some concern was noted regarding devaluation of properties in proximity to existing mining operations, affordability of rental properties, and the challenge for some non-mining industry sectors to attract labour given the competition of typically strong mining wages.

Over its life, the Project is estimated to generate net benefits of approximately $758 million to the local and regional economy, of which $306 million will be within the Singleton community. Micro-level economic analysis, undertaken through a detailed survey of the existing Mount Owen workforce, found that not only is Mount Owen highly linked to the township and LGA of Singleton, but it also has strong connections with other nearby towns such as Maitland and Muswellbrook.

These locations tend to be where most employees and contractors live and consequently where a significant portion of their household expenditure (approximately $46 million annually) and use of local services e.g. health and education occurs. Furthermore, the existing Mount Owen workforce is seen to have resided in the area, on average 14 years, are predominantly married (67%) with a mortgage (63%), live within around 30 minutes of the Mount Owen operations and participate in a range of local community groups and activities.

Additional investment associated with the Project includes ongoing social investment in these local and regional communities, with support for community programs and infrastructure at both a corporate (Glencore Corporate Social Involvement Program) and site level (Mount Owen Social Involvement Program).

In summary, the SIOA has predicted that the medium and high level technical impacts to be experienced as a result of the Project are primarily related to local social amenity and mainly due to the potential for increased off-site air quality and noise impacts which will require ongoing active monitoring and management.

Despite the small number of residents affected, given the cumulative nature of these issues, it is recommended that Mount Owen seek to collaborate with neighbouring mines regarding specific residences common to relevant mining operations.

In addition, it is suggested that the company commit to a dedicated program of engagement with landholders located within defined Project management zones to afford effective monitoring and management, if required, of project impacts over time. Positive feedback received from landholders, as part of the SIOA program, has specified a desire to see on-going community engagement should the project be approved.

A key aspect of any social impact assessment is the development of a framework to monitor a project's impact over time. It is recommended that social data be collected to monitor commitments made in the SIOA namely:

- Key areas of predicted Project impact e.g. origin of the proposed construction workforce, intended accommodation of construction workers in the locality/region, use of local services etc;

- Changes in the local social and economic context through the collection of relevant census and social indicator data at appropriate levels of analysis across the study area;

- Monitoring of the social and economic contributions of the operation in the community through recurring implementation of workforce and supplier surveys (i.e. Town Resource Cluster (TRC) Analysis); and

- Evaluation of actions and investments arising from any Voluntary Planning Agreement (VPA) for the Project to assess the outcomes of key projects and programs.

Mount Owen has an existing Social Involvement Plan and it is suggested that outcomes of the SIOA be integrated into this document to inform future management of social impacts and on-going operational and community engagement planning for the operation. The company also has a current community support program that provides contributions to local community groups and organisations. This program, at the operational level, is complemented by Glencore's broader Corporate Social Involvement Program which takes a more regional focus to social involvement and investment.

Consequently, data obtained through the SIOA should be utilised to further inform engagement and investment planning at a local and regional level through greater alignment of investment priorities with community issues, impacts, needs and aspirations. Where possible, indicators developed to monitor the SIOA should be aligned with broader company business drivers and sustainable development standards.

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Glossary

ACHA	Aboriginal Cultural Heritage Assessment
ARIA	Accessibility/Remoteness Index of Australia
ARTC	Australian Rail Track Corporation
ABS	Australian Bureau of Statistics
BOCSAR	Bureau of Crime Statistics and Research
Coakes	Coakes Consulting
CSI	Community Sensitivity Index
DP&I	Department of Planning and Infrastructure
DGRs	Director-General's Requirements
EIS	Environmental Impact Study
GP	General Practitioner
HVRF	Hunter Valley Research Foundation
HCRCMA	Hunter Central Rivers Catchment Management Authority
IAIA	The International Association for Impact Assessment
LGA	Local Government Area
NHPA	National Health Performance Authority
NSW	New South Wales
PHIDU	Public Health Information Development Unit
PSNL	Project Specific Noise Levels
REINSW	Real Estate Institute of NSW
SIA	Social Impact Assessment
SIOA	Social Impact and Opportunities Assessment
SRLUP	Strategic Regional Land Use Plan – Upper Hunter
SS	State Suburb
TRC	Town Resource Cluster
UCL	Urban Centre Locality

1.0 Introduction

This report presents the results of a Social Impact and Opportunities Assessment (SIOA) undertaken by Coakes Consulting and Umwelt Pty Ltd (Umwelt) on behalf of Mount Owen Pty Limited (Mount Owen), a subsidiary of Glencore Coal Pty Limited (formerly Xstrata Coal Pty Limited (Xstrata)). The SIOA is part of an Environmental Impact Statement (EIS) for the Mount Owen Continued Operations Project (the Project) which seeks to expand and extend open cut coal mining operations at the Mount Owen Mine until 2030.

The SIOA program has been designed to identify, assess and manage the potential for social impacts of the Project on neighbouring local and regional communities. Consultation with the community has been a primary component of the assessment.

1.1 The Mount Owen Continued Operations Project

The Mount Owen Complex is located within the Hunter Coalfields in the Upper Hunter Valley of New South Wales (NSW), approximately 20 kilometres north-west of Singleton, 24 kilometres south-east of Muswellbrook and to the north of Camberwell village (refer to **Figure 1.1**).

Mount Owen Pty Limited (Mount Owen), a subsidiary of Glencore Coal Pty Limited (formerly Xstrata Coal Pty Limited (Xstrata)), currently owns and operates the three existing open cut operations in the Mount Owen Complex; Mount Owen (North Pit), Ravensworth East (West Pit and Glendell (Barrett Pit). Mount Owen anticipate that mining will commence in the northern portion of the Ravensworth East in an area known as the Bayswater North Pit (BNP) in 2015. The mining operations at the Mount Owen Complex include the integrated use of the Mount Owen coal handling and preparation plant (CHPP), coal stockpiles and the rail load out facility.

Mount Owen (North Pit) has an approved production rate of 10 million tonnes per annum (Mtpa) of run of mine (ROM) coal, and blended with Ravensworth East (approved 4 Mtpa) and Glendell (approved 4.5 Mtpa) ROM coal, feed the Mount Owen CHPP and associated infrastructure, which has a total approved processing capacity of 17 Mtpa of ROM coal. Processed coal, both semi soft and thermal, are transported via the Main Northern Rail Line to the Port of Newcastle for export, or by conveyor for domestic use as required.

Mount Owen expects, subject to market conditions, that mining will be completed within the currently approved area of the North Pit and the West Pit by 2018 and late 2014 respectively; and Glendell by 2022. Mount Owen has undertaken extensive exploration of its mining tenements and identified substantial additional mineable coal tonnes to the south of the currently approved North Pit. Further exploration verified economically viable reserves within an area located in the northern portion of the existing approved Ravensworth East Mine, referred to as the BNP. The proposed Ravensworth East Resource Recovery (RERR) Mining Area, is located immediately east of the West Pit and is proposed to be mined sequentially after mining has been completed in the BNP.

Mount Owen is seeking development consent for the Mount Owen Continued Operations Project (the Project) to extract these additional mineable coal tonnes through continued open cut mining methods. The Project proposes to continue the existing mining operations within the North Pit to the south beyond the current approved North Pit mining limit (the North Pit Continuation) in addition to undertaking mining operations within the BNP area, sequentially followed by the proposed RERR Mining Area (refer to **Figure 1.2**).

FIGURE 1.1

Locality Plan

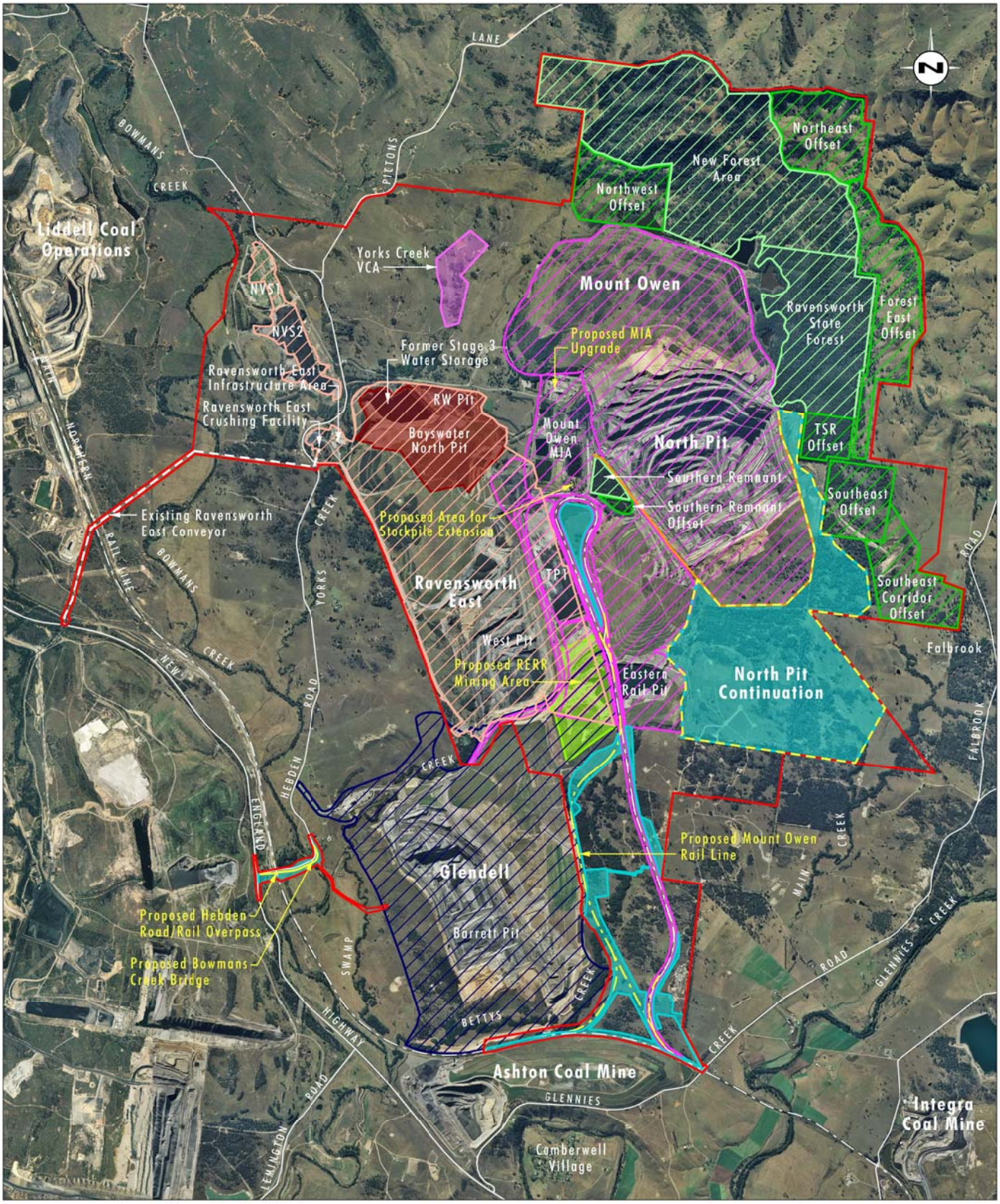

Image Source: Mount Owen (2012-2013)
Data Source: Mount Owen (2014)

0 1 2 3 km
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Legend

- Project Area
- Approved North Pit Mining Extent
- Proposed North Pit Continuation
- Proposed Rail Upgrade Works
- Proposed Hebden Road Upgrade Works
- Proposed Disturbance Area
- Proposed RERR Mining Area
- Yorks Creek VCA
- Bayswater North Pit
- Mount Owen Operational Area
- Glendell Operational Area
- Ravensworth East Operational Area
- Existing Biodiversity Offset Area
- Ravensworth State Forest

FIGURE 1.2

Proposed Mount Owen Continued Operations Project

File Name (A4): R13/3109_861.dgn
20141009 10.13

The Project seeks to maintain the current approved North Pit extraction rate of 10 Mtpa of ROM coal, extracting approximately 74 million tonnes (Mt) of ROM coal from the North Pit Continuation. The extraction of these additional mineable coal tonnes would continue the North Pit life to approximately 2030 (an additional 12 years). Additionally, the Project seeks to maintain the current approved Ravensworth East extraction rate of 4 Mtpa of ROM coal, and to extract approximately 12 Mt of ROM coal from the BNP. Subject to market conditions, mining within the BNP area would be undertaken from approximately 2015 to 2022, with the mining in the proposed RERR Mining Area to follow sequentially from approximately 2022 to 2027 and extract approximately 6 Mt of ROM coal.

The Project will enable the consolidation of the Mount Owen and Ravensworth East Operations to provide for further operational efficiency by providing a single development consent for continued operations. The Project does not include any aspect of the ongoing operations at Glendell Mine and it will continue to operate in accordance with its current development consent.

The Project is State Significant Development as defined by the provisions of the State Environmental Planning Policy (State and Regional Development) 2011 and requires development consent under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The Minister for Planning is the consent authority for the Project.

An Environmental Impact Statement (EIS) has been prepared for the Project to accompany a Project Application following Department of Planning and Environment (DP&E) issuing Director-General's Requirements (DGRs) for the Project in March 2013. The following SIOA was prepared to meet the Director-General's EIS requirements in relation to heritage issues for the Project.

1.2 Key Aspects relevant to the SIOA

Key changes proposed as part of the Project that are particularly relevant to the SIOA are:

- Increased life of mine to 2030 (an additional 12 years);
- Upgrades to local roads and infrastructure, including a new bridge on Hebden Road;
- Use of a large construction workforce (i.e. 330 temporary workers over and approximate 18 month period);
- Movement of the mine footprint toward some residences and away from others;
- New acquisition rights for three private residences that are modelled to exceed relevant air and noise criteria; and
- Inclusion of eight private residences in Mount Owen's active noise management zone that have been modelled to exceed relevant noise criteria.

Relevant aspects of the current operations that will stay the same include:

- No changes to operating hours;
- No change in operational employment numbers and shift arrangements;
- No change in approved extraction rate or mining method; and
- No changes to approved numbers of coal trains.

1.3 Director-General's Requirements

As part of the assessment process for the Project, a number of DGRs have been defined by the DP&E (formerly the Department of Planning and Infrastructure (DP&I)). These requirements outline what must be addressed in the EIS.

The DGRs require:

- An assessment of issues specific to the Project and potential impacts;
- Specification of technical assessment guidelines relevant to the Project; and
- Consultation with the local community as well as local, state and Commonwealth government agencies.

The following table outlines the relevant DGRs for the social component of the Project and outlines where in the SIOA document these requirements have been addressed.

Table 1.1 – DGRs Addressed in the SIOA

Director-General's Requirements	Document Section
Assess potential impacts on local and regional communities, including: Increased demand for local and regional infrastructure and services.	**Section 7.0**
Provide a detailed description of the measures that would be implemented to minimise the adverse social and economic impacts of the project, including any infrastructure improvements or contributions and/or voluntary planning agreement or similar mechanism.	**Section 8.0**

Source: DP&I (2012, Letter dated 13/03/13, ref.no. 10/14081-2)

2.0 SIOA Approach

A SIOA is an approach to assessing and predicting the likely consequences of a proposed action in social terms, and developing options and opportunities to improve social outcomes.

While economic impact 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 and in providing a complete picture of potential impacts and their context and meaning.

2.1 International Guidelines for Social Impact Assessment

The International Association for Impact Assessment (IAIA) defines Social Impact Assessment as:

> '…the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment (IAIA, 2003)'

The IAIA guidelines adopt Vanclay's (2008) classification of social impacts as issues affecting (directly or indirectly) people's:

- **Way of life** - how they live, work, play and interact with one another on a day to day basis;
- **Culture** - their shared beliefs, customs, values and language or dialect;
- **Community** - its cohesion, stability character, services and facilities;
- **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;
- **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;
- **Health and wellbeing** - health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity;
- **Personal and property rights** - particularly whether people are economically affected or experience personal disadvantage which may include a violation of their civil liberties; and
- **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.

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

Monitoring and evaluation is also a key component of an SIOA process; that is, to monitor impacts over time and identify any unanticipated impacts that may arise as a result of the proposed change.

The IAIA guidelines have been integrated within the SIOA during all stages of its development and implementation, and have in turn influenced development of the Project itself. **Table 2.1** summarises how the SIOA's activities are aligned with the IAIA guidelines.

Table 2.1 –Activities Comprising Social Impact Assessment (Vanclay, 2003)

IAIA Guidelines - Activities for Social Impact Assessment	Relevant Section of SIOA
Participates in the environmental design of the planned intervention	Scoping of perceived social issues up front in the assessment process to inform project assessment and planning (**Section 5.0**) Potential for social amenity impacts taken into consideration in planning stages; Main text of EIS
Identifies interested and affected people	**Section 3.0**, **Section 4.0**
Facilitates and coordinates the participation of stakeholders	**Section 5.0**
Documents and analyses the local historical setting of the planned intervention so as to be able to interpret responses to the intervention, and to assess cumulative impacts	**Section 3.0, Section 4.0**
Collects baseline data (social profiling) to allow evaluation and audit of the impact assessment process and the planned intervention itself	**Section 3.0**, **Section 4.0** **Section 5.0**
Gives a rich picture of the local cultural context, and develops an understanding of local community values, particularly how they relate to the planned intervention	**Section 3.0**, **Section 4.0** **Section 5.0**
Identifies and describes the activities which are likely to cause impacts	**Section 7.0**
Predicts (or analyses) likely impacts and how different stakeholders are likely to respond	**Section 7.0**
Assists evaluating and selecting alternatives	Main text of EIS
Assists in site selection	Continuation of existing operation
Recommends mitigation measures	**Section 8.0**
Assists in the valuation process and provides suggestions about compensation (non-financial as well as financial)	**Section 8.0**
Describes potential conflicts between stakeholders and advises on resolution processes	**Section 7.0**, **Section 8.0**
Develops coping strategies for dealing with residual or non-mitigatable impacts	**Section 8.0**
Contributes to skill development and capacity building in the community	**Section 8.0**
Advises on appropriate institutional and coordination arrangements for all parties	**Section 8.0**
Assists in devising and implementing monitoring and management programs	**Section 8.0, Section 9.0**

Source:(Adapted from Vanclay, 2003)

2.2 SIOA Methodology

A wide range of assessment and analytical methods have been utilised in the SIOA to develop a detailed understanding of the existing Mount Owen Mine operations and relevant communities and in turn, to identify potential social impacts that may be associated with the Project. A summary of the approaches and methods are presented in **Table 2.2.**

Table 2.2 – SIOA Phases and Assessment Methods

Task	Description/Detail
Assessment Methods	
Phase 1	**Program Planning**
Development of stakeholder engagement strategy	Development of a stakeholder engagement strategy for the Project. The strategy was informed by previous consultation activities, existing data on perceived issues and opportunities and preliminary social risk rankings undertaken by the Project team.
Phase 2	**Community Profiling**
Community capitals analysis (socio-economic analysis)	Assessment and analysis of ABS Census data and other relevant social and community indicators and data sets to develop a detailed social profile of the communities of interest. Areas of existing community sensitivity and resilience identified through a community capitals analysis, a form of analysis developed by Coakes Consulting.
Historic and contemporary issues and opportunities	Review and analysis of local media sources to understand historical and emerging issues and opportunities within the community. Scoping of stakeholder issues through the associated community consultation program.
Operational situational analysis and township resource cluster analysis (TRC-Analysis)	Review of corporate and operational standards and policies relevant to the SIOA. Documentation of the socio-economic linkages between the Project, the existing Mount Owen and Ravensworth East mines and the local community through employee and supplier surveys (Coakes Consulting, 2013a).
Local, regional and cumulative issues analysis	Personal interviews with key local and regional stakeholders to identify challenges and opportunities for the Singleton LGA (Coakes Consulting, 2013b).
Phase 3	**Scoping of Issues and Opportunities**
Review of previous consultation and complaints	Review and analysis of historical stakeholder consultation outcomes and complaints data for Mount Owen to obtain an understanding of perceived issues in the community.
Community issues analysis	Personal interviews and meetings with local neighbours to identify perceived issues and opportunities. Ranking of perceived issues and opportunities by relative frequency.
Regional issues analysis	Briefings with interested NGOs, business groups and other interested stakeholders to identify perceived issues and opportunities and calibrate local concerns within the broader scale (Coakes Consulting, 2013b).
Phase 4	**Assessment of Impacts and Opportunities**
Social risking	Assessment of unmitigated technical social risk associated with the Project through a review of relevant social and environmental consequence and likelihood ratings, using Social Consequence Indicators and social impact assessment approach developed by Coakes Consulting.

Table 2.2 – SIOA Phases and Assessment Methods (cont.)

Task	Description/Detail
Phase 5	**Prediction of Impact and Strategy Development**
Social Impact Plot©	Plotting of impacts (perceived and technical) utilising the Social Impact Plot© developed by Coakes Consulting to prioritise social risk rankings (technical and perceived) and guide management strategy development.
Social impact management and residual risk ranking	Identification and development of appropriate strategies to address predicted Project impacts. Minimisation of high and medium social risks through commitment to relevant management and enhancement strategies.

2.3 Stakeholder Consultation

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 the resource/operation/project;
- have an interest in the proposed action or change;
- use or value a resource; and
- are interested in its use and/or are forced to relocate.

Community involvement has been a key component of the SIOA, and a program of consultation has been ongoing throughout preparation of the Project EIS. **Table 2.3** provides an overview of consultation activities and **Table 2.4** lists the stakeholder consulted during preparation of the EIS.

Table 2.3 – Consultation and Communication Activities

Consultation and Communication Methods	
Neighbour interviews and meetings	Personal meetings with near neighbours to outline Project aspects and obtain feedback on perceived issues and opportunities (4 rounds of consultation).
Local stakeholder consultations	Personal meetings in local communities (including Council representatives, Chamber of Commerce, community groups).
Community Consultative Committee (CCC)	Regular briefings and presentation of EIS material at CCC meetings.
Regional stakeholder meetings	Personal meetings with key local stakeholders drawn from community sectors such as local government, education, health, transport, housing and emergency services (Coakes Consulting, 2013b).
Community Information Sheets	Development of a series of five Community Information Sheets summarising key aspects and progress/outcomes of the environmental and social assessment program - distributed to neighbouring community members and key stakeholders.
Site open day and site visits	Engagement events hosted on site, including exhibition of Project material, tours of the Mount Owen site, and discussions with the Project team.

Table 2.3 – Consultation and Communication Activities (cont.)

Consultation and Communication Methods	
Community information sessions	Project information sessions to enable the wider community key stakeholders and neighbouring landholders to view EIS findings and ask questions of the Project team.
Workforce and supplier survey	Surveys of Mount Owen employees, contractors and suppliers to identify associations between Mount Owen and the wider community.
Government briefings and consultation	Meetings with relevant local, state and Commonwealth government organisations to provide updates on Project status and discuss approval and other relevant matters.
Website	Publication of relevant Project information on the Mount Owen Complex website.

Table 2.4 – Summary of Consultations

Stakeholder	Number of Stakeholders
Local landholders	47
Open Day participants (additional to those already consulted in landholder meetings)	13
Tenant interviews	14
Local community groups	4
Environmental NGOs	1
Regional stakeholders/service providers	58
Government (local/state)	14
Aboriginal stakeholders (Registered Aboriginal Parties)	60
Mount Owen CCC community representatives	9
Mount Owen Flora and Fauna Interagency Advisory Group	1
Mount Owen and Ravensworth Workforce	135
Total Consultations	*356*

3.0 Operational Profile – Mount Owen

In order to effectively predict social impacts of a proposed change it is important to understand the current social context of the Project and its functional linkages within the specific assessment area. This section presents an analysis of the existing socio-economic linkages between Mount Owen and local and regional communities using a technique known as Town Resource Cluster Analysis (TRC-Analysis; Fenton, Coakes, and Marshall, 2003).

TRC-Analysis looks at the links between resource projects and communities via their direct contributions (e.g. employment) and indirect contributions (e.g. employee household expenditure and use of services). TRC-Analysis may identify contributions or impacts experienced in areas close to and/or some distance away from a project. For example, communities in capital cities or other states may experience some benefit from a mining project through indirect flow-on effects, such as employee household expenditure (e.g. spending occurring in regional centres) or employment by suppliers to the project (e.g. if a large supplier has its main office and employs many staff in another location).

This data is critical when calculating the impacts of benefits of a Project that is continuing or expanding its activities, or where there is a continuing or at least similar workforce, as is the case with the current Project. Identifying the functional linkages between a project and surrounding communities, can also assist in accurately defining an appropriate social assessment area for the project.

Information informing the TRC-Analysis for Mount Owen has been sourced from:

- A detailed survey of the existing Mount Owen Complex workforce (completed by 135 employees and contractors) *nb: Mount Owen Complex includes the Mount Owen, Ravensworth East and Glendell operations;*
- A survey of Mount Owen Complex suppliers (completed by 24 suppliers); and
- A review of relevant company documents and reports.

The full TRC-Analysis report is attached at **Appendix A**, and a summary of key findings is presented below.

3.1 Workforce Characteristics

Table 3.1 summarises the key characteristics of Mount Owen Complex's employees and contractors, based on the survey data. Most employees and contractors were employed full time (98 per cent), and the average hours worked per week was estimated at 45.65 hours. More than half of the workers (67 per cent) said they were married, and 17 per cent of workers were single males.

Table 3.1 Characteristics of employees and contractors (survey data)

Characteristics	Survey percentage (%) or number (#)
Employment type	
Employee	25.20%
Contractor	74.80%

Table 3.1 Characteristics of employees and contractors (survey data) (cont.)

Characteristics	Survey percentage (%) or number (#)
Employment status	
Permanent full-time	97.78%
Permanent part-time	0.74%
Casual	0.74%
Not specified	0.74%
Length of time working for the mining industry	
Mean (years)	10.74
Length of time working for Mount Owen Mine	
Mean (years)	4.82
Hours worked per week	
Mean (hours)	45.65
Employed previously in other industry sectors (not mining)	
Percentage	21.50%
Highest level of school education	
Year 10 or below	49.63%
Year 11	11.11%
Year 12	37.04%
Not specified	2.22%
Additional qualifications	
Trade/TAFE certificate	67.83%
Degree/ Diploma	25.87%
Business/ Management certificate	2.79%
Other	3.49%
Home ownership	
Has a mortgage	63.24%
Renting	19.12%
Owns the property	14.71%
Staying with family	2.94%
Length of time in town or suburb of residence	
Mean (years)	13.64
Median (years)	8.00
Proportion that relocated to the Upper Hunter area for employment	
Percentage	45.90%
Number of people in household	
Mean number of people	3.48
Proportion of single males in sample	
Percentage	17.04%
Family structure	

Table 3.1 Characteristics of employees and contractors (survey data) (cont.)

Characteristics	Survey percentage (%) or number (#)
Married	66.67%
Never married	23.70%
Divorced	6.67%
Separated	2.96%
Aboriginal / Torres Strait Islander status	
Yes (Aboriginal and / or Torres Strait Islander)	4.44%
No	95.56%

Source: Coakes Consulting (2013)

3.2 Town of Residence

Mount Owen Complex workers live in a number of communities surrounding the Mount Owen operations, with most workers reporting that they lived in Singleton (33 per cent), followed by Maitland (22 per cent), and Muswellbrook (10 per cent). Worker residence locations are mapped in **Figure 3.1**.

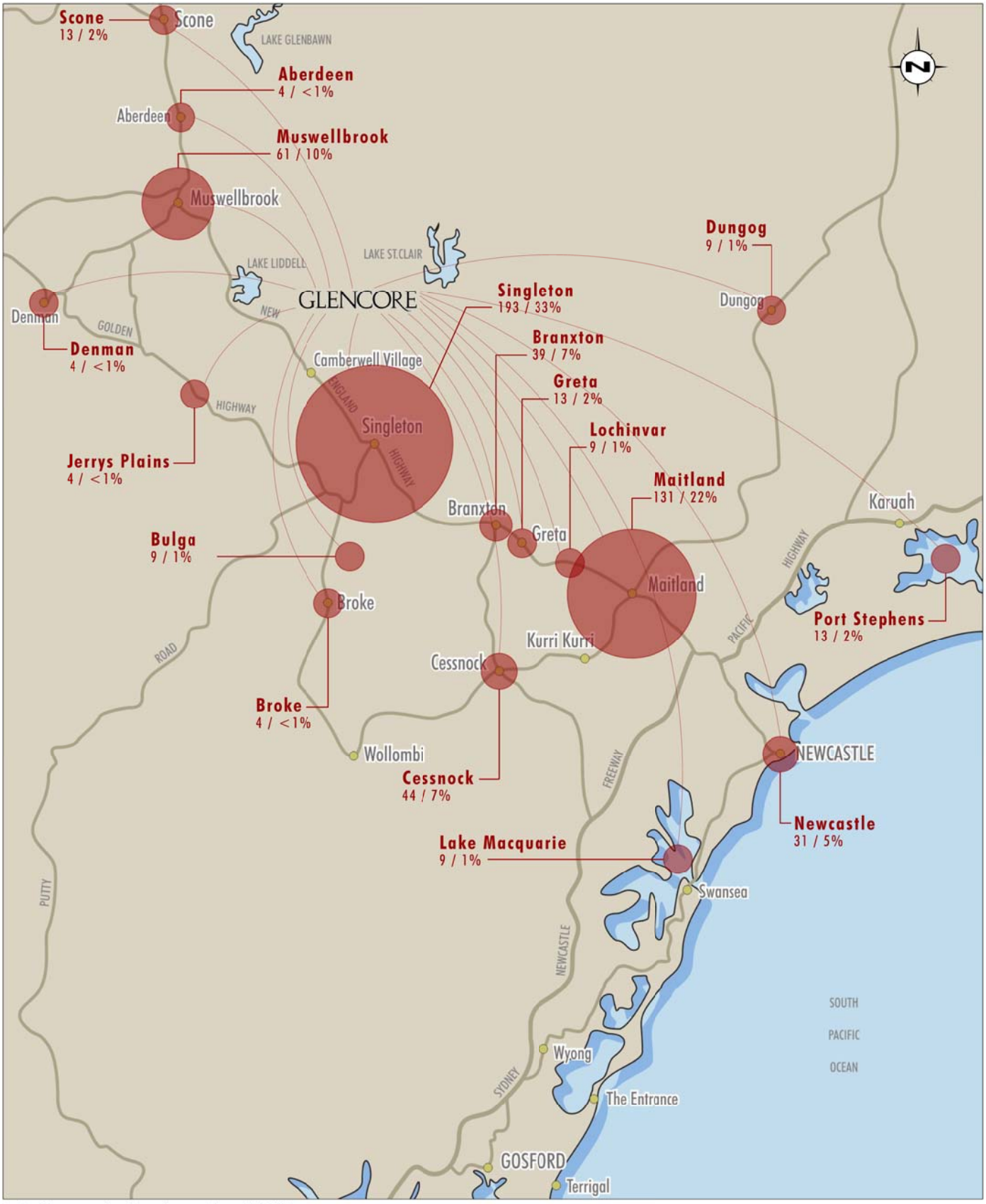
3.3 Household Spending

Survey respondents were asked to identify the locations in which they spend money on household goods and services, and then estimate the proportion of their spending that occurs in each town.

As mapped in **Figure 3.2**, household expenditure by employees and contractors was highest in Maitland, Singleton, Newcastle and Muswellbrook, which together accounted for slightly more than $11.29 million or 83 per cent of all spending. Many of these towns are the locations in which employees tend to live, but some are regional centres (e.g. Newcastle) where people are likely to undertake at least some spending, despite the distance from their homes.

3.4 Participation in Community Activities

Employees and contractors were asked to identify whether anyone in their household participated in any social, sport, hobby, or local community groups and activities. Approximately 58% of respondents indicated that at least one member of their household participated in such activities or groups. These respondents were then asked to identify the nature and location of these activities.

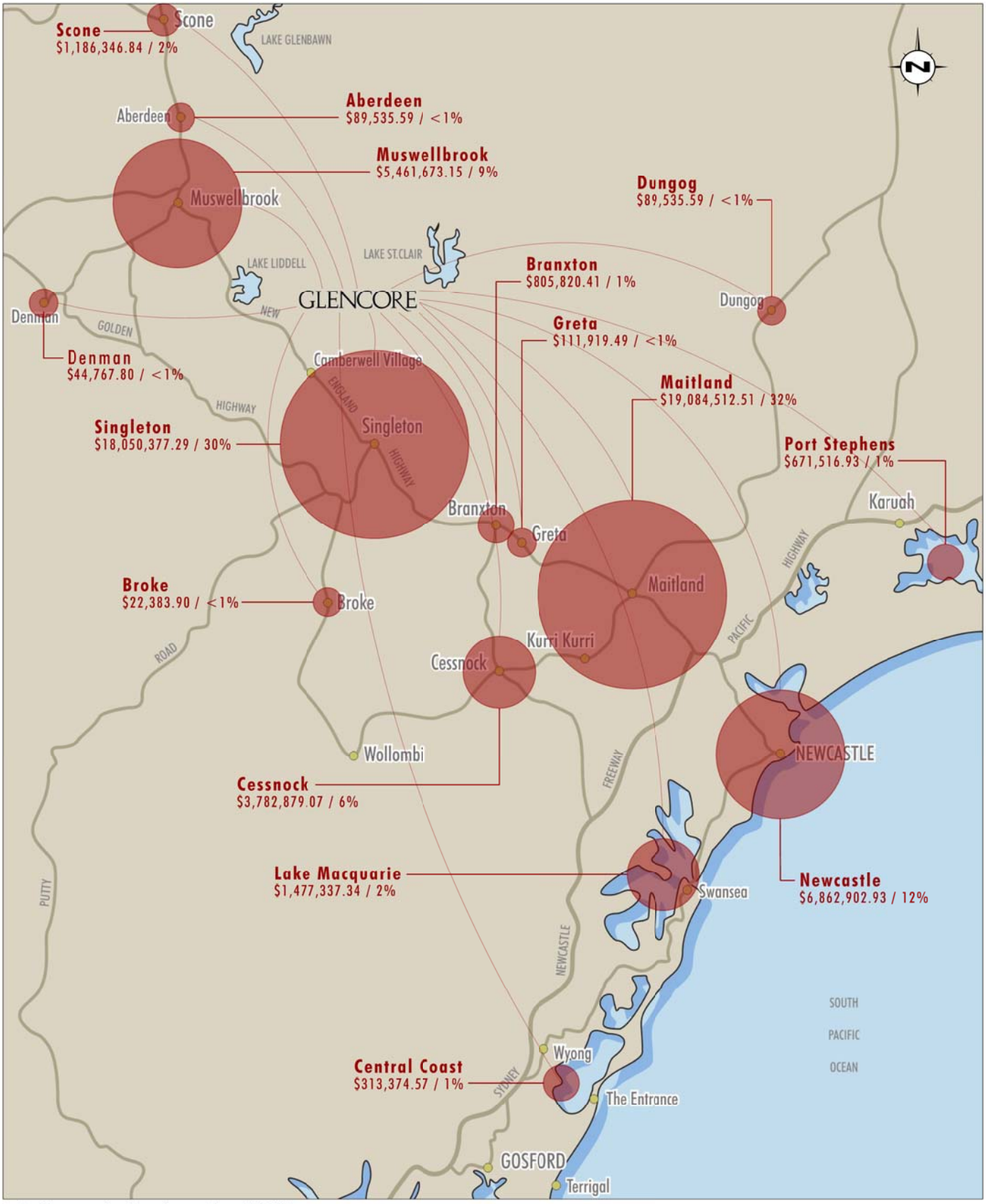


Legend

- Employee/Contractor Town of Residence (number / percent of workforce)

FIGURE 3.1

Employee/Contractor Town of Residence



Legend

- Household Expenditure (amount / percent total expenditure)

Other Locations:

- Not Specified $828,204.24 (1%)
- Sydney $8,953.56 (<1%)
- Orange $44,767.80 (<1%)
- Taree $313,374.57 (1%)
- Not Specified Upper Hunter $22,383.90 (<1%)

FIGURE 3.2

Employee/Contractor Estimated Annual Household Expenditure

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20130904 16.09

The most common activities related to sport and recreation, and in particular sport and recreation activities that occur in a team or club environment. Singleton and Maitland tended to be the most common location of activities, which is expected given that these are the locations where employees and their families tend to live. **Figure 3.3** presents Mount Owen Complex workforce households' participation in community groups and activities.

3.5 Use of Community Services

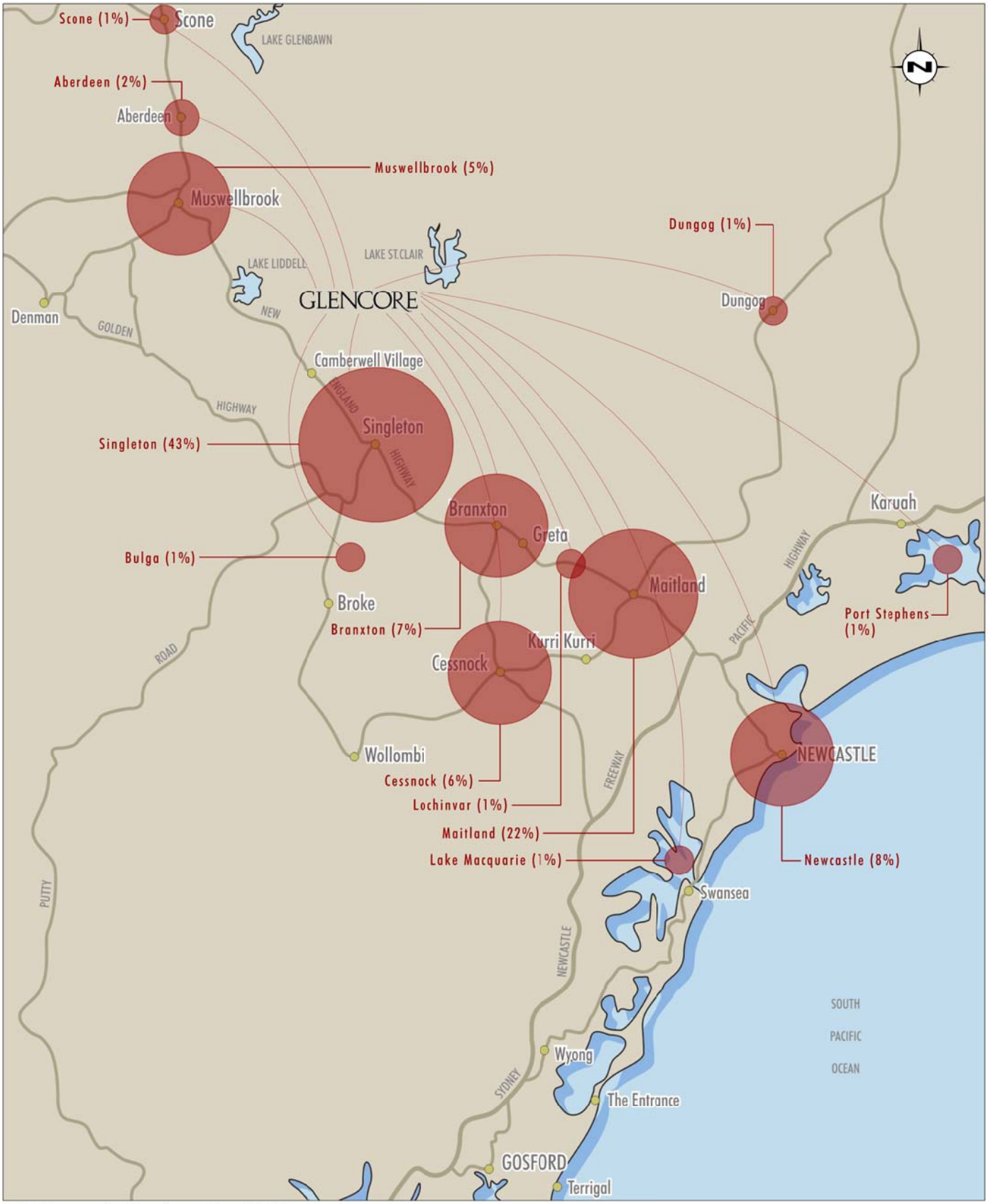
Employees and contractors were asked to identify the types and locations of health services and education facilities used by themselves and / or their families. As mapped in **Figure 3.4,** health services tended to be accessed in the main locations of employee residence, and the most common services accessed were doctors, dentists, hospitals and optometrists.

Respondents living with children, other family members or flatmates were asked to indicate the locations (if applicable) where they accessed schools, universities, preschools, and child care services. Results are mapped in **Figure 3.5**. Most people in respondents' households were reported as using educational services in Singleton, Maitland, Cessnock and Newcastle.

3.6 Summary of Existing Socio Economic Linkages

In summary, TRC-Analysis findings illustrate that:

- Most employees and contractors of the existing Mount Owen Complex operations live in Singleton, Maitland, Muswellbrook and Cessnock;
- Mount Owen Complex workers directly contribute almost $60m to various economies annually (63% in the townships of Singleton and Maitland);
- Singleton and Maitland benefit most from Mount Owen Complex workers' contribution to local communities, through the highest household expenditure, use of local suppliers and highest participation in community groups; and
- Singleton and Maitland host the highest usage of health services and education institutions by Mount Owen Complex workers and other family or household members.



Legend

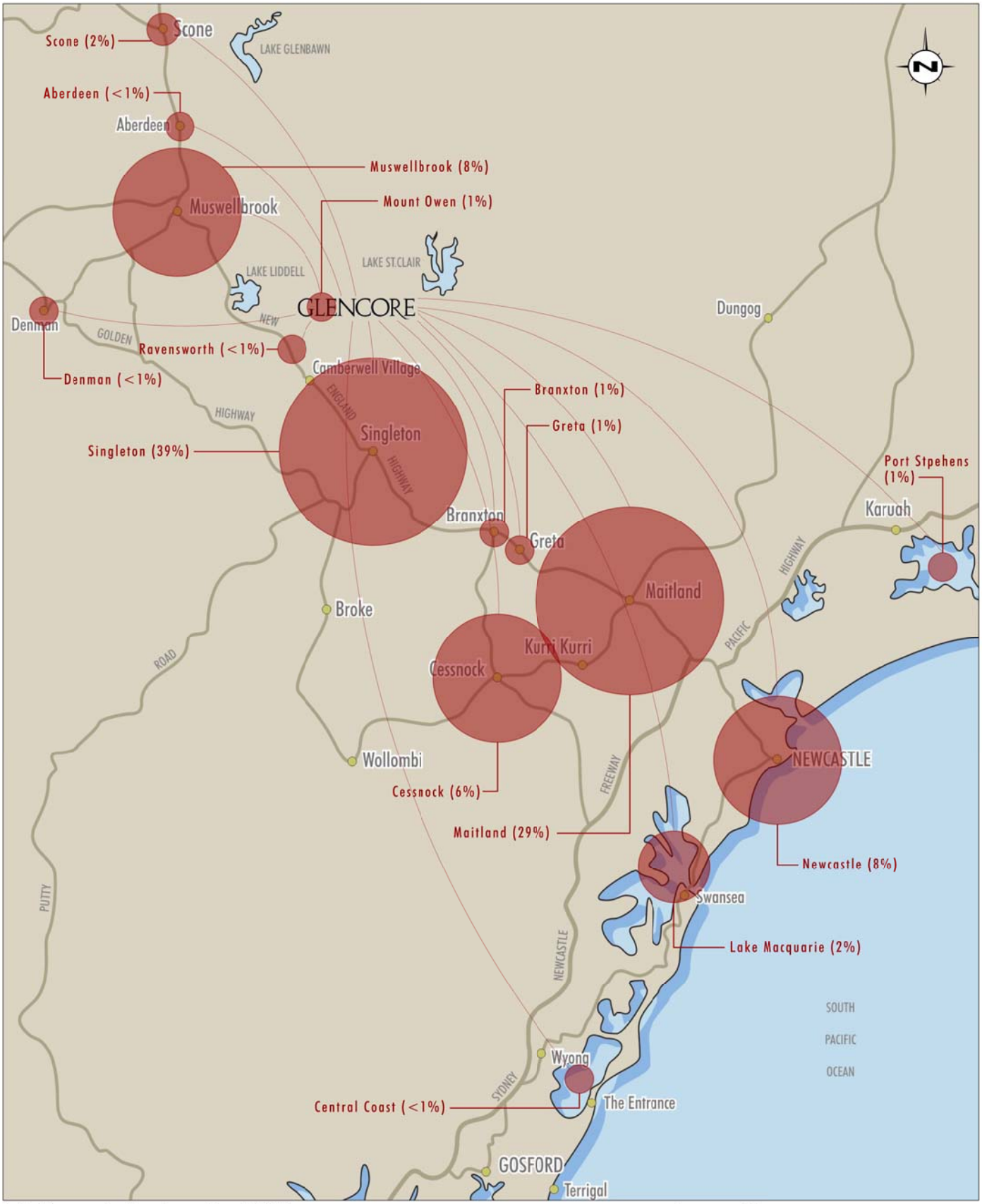
- Respondent Community Participation (percent)

Other Locations:

- Overseas (1%)
- Not specified (1%)

FIGURE 3.3

Community Participation



Data Source: Coakes Consulting (2012)

0 10 20 40km
1:750 000

Legend

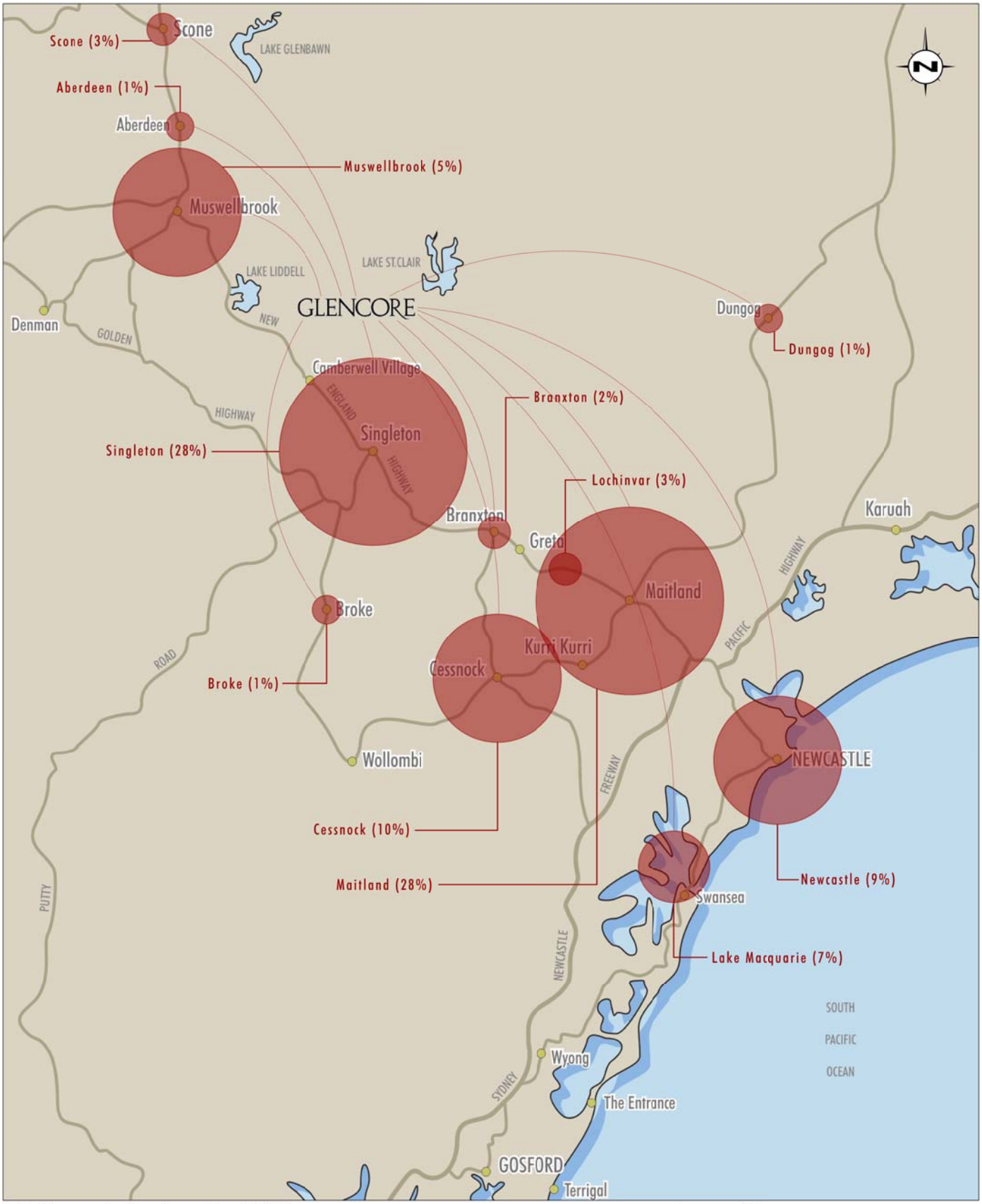
- Respondent Family Use of Health Services (percent)

Other Locations:

- Sydney (1%)
- Melbourne (<1%)
- Taree (<1%)
- Not specified(<1%)

FIGURE 3.4

Use of Health Services



Data Source: Coakes Consulting (2012)

0 10 20 40km
1:750 000

Legend

- Respondent Family Use of Education Services (percent)

Other Locations:

- Sydney (1%)
- Not specified (1%)
- Brisbane (1%)
- Armidale (1%)

FIGURE 3.5

Use of Education Services

4.0 Social and Community Profile

A baseline social profile is primarily a knowledge scan of primary and secondary data sources to obtain an understanding of the existing social environment in which a proposed project is located. The social profile is a necessary component of a SIOA, and provides a foundation from which impacts associated with the Project may be predicted and measured.

The following components have informed the social profile for the Project, namely:

- **Development context and geographic scope** – description of the context and identification of the communities of interest relevant to the current assessment;
- **Historical context** – review of the history of the local areas and communities, including their culture and values;
- **Community capitals/assets** – assessment of areas of vulnerability and resilience across the communities of interest;
- **Governance** – outline of relevant structures of governance at local, State and Federal levels; and
- **Key community values, issues and concerns** – exploration of current community issues in the Singleton LGA and Upper Hunter Region as a whole, as identified in key planning documents, regional studies and the media.

Data sources utilised in the preparation of this profile section include:

- ABS Census (ABS, 2006; 2011); Social Health Atlas (PHIDU, 2011) and other social indicator datasets;
- Local and State Government reports;
- Existing Environmental Assessments / Environmental Impact Statements (relevant to the area);
- Relevant research reports and publications (e.g. HVRF 2011);
- Review of relevant media; and
- Review of relevant regional studies (e.g. ACCSR 2011; Coakes Consulting 2012a).

4.1 Geographic Scope

TRC-Analysis has been used to identify the associations that exist between the Mount Owen operations and the wider community, as a means of defining the study area for the SIOA. The TRC-Analysis found that not only is Mount Owen highly linked to the township and LGA of Singleton, but it also has strong connections with other nearby towns such as Maitland and Muswellbrook. These locations tend to be where most employees and contractors live and consequently where a significant portion of household expenditure and use of local services occurs.

It is therefore important to detail the socio-economic profile across different geographical scales, from the local areas immediately surrounding the Project to the broader localities and townships or cities in the wider region.

As such, the geographic areas of interest for the SIOA include:

- **Project Area**: covers all aspects of the existing approved Mount Owen and Ravensworth East Mines and the Project, encompassing the current approved development consent areas for the Mount Owen and Ravensworth East Mines in addition to all areas associated with the proposed operations and associated works;

- **Local Area or Locality**: the surrounding 'statistical State suburbs' (ABS, 2011) of Camberwell and Bridgman as depicted within **Figure 4.1** (note: 'State suburb' is a statistical area used by the ABS to describe clusters of populations according to geographic bounds type);

- **Singleton LGA:** the LGA in which the Mount Owen operations are based, and where over half of the mine's employees and contractors to the existing operation are resident;

- **Maitland and Muswellbrook LGAs**: these are socially linked to Mount Owen operations as locations where a large percentage of the remainder of employees and contractors live and are active within their home communities. Employee and contractor linkages between Mount Owen and surrounding communities are mapped in **Figures 3.1, 3.2, 3.3 3.4 and 3.5)** in **Section 3** above.

- **The Upper Hunter region**: defined as the State Electoral District (SED), to gain an understanding of the wider region; and

- **The State of NSW**: to afford a comparative assessment.

4.1.1 Local Area

There are approximately 240 properties located in the local area around the Mount Owen operations. These properties fall within the State Suburbs of Bridgman and Camberwell (as presented in **Figure 4.1**).

According to the ABS census (ABS, 2011a), there were 396 people within Bridgman and 181 people within Camberwell in 2011, with significant decreases in population experienced in these localities between 2006 and 2011; specifically a decrease of 81 persons (17 per cent) in Bridgman and a decrease of 197 persons (52 per cent) in Camberwell. Given the low population levels within the two suburbs, such population loss may be felt more heavily than in more highly urbanised and populated areas.

Families comprise a smaller proportion of households in Camberwell than in Bridgman, and the population of Camberwell also has a median age 5 years older than the state average (43 years compared to 38 years). There were also no persons in Camberwell aged over 75 years who took part in the 2011 Census.

Camberwell State suburb had a higher proportion of children attending primary and secondary school than other educational institutions compared to Bridgman, which was more similar to the State average (30 per cent primary education in Camberwell, 24 per cent NSW; 30 per cent secondary education in Camberwell, 20 per cent NSW). Approximately sixty per cent of the population are male in Camberwell, in comparison to 51 per cent male in Bridgman, and 49 per cent across the State.

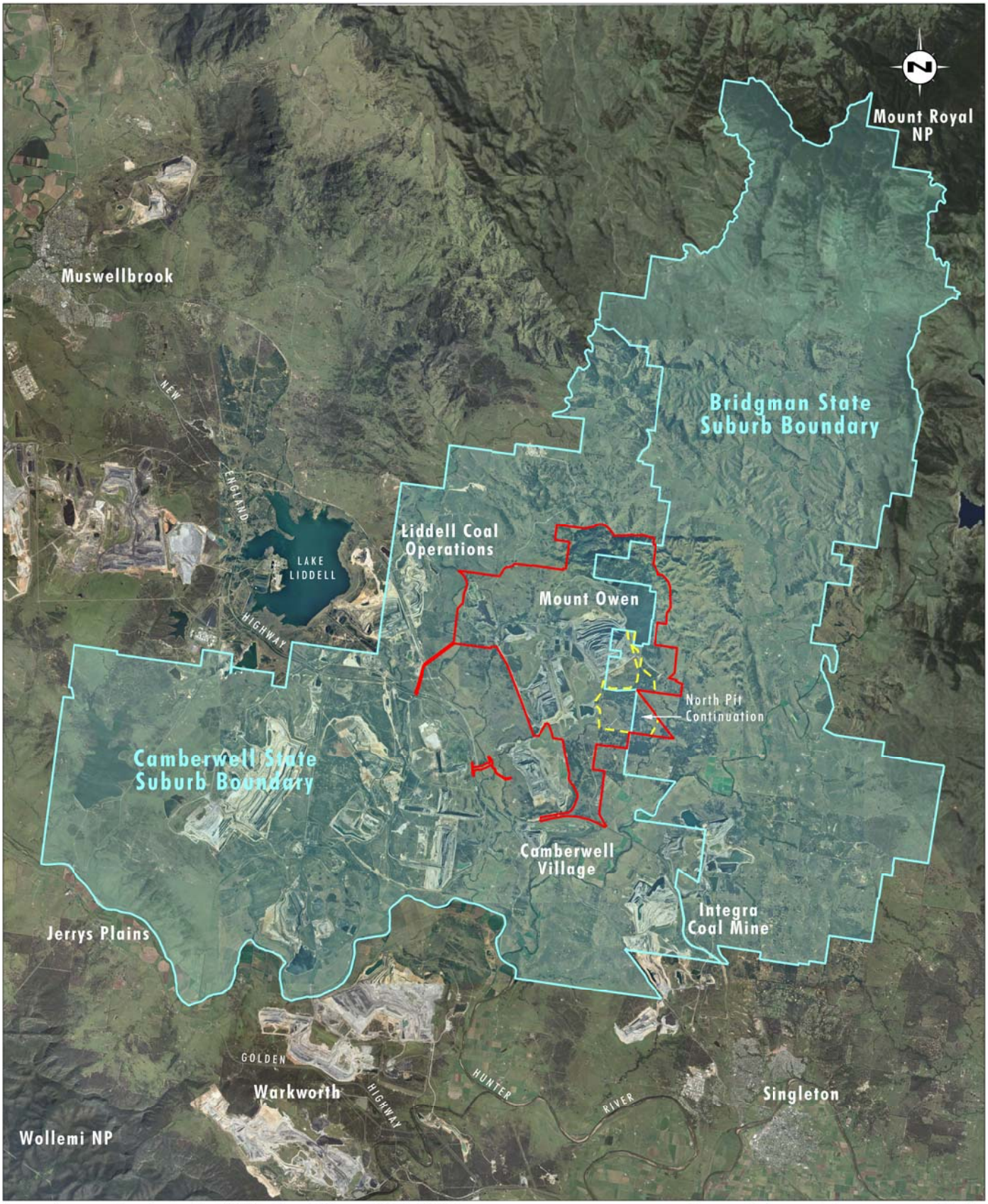


Image Source: Google Earth (2009), Mount Owen (2012-2013)
Data Source: Australian Statistical Geography Standard (2011), Mount Owen (2014)

0 2.5 5.0 10.0km
1:200 000

Legend
- Project Area
- Proposed North Pit Continuation
- State Suburb Boundary

FIGURE 4.1
Local Area

All houses in Camberwell and Bridgman are separate houses (i.e. not terraces, units, etc.), 18 per cent of which were unoccupied in Camberwell and 4 per cent unoccupied in Bridgman during the census. Additionally, 60 per cent of houses were rented in Camberwell in 2011, 26 per cent in Bridgman and 30 per cent State wide. The per cent of dwellings being rented saw an overall increase of 25 per cent in Camberwell from 2006 - 2011, and an increase of 14 per cent in Bridgman, with corresponding decreases in dwellings under mortgage and fully owned.

Both suburbs may be considered to have lower levels of education than NSW generally, with an average of 62 per cent of persons not having completed year 10 in 2011 in comparison to NSW, where 36 per cent of persons had not completed year 10. No person in Camberwell reported having a postgraduate degree, graduate diploma or bachelor's degree, in comparison to 35 per cent of the NSW population who reported achieving a degree or higher education awards.

Industry demographic changes (2006 – 2011) across the two suburbs differ substantially and include:

- An increase of 6 per cent employment in mining in Bridgman, compared to a six per cent drop in employment in mining in Camberwell;
- Decrease of 11 per cent in employment in construction and wholesale trade in Camberwell, and an increase of six per cent in construction in Bridgman;
- An increase of 11 per cent employment in agriculture in Bridgman;
- Increasing full time employment in Bridgman and increasing part time employment in Camberwell;
- A 12 per cent decrease in persons employed as managers in Camberwell, and a six per cent increase in persons employed as managers in Bridgman; and
- Median monthly mortgage repayments in Camberwell almost doubled from 2006 – 2011 ($1,213 to $2,400).

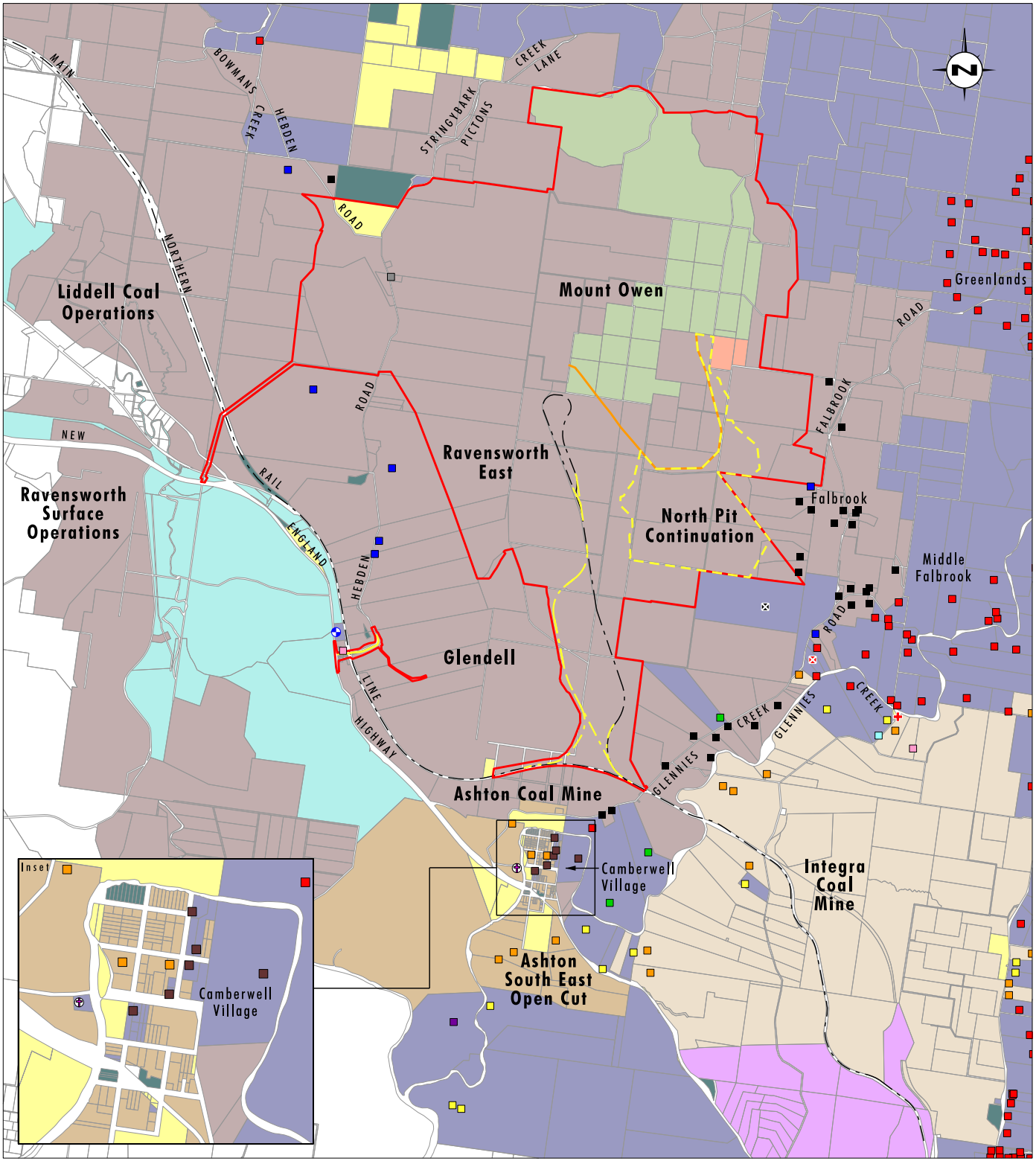
Figure 4.2 sets out the patterns of land ownership immediately surrounding the Project site.

4.2 History and Heritage

Detailed Historic and Aboriginal Cultural Heritage Assessments were undertaken as part of the EIS process and further detail regarding the local history of the Mount Owen area is available through the main text of the EIS. However, a brief summary of the local history of the area is included below.

The Central Lowlands of the Hunter Valley is the traditional country of the Wonnarua people, one of the 600 different clan groups or 'nations' present in Australia at the time of European contact. Although early records on traditional tribal boundaries are limited, it is understood that the country of the Wonnarua was centered on the Upper Hunter Valley. With the arrival of European settlers in the nineteenth century, traditional patterns of Aboriginal life were quickly and dramatically altered, with the spread of disease and rapid influx of new technologies and materials.

The Patterson's Plains area had been opened to several people from 1813 onwards, including the first free settler John Tucker who settled with his family in 1814. The earliest recorded journey that reached the Singleton area occurred during October and November in



Data Source: Mount Owen (2014), Department of Lands (2009)

Inset Scale 1:30 000 (0, 0.5, 1.0, 1.5 km)

Main Scale 1:90 000 (0, 1, 2, 4 km)

Legend

- Project Area
- Approved North Pit Mining Extent
- Proposed North Pit Continuation
- Proposed Rail Upgrade Works
- Proposed Hebden Road Upgrade Works
- Ashton Coal
- Crown Land
- Crown Land TSR
- Government Authority
- Integra Coal
- Macquarie Generation
- Glencore
- Private
- Rixs Creek Mine
- State Forest
- Church
- Daracon Site Office
- Glennies Creek Fire Brigade
- Private No Dwelling
- Subject to Acquisition Rights - Glencore No Dwelling
- Currently Subject to Acquisition Rights - Dairy
- SEOC Acquisition
- Private Residence
- Private Residence - Currently Subject to Acquisition Rights - Glencore
- Private Residence - Currently Subject to Acquisition Rights - Other Mines
- Mine Owned Residence - Glencore
- Mine Owned Residence - Other Mine
- Mine Owned Residence - Derelict
- Mine Owned Residence - Vacant
- Community Hall
- Former Hebden Public School

FIGURE 4.2

Land Ownership

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20141009 10.14

1817. The expedition included William Parr and Benjamin Singleton. Benjamin Singleton returned to the area on another expedition in 1818. Two trips were made into the area in October 1819 and March 1820 by John Howe (Chief Constable of Windsor from 1813 to 1825) looking for a line of road for an overland route between Sydney and Newcastle. John Howe, Benjamin Singleton and the others who took part in these two expeditions, reached the Hunter River in the vicinity of Whittingham after 10 days in March 1820.

In 1821, Henry Dangar was commissioned to undertake a survey of the Hunter Valley to assess its suitability for settlement and farming, with the survey of the lower Hunter Valley and Upper Hunter Valley completed in 1822 and 1826 respectively. Settlement in the region followed closely behind Dangar's 1821 survey party, with settlers occupying land as far north as Singleton by October 1821. Early reports describing the suitability of the land for pastoral pursuits resulted in the establishment of large scale pastoral holdings.

Wool production, dairy farming and wheat growing were the predominant industries at this time. Horse breeding also became a thriving industry as early as 1822. Wheat production went into decline in the mid-1800s owing to the disease *rust* which struck severely in 1857. The late 19th century saw the decline of cropping along river flats as they were converted to dairying on pastures improved by pump irrigation. The pastoral and dairy industries continued to dominate into the 20th century.

Coal was known to exist in Singleton and its surrounding areas since early exploration. The development of coal resources comprises an important part of the region's history of coal mining and began on a limited scale in the early 1900s, prior to a rapid expansion in the 1950s, with the establishment of large open-cut mines.

Coal mining and electricity generation have become major industries in the Singleton area since the 1950s with the first wave of collieries built to meet export demand at Liddell, Foybrook and Liddell State. Since the mid-twentieth century, coal mining operations expanded from the Cessnock/Maitland area to the triangle bounded by Singleton, Muswellbrook and Denman using highly mechanised, open cut surface mining techniques.

Mining operations at the Ravensworth East Mine (previously known as Swamp Creek Mine), date back to the early 1960's. Ravensworth East Mine was acquired in 1997 by Peabody Resources Ltd (Peabody) after an extended period of care and maintenance. In 2002, Xstrata Coal Pty Limited (Xstrata), (formerly Enex Resources and now Glencore) purchased Ravensworth Operations Pty Limited (Ravensworth Operations), which included Narama Mine (now part of Ravensworth Surface Operations) and Ravensworth East Mine.

Mining operations within the Mount Owen Mine commenced in 1993 under the management of Hunter Valley Coal Corporation Pty Limited (HVCC). Glencore (formerly Xstrata) has managed Mount Owen Mine, Ravensworth East and Glendell Mines as the Mount Owen Complex since 2004.

Thiess Pty Ltd currently operates the Mount Owen Mine (excluding the CHPP and associated infrastructure) under a contractual agreement with Mount Owen. Mount Owen operates the Mount Owen CHPP and associated infrastructure, the Ravensworth East and the Glendell mines.

4.3 Community Capitals Profile

In order to understand the sensitivity of local and regional communities to changes in mining operations and employment, a Community Capitals analysis of the local area and wider region was undertaken. The Capitals analysis utilises a 'Sustainable Livelihoods' approach to social profiling (Beckley et al., 2008; Ellis, 2000; Hart, 1999) which focuses on five interrelated 'Community Capitals' or assets – natural, economic, human, physical, and social – which together, are seen to make up a holistic profile of a community. This model of Community Capitals analysis is presented in **Figure 4.3.**

The Capitals Analysis has also been informed by the TRC-Analysis (see **Section 3** and **Appendix A**), and a review of regional issues and opportunities (**Section 4.5**), both undertaken by Coakes Consulting (2012, 2013a). Further detailed data used to inform this section is included within **Appendix B**.

Figure 4.3– Community Capitals Framework (Coakes and Sadler, 2011)

The Sustainable Livelihoods approach centres on people rather than resources with the intent of empowering individuals and communities. The approach emphasises understanding a community and the relationships of which it consists, and then using this understanding to predict the areas of community sensitivity and resilience.

Community sensitivity and resilience has been assessed by Coakes and Sadler (2011) using a Community Sensitivity Index (CSI). The CSI is a relative measure of community sensitivity, where a wide range of indicators for chosen communities are plotted in relation the same indicators for comparison communities. As such, while *all* communities may be considered sensitive (or resilient), the CSI allows for comparison as to which communities are more or less sensitive (or resilient).

The key steps to the CSI approach include:

- Selection of indicators to comprise each capital area and collation of relevant data;
- Standardization of variable scores for indicators to enable comparison. Z-score transformations are a suitable comparative measure in this regard as they take into account the spread or dispersion of scores around the mean, and can be used when composite indices have to be derived. The Z-score has a mean of zero and a standard deviation of 1.0;
- The standardized scores for indicators specific to each capital area are averaged to produce a sub-index for each capital; and
- Sub-indices for all capitals are aggregated to derive a composite community sensitivity index.

The CSI was developed using readily available data from the 2011 Australian Census of Population of Housing (ABS, 2011a), other data provided by the Australian Bureau of Statistics (ABS) and other relevant social and economic indicator datasets. The CSI comprises a number of specific sub-indices based on community capitals that are aggregated to form an additive index that provides a relative measure of the communities' sensitivity or resilience to change. To provide comparative analysis, the Bega Valley LGA, Gloucester LGA, Narrabri LGA and Orange LGA were analysed as other comparative communities where mining and/or agriculture are also key industries.

Results from the CSI have been incorporated in the Community Capitals profile detailed in the following sub-sections, with a summary provided in **Section 4.3.6 and 4.3.7.** The full CSI analysis is included as **Appendix C**. An overview of each of the five community capitals is provided in the following sections.

4.3.1 Natural Capital

Natural capital refers to natural assets and resources that contribute to community strength and sustainability. Natural capital can include the presence and use of resources such as minerals, productive agricultural soil, oil and gas, and forests; which provide commercial and practical benefit to the community. Natural capital can also include other environmental assets and ecosystem services, which generate tourism or provide other social, cultural, and recreational value, such as waterways or lakes.

Given the diverse perspectives relating to land use and land use planning within the Hunter region and Mount Owen area (c.f. HVRF, 2010), assigning definite values to natural capital is difficult and may be considered controversial. Additionally, as natural landscape values are not confined to socially defined boundaries (such as suburb or LGA boundaries), different values of natural capital often co-exist between different communities in different places. For

example, privately owned bushland may have one value for the landholder who seeks to run cattle, different values for local environmental protection groups, other values for local government authorities who rate the land, and different values again for the resource extraction industry who may seek to mine the land in the future.

Aspects which give some indication of the natural capital of the local area and wider region, as relevant to the Project, include the following:

- Approximately 40 per cent of NSW's total identified coal reserves are situated in the Hunter region, with enough coal to last a number of decades at the rate of predicted future mining. The presence of coal has driven substantial economic growth and provided employment in the region, indicating strong natural capital in the region (Department of Planning and Infrastructure, 2012a).

- Farm holdings in the Upper Hunter region comprise from 52 per cent to 80 per cent of the landscape, with a mix of primarily grazing (from 75 per cent – 82 per cent) and cropping (from 1 per cent – 5 per cent) uses (Department of Primary Industries, 2013). The gross total value of agriculture for the Hunter Valley (excluding Newcastle) is estimated at $330.6 million (ABS, 2011b).

- The Upper Hunter is ranked second in the world of locations for thoroughbred horse breeding (Department of Primary Industries, 2013).

- The Strategic Regional Land Use Plan (SRLUP) – Upper Hunter identifies key areas for coal, coal seam gas and other minerals extraction and exploration, viticulture and equine industry clusters and agricultural land (Department of Planning and Infrastructure, 2012a).

- The Upper Hunter region contains a diverse range of soil landscapes, from alluvial soils with a long history of cropping on the valley floor, rugged forested areas and extensive volcanic soils on the Merriwa plateau (Department of Primary Industries, 2013).

- A number of natural recreational assets are located within the Singleton LGA. For example, Lake St Clair is popular among both residents and tourists for camping, boating, water-skiing, and fishing (visitsingleton.com).

- Tourists often use the Yengo, Mount Royal and Wollemi world heritage-listed national parks for bushwalking and horse riding (Destination NSW, 2011).

- The former Hunter-Central Rivers Catchment Management Authority (now Hunter Local Land Services) reports gains regarding numerous environmental values and ecosystem services 2011-2012, including investing over $16 million in catchments within the Hunter-Central Rivers catchments (Hunter-Central Rivers Catchment Management Authority, 2013).

- Communities within the Upper Hunter are very concerned about the cumulative impacts of the mining industry on their natural environment, as evinced in local media publications and community forums. The most significant areas of concern include visual impacts, air quality, noise and vibration from blasting, quantity and quality of water in the Hunter River, loss of native vegetation, loss of good quality agricultural land and subsequent long-term impacts of food security. Members of the community echoed many of these concerns during the consultation, undertaken for the Project as described in **Section 5.0**.

4.3.2 Economic Capital

Economic Capital is defined as the extent of financial or economic resources within a town or community, including access to credit (Black and Hughes, 2001). Examining a community's economic capital involves consideration of a number of indicators, including industries and employment, workforce participation and unemployment, income levels and cost of living pressures, such as weekly rent or mortgage repayments.

- During the December quarter 2013, unemployment rates were 3.0 per cent in Singleton (average of 2.4 per cent 2008-2013), 4.5 per cent in the Hunter Valley (excluding Newcastle) and 5.8 per cent across NSW (Department of Education, Employment and Workplace Relations, 2014).

- The suburbs of Camberwell and Bridgman had 68 and 71 per cent of residents in the labour force respectively, compared to the broader Singleton LGA (66 per cent), Upper Hunter (61 per cent) and NSW average (59 per cent) (ABS, 2011a, 2006).

- In Singleton, Maitland and the Upper Hunter there were increases in the number of people in full time employment 2006-2011, while Muswellbrook and NSW exhibited steady employment patterns, and there was a slight decrease in the suburb of Camberwell (ABS, 2011a, 2006).

- There was a small increase in the proportion of males in the workforce in Bridgman, Camberwell and the Upper Hunter 2006-2011, and a small increase in the proportion of females in the workforce in Singleton and NSW 2006-2011 (ABS, 2011a, 2006).

- In 2011 'Mining' was generally the main industry of employment across the local area and Upper Hunter, with percentages of workers as follows: Camberwell 19 per cent; Bridgman 25 per cent; Singleton 24 per cent, Muswellbrook 20 per cent and the Upper Hunter 16 per cent, in contrast to the State average of less than 1 per cent (ABS, 2011a).

- In 2011, the proportion of Upper Hunter residents employed in 'agriculture, forestry and fishing' declined (10%) from 2006, when it was the main industry of employment; however Bridgman saw an increase in the proportion of residents employed in the sector (ABS, 2011a, 2006).

- Common occupations in the region are indicative of the presence of the mining industry. A greater number of Singleton and Upper Hunter residents were employed as 'technicians and trade workers' or 'machinery operators than any other job category in both 2006 and 2011 (ABS, 2011a, 2006).

- Despite being one of the LGA's in which mining employees working in the Hunter region reside, demographic patterns for Maitland do not reflect the dominance of employment in the mining industry as strongly as in other parts of the Hunter; Maitland's top industry of employment in 2011 was manufacturing at 12 per cent (mining is 6 per cent), and the LGA had substantially more workers in healthcare (17 per cent) than other compared communities or NSW broadly (10 per cent).

- Consultation with regional stakeholders in 2012 revealed concerns about the demand for labour from the mining industry putting pressure on the availability of labour in other key industries (such as agriculture, equine and viticulture) and creating skills shortages (Coakes Consulting, 2012). However, since the consultation was undertaken, there has been a significant downturn in the mining sector, including a reported 1,500-2,000 redundancies across the Hunter Valley mining sector in the two years before April 2014 (Locke, 2014; Tasker, 2014), and an additional 750 jobs lost from Vale's Integra Complex at Singleton and BHP Billiton's Mount Arthur Mine at Muswellbrook (Blair,

2014). Household incomes are generally increasing in all assessment areas, corresponding with increases in wages across NSW. Weekly household incomes are above the NSW average ($1,237) in Camberwell ($1,607), Bridgman ($1,402), Muswellbrook ($1,399) and Singleton LGA ($1,692), indicative of above average wages from the large employment within the mining industry (ABS, 2011a, 2006).

- Housing costs, such as weekly mortgage and rent repayments, were also typically above State averages in Camberwell, and Singleton LGA in 2011 (ABS, 2011a).

- Economic challenges and opportunities predicted in the next 20 years include: growth and diversity in the regional economy, improvements in the regions infrastructure, cohesive planning for the future, skills and workforce development, creativity and innovation, and the natural and built environment (Deloitte Access Economics, 2013)

Further detail regarding the economic capital of the study area is provided in the TRC-Analysis report in **Appendix A**.

Many participants of the employee/contractor and supplier survey responded with estimates of their expenditure by locality in the Hunter Valley and surrounds. This data provides an indication of the economic connections between Mount Owen and other communities in the region. A high level overview of the data has been presented previously in **Figure 3.3**. **Table 4.1** below also provides further detail of the survey findings.

Table 4.1 – Employee/Contractor Household Expenditure (Coakes Consulting, 2013a)

Location	Household Expenditure (employee/contractor sample)	Household Expenditure (estimated for workforce population)
Maitland	$ 4,358,986.00	$ 19,084,512.51
Singleton	$ 4,122,785.00	$ 18,050,377.29
Newcastle	$ 1,567,517.00	$ 6,862,902.93
Muswellbrook	$ 1,247,470.00	$ 5,461,673.15
Cessnock	$ 864,026.10	$ 3,782,879.07
Lake Macquarie	$ 337,430.30	$ 1,477,337.34
Scone	$ 270,966.80	$ 1,186,346.84
Not specified	$ 189,165.46	$ 828,204.24
Branxton	$ 184,052.90	$ 805,820.41
Port Stephens	$ 153,377.40	$ 671,516.93
Central Coast	$ 71,576.12	$ 313,374.57
Taree	$ 71,576.12	$ 313,374.57
Greta	$ 25,562.90	$ 111,919.49
Dungog	$ 20,450.32	$ 89,535.59
Aberdeen	$ 20,450.32	$ 89,535.59
Denman	$ 10,225.16	$ 44,767.80
Orange	$ 10,225.16	$ 44,767.80
Broke	$ 5,112.58	$ 22,383.90
Sydney	$ 2,045.03	$ 8,953.56
Total	***$ 13,538,113.26***	***$ 59,272,567.46***
Upper Hunter (Not specified)	$ 5,112.58	$ 22,383.90

Expenditures are based on those provided within the 135 responses to the employee/contractor survey that was undertaken and then extrapolated to be representative of a total 591 employees/contractors.

As outlined previously, the economic capitals of communities within the study area were compared with matched communities. Results from the Economic Sensitivity sub index are graphed in **Figure 4.4**. Cessnock LGA and Merriwa Urban Centre Locality (UCL) are both considered particularly economically sensitive. Cessnock has a relatively high unemployment rate; Merriwa has a higher proportion of persons earning under $400 per week; and both localities have a higher childhood burden.

Conversely, the Upper Hunter Shire LGA, Singleton LGA and Aberdeen UCL are considered more economically resilient. This is due to relatively higher household incomes and low unemployment across the respective LGAs; however the ranking also reflects Singleton's greater economic dependence on mining, that is, less diversity of employment across other industry sectors.

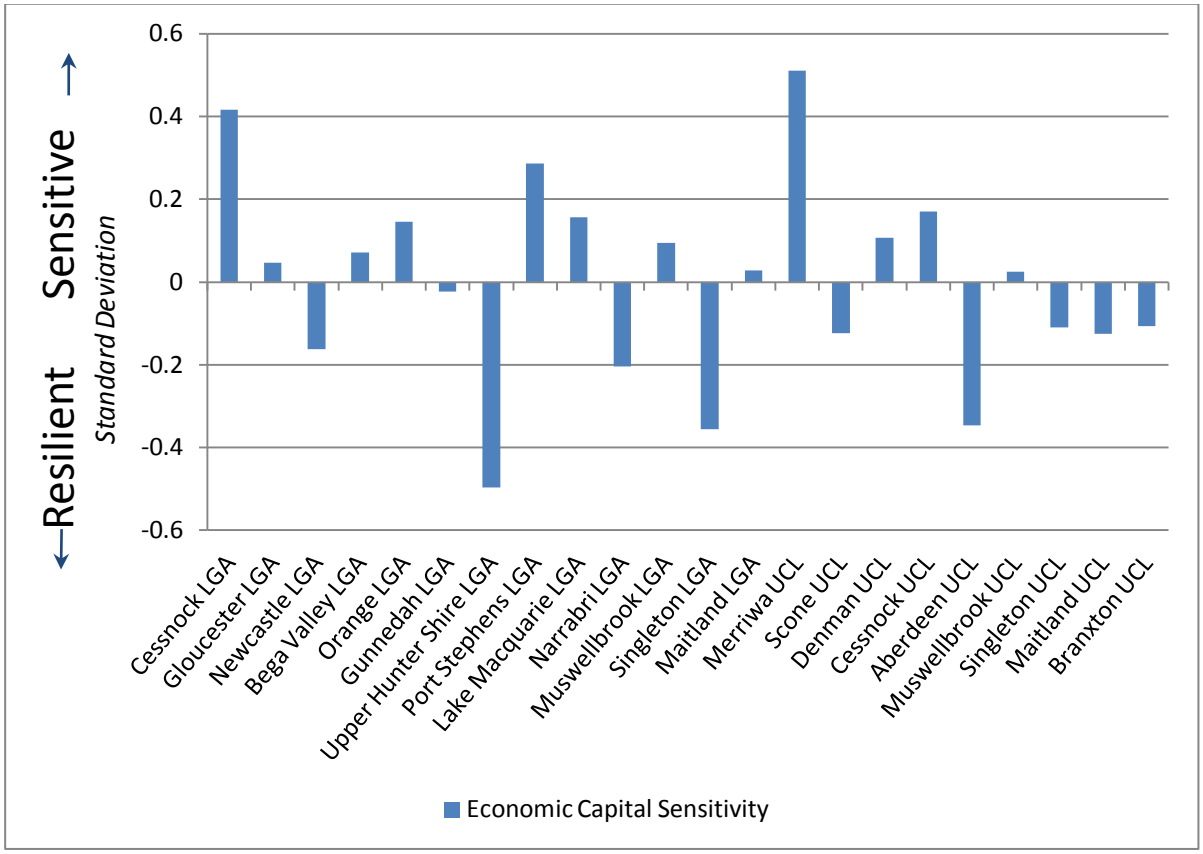


Figure 4.4 – Economic Capital Sensitivity (Coakes Consulting, 2013b)

4.3.3 Human Capital

Human Capital refers to the health, welfare, knowledge and skills of members in a community (Coakes and Sadler, 2011). The status of a community's human capital is assessed by considering population size, age distribution, education and skills, general population health and the prevalence of at-risk groups within the community.

- The Upper Hunter Region experienced significant population growth 2006 – 2011, with an increase in population of around 17 per cent, which is around three times the NSW State average of 5 per cent (ABS, 2011a, 2006). This growth correlates with an increase of over 7000 jobs, 3252 of which were in the mining industry (ABS, 2011a, 2006). Singleton LGA had an increase in population of 6 per cent 2006 – 2011, predominantly of persons aged over 55 years, with notable increases also within the 20-24 year age bracket (ABS, 2011a, 2006).

- The median age increased by approximately one year across all measured communities from 2006 – 2011, aside from the Upper Hunter, which recorded a decrease of one year in median age (ABS, 2011a, 2006).

- While the proportion of the population that has completed year 12 increased 4 per cent in Muswellbrook, and 5 per cent in Singleton and the Upper Hunter, this is lower than the NSW average increase of 7 per cent 2006 – 2011 (ABS, 2011a, 2006).

- However the proportion of residents over 15 years old with a Certificate I – Certificate IV level of education was significantly higher in all localities including Singleton and all others at 49 per cent, compared to the NSW average of 31 per cent in 2011 (ABS, 2011a).

- Rates of respiratory system disease (including asthma and chronic obstructive pulmonary disease) were slightly higher across the Upper Hunter (age standardised rate (ASR) of 26.7 per 100) than both NSW (ASR of of 25.4 per 100) and Country NSW averages (ASR of 25.7 per 100) in 2007-2008, however these rates are themselves higher than those in Singleton (ASR of 24.5 per 100) (PHIDU, 2014).

- More persons rated themselves as having fair or poor health in Maitland (ASR of 18.2 per 100) and Country NSW (ASR of 17.1) than Singleton (ASR of 14.1 per 100) and the State average (ASR of 15.5 per 100) in 2007-2008, and adults in Singleton reported lower levels of psychological stress (PHIDU, 2014). Note that Maitland has almost double the average per cent of persons employed in health care & social assistance of the other communities compared (12 per cent vs. seven per cent) (ABS, 2011a).

- The rate of the adult population that have at least 1 of 4 health risk factors such as smoking, harmful use of alcohol, physical inactivity, and/or obesity, were higher in 2007-2008 in both the Upper Hunter (ASR of 59 per 100) and County NSW (ASR of 60 per 100), when compared to NSW (ASR of 56.6 per 100) and the Singleton LGA (ASR of 55.6 per 100) (PHIDU, 2014).

- There was a higher rate of persons in residential aged care during 2011 in Singleton LGA (102.2 per 1,000) than NSW average (90.3 per 1,000) (PHIDU, 2014).

- The proportion of children developmentally vulnerable during 2009 in one or more domains (physical health and well-being, social competence, emotional maturity, language and cognition, communication) was higher in Singleton (24 per cent) than in the Upper Hunter as a whole (19 per cent) and NSW (21 per cent) (PHIDU, 2014).

- Overall, the self assessed health and well-being of residents in Singleton LGA was comparatively good in 2010, relative to residents from the Upper Hunter and NSW However, Singleton LGA was found to have less GP services available, a higher rate of residents in residential aged care and a higher proportion of women who smoked during pregnancy, than the Upper Hunter and NSW averages (PHIDU, 2014).

Further detail regarding the human capital of the study area is provided in the analysis detailed in **Appendix A**. However, as discussed in **Section 3.5**, in relation to health, Mount Owen employees/contractors were asked to identify the types and locations of health services used by themselves and/or their families. As shown in **Table 4.2** health services tended to be accessed in the main locations of employee residence, predominantly Singleton and Maitland, and the most common services accessed were doctors, dentists, hospitals, and optometrists.

Table 4.2 – Number of Employees' Family Members Using Health Services, By Type and Location (extrapolated from survey data) (Coakes Consulting, 2013a)

	Doctor/GP	Dentist	Hospital	Optometrist	Physiotherapist	Chiropractor	Community Health Centre	Specialist (other)
Singleton	215	114	136	101	96	35	4	4
Maitland	123	149	101	61	44	22	13	4
Muswellbrook	35	22	26	39	13	9	4	4
Newcastle	18	35	31	35	4	9	0	4
Cessnock	35	39	13	4	4	9	4	0
Lake Macquarie	18	22	0	0	0	0	0	0
Scone	13	4	13	0	4	0	0	0
Sydney	0	9	4	9	0	0	0	0
Port Stephens	9	4	4	4	0	0	0	0
Greta	13	0	0	0	0	0	0	0
Branxton	9	0	0	0	0	0	0	0
Mount Owen	0	0	0	0	9	0	0	0
Melbourne	0	0	4	0	0	0	0	0
Denman	4	0	0	0	0	0	0	0
Central Coast	0	4	0	0	0	0	0	0
Aberdeen	4	0	0	0	0	0	0	0
Not specified	0	0	0	4	0	0	0	0
Ravensworth	0	0	0	0	4	0	0	0
Taree	4	0	0	0	0	0	0	0

Note: Conditional formatting has been used in this table with shades of blue highlighting higher values. Health service visits included are as reported/extrapolated from survey responses and are not necessarily indicative of numbers of registered health practitioners in a given locality.

Education levels within a community are also taken into consideration when profiling Human Capital. Respondents to the employee/contractor survey undertaken as part of the TRC-Analysis were asked to indicate (if applicable) where any children, other family members or flatmates attended universities, schools, preschools, and child care services. Responses have been extrapolated to all employees/contractors and are presented in **Table 4.3**. Most people in respondents' households were reported as using educational services in Singleton, Maitland, Cessnock and Newcastle.

Table 4.3 – Number of People in Respondents' Households Attending Educational Institutions/Child Care Facilities, by Town (extrapolated from survey data) (Coakes Consulting, 2013a)

	Number of Persons (sample)	Number of Persons (estimated for population (i.e. workforce)
Singleton	41	180
Maitland	41	180
Cessnock	15	66
Newcastle	14	61
Lake Macquarie	10	44
Muswellbrook	8	35
Scone	4	18
Lochinvar	4	18
Branxton	3	13
Sydney	2	9
Dungog	2	9
Brisbane	1	4
Aberdeen	1	4
Not specified	1	4
Broke	1	4
Armidale	1	4
Total	***149***	**652**

In summary, a further review of community sensitivities across the human capital sub-index indicates that the Muswellbrook LGA and Singleton LGA, and Branxton UCL are considered more resilient in regard to Human Capital than other localities, as presented in **Figure 4.5.**

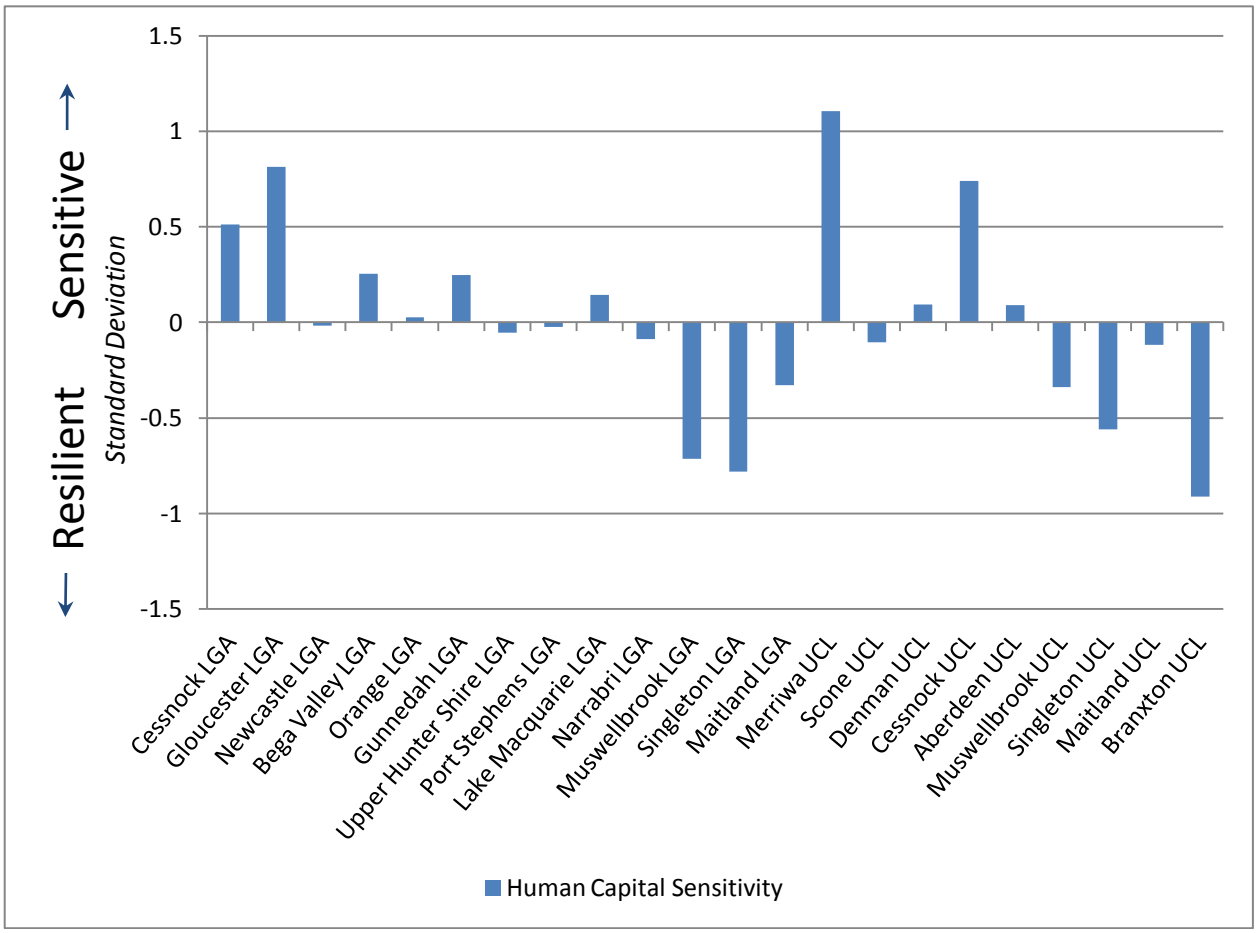


Figure 4.5 – Human Capital Sensitivity (Coakes Consulting 2013b)

4.3.4 Physical Capital

Physical capital includes provision of built infrastructure and services to the community. Within this capital, it is important to consider the type, quality and degree of access to public, built and community infrastructure (including amenities, services and utilities) and housing and accommodation:

- The built infrastructure in Singleton LGA is well developed for a regional area, with a wide range of recreational, sporting and open spaces, a number of schools, a well-resourced library, multiple community halls in the region, including the Civic Centre which acts as a prominent community hub in Singleton (Singleton Council, 2014).

- Singleton Council provides most of the public utilities, including water supply, town sewerage services, domestic general waste and recycling collection services while energy for the Singleton LGA is provided by Ausgrid (Singleton Council, 2014).

- Three of the Hunter's four power stations (Bayswater, Liddell, and Redbank coal-fired power stations) are located in the Upper Hunter. These power stations cumulatively generate more than 60 per cent of the State's energy supply (Department of Planning and Infrastructure, 2012a). It is noted that Redbank power station went into receivership during October 2013.

- 91.4 per cent of employed persons who reside in Singleton LGA travelled to work by car (83.7 per cent as a car driver and 7.7 per cent as a car passenger) in 2011 (ABS, 2011a), indicating higher than NSW State average car travel in the LGA.

- The Singleton LGA is traversed by two main national highways: the New England Highway, which links Sydney to Brisbane; and the Golden Highway, which links Newcastle to the Western Region of NSW via Dubbo. The Hunter Expressway linking Singleton to the M1 Motorway was completed in 2014, providing decreased travel times between the Upper Hunter and the coast, including Newcastle and Sydney.

- Passenger rail services are available within key towns within the region and rail is heavily used to transport coal to the Port of Newcastle for export, with 2013 estimates of increases from approximately 145 Mtpa exported in 2012-2013 (Newcastle Port Corporation, 2013), to 200 Mtpa in 2016 and 260 Mtpa in 2020 (ARTC, 2013).

- Singleton also has limited multicultural services, indicative of the lower percentage of persons born overseas (8 per cent), compared to 26 per cent in NSW in 2011 (ABS, 2011a).

- The median waiting times for Singleton Hospital are lower than the national average times for treating emergencies and undertaking eye and general surgeries (NHPA, 2012).

- Singleton has police, fire, and ambulance services which are co-ordinated centrally across the Hunter Valley (Singleton Council, 2014).

- Regional service providers were consulted in 2012, and many supported the view that levels of physical infrastructure were generally adequate in the LGA, noting a perception among some that there is a disjunct between community infrastructure expectations and (local) government service provision (Coakes Consulting, 2012).

- Of houses in the Singleton LGA, 89 per cent are freestanding dwellings, compared with 70 per cent over NSW. 92 per cent of dwellings in the Upper Hunter are freestanding (ABS, 2011a).

- Rental and mortgage stress, determined as rent or mortgage payments greater than 30 per cent of household income, was lower in Singleton LGA than the Upper Hunter and State average during 2011 (ABS, 2011a).

- DPI (2012a) and BHP Billiton (2011) studies identify the impact of mining on housing affordability, availability, increased costs of living, mining leases on rural/residential properties, impacts on tourism, longer commute times and increased homelessness and squatting, as issues for the region. However, these outcomes need to be viewed in light of the recent downturn in the mining sector, which may have resulted in reduced pressure in these areas.

Results from the Physical capital Sensitivity sub index are graphed in **Figure 4.6.** Results are reasonably varied, due to the yes/no methodology used with regard to the presence of specific key infrastructure (hospitals, police, etc.), and differences between communities in the Accessibility/Remoteness Index of Australia (ARIA+), which is a measure of remoteness produced by the ABS. Maitland LGA and UCL and Newcastle LGA are considered the most resilient with regard to physical capital, followed by Muswellbrook LGA.

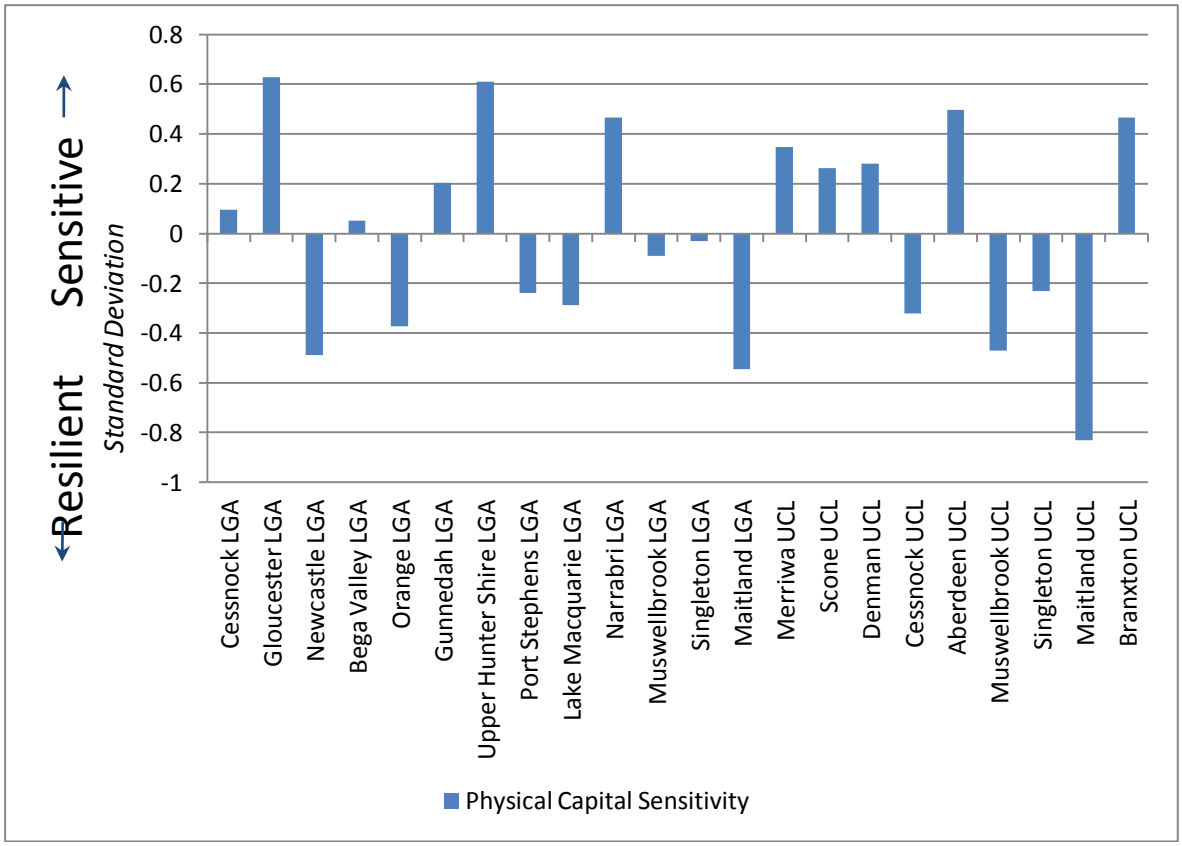


Figure 4.6 – Community Sensitivity – Physical Capital (Coakes Consulting 2013b)

4.3.5 Social Capital

Social capital refers to community cohesion and the strength of relationships within a community. Various indicators are used to examine social capital, including the level of volunteering, population mobility, crime rates and the cultural composition of the community (percentage of people born overseas, language spoken at home). The influx of visitors to an area and the extent of a transient workforce population can also contribute to varying levels of social capital and resilience within a community:

- People born overseas accounted for 7 per cent of persons within the Upper Hunter Region in 2011, in contrast to 26 per cent across NSW (ABS, 2011a), indicative of less cultural diversity in the region.
- Singleton had 4 per cent Indigenous persons in 2011, higher than the NSW average of 1.8 per cent.
- The proportion of single parent families with children in Singleton was similar to the NSW average of 8 per cent in 2011. Camberwell had a higher proportion of single parent families with children than the NSW average at 13 per cent in 2011.
- While all areas had rates of family households similar to the NSW average of 71 per cent, there has been a considerable increase in non-family households, primarily one person households 2006 – 2011 in Camberwell, Bridgman and Singleton.
- In the last five years, the number of volunteers dropped slightly across all areas of the Upper Hunter Region, which may be indicative of a trend of reduced volunteerism in the area. However, the rates remain generally higher than the NSW average.

- The proportion of the population with a different address one year ago has stayed fairly consistent 2006 – 2011 in most areas.

- The proportion of the population with a different address five years ago has declined in Camberwell, Singleton, Upper Hunter and NSW overall 2006 – 2011, and was consistent across 2006 – 2011 in Bridgman.

- Bridgman had the most long term residents out of those compared, with 32 per cent of the residents having a different address five years ago.

- In Singleton LGA, crime rates have been generally stable between 2009 and 2013. Exceptions to this include a 66% increase in possession and/or use of cannabis offences and a 85.7% increase in prohibited and regulated weapons offences 2011-2013 (BOSCSAR, 2014).

- Approximately 58 per cent of Mount Owen's workforce have at least one member of their household participating in community activities or groups. As shown in **Table 4.4,** the most common activities related to sport and recreation, and in particular sport and recreation activities that occur in a team or club environment. Singleton and Maitland tended to be the most common location of activities, which is expected given that these are the locations where most of the employees and their families tend to live.

Table 4.4 – Activity/Group Participation, by Location (extrapolated from survey data) (Coakes Consulting, 2013a)

	Sport and recreation (team/club)	Sport and recreation (unspecified)	Community groups	Arts and culture	Volunteer emergency services	Youth/school groups	School parents' association	Child playgroup	Other
Singleton	188	13	18	22	13	0	4	13	9
Maitland	101	18	13	0	0	4	0	4	0
Newcastle	31	9	4	4	0	0	4	0	0
Branxton	39	0	0	4	0	0	0	0	0
Cessnock	31	0	9	0	0	0	0	0	0
Muswellbrook	22	4	4	0	0	0	0	0	0
Aberdeen	13	0	0	0	0	0	0	0	0
Scone	9	0	0	0	0	0	0	0	0
Dungog	0	0	0	0	9	0	0	0	0
Not specified	0	4	4	0	0	0	0	0	0
Lochinvar	9	0	0	0	0	0	0	0	0
Port Stephens	0	0	0	0	4	0	0	0	0
Lake Macquarie	4	0	0	0	0	0	0	0	0
Bulga	0	0	0	0	4	0	0	0	0
Overseas	0	0	4	0	0	0	0	0	0
Total	***447***	***48***	***57***	***31***	***31***	***4***	***9***	***18***	***9***

As shown in **Figure 4.7**, Singleton LGA and Muswellbrook LGA are both considered sensitive with regard to social capital, even though they are considered more resilient to change overall. This is due to a relatively greater gender imbalance and more transient populations, both of which are correlated with mining populations.

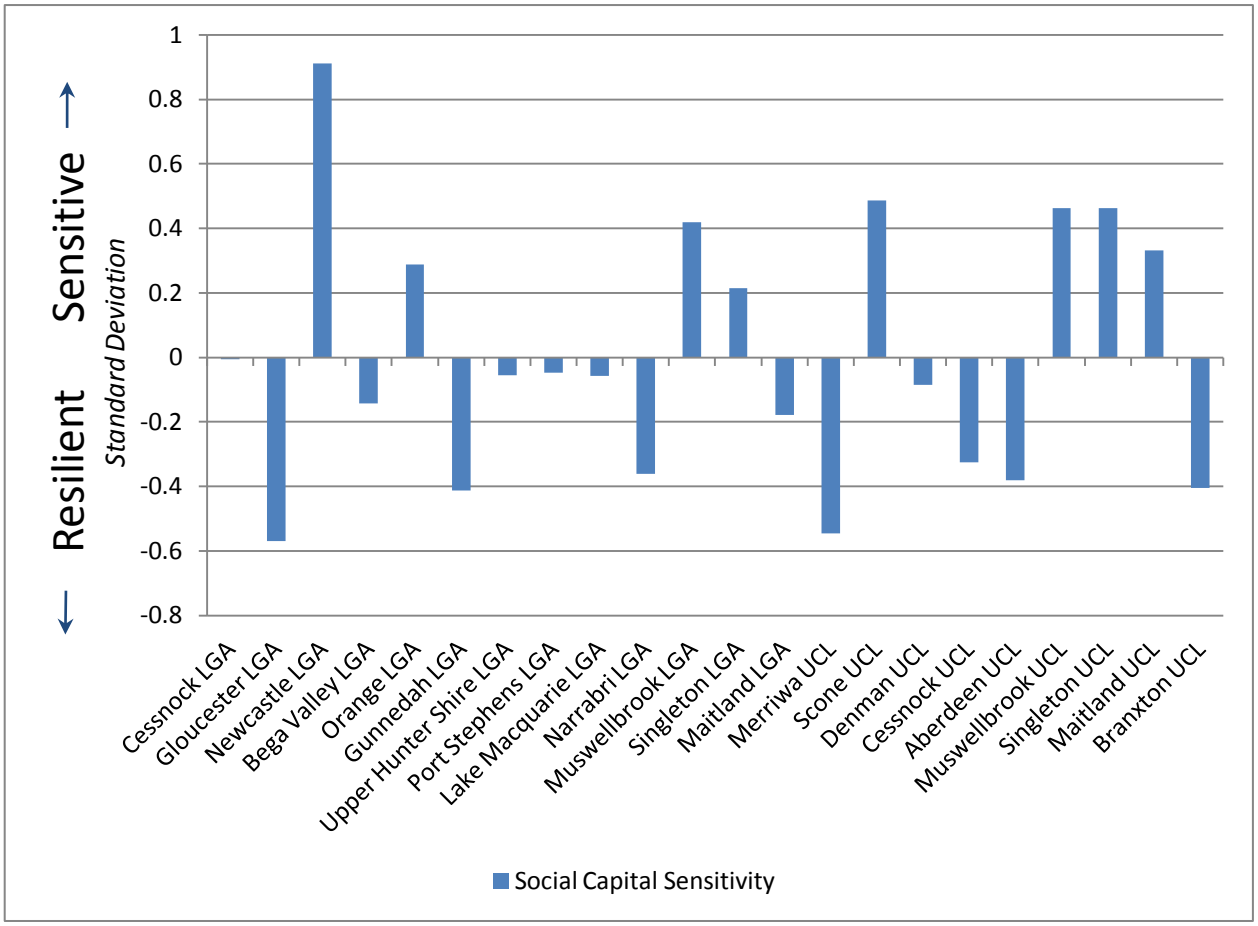


Figure 4.7 – Social Capital Sensitivity (Coakes Consulting 2013(b)

4.3.6 Summary of Community Capitals

From the community capital profile analysis, it is possible to assess key areas of community resilience and risk in the immediate Mount Owen area, the Singleton LGA and broader Upper Hunter region as it relates to mining operations and the Project. These key findings are summarised below in the table, with specific points relating to a locality noted where relevant.

Table 4.5 – Areas of Resilience and Risk across Key Community Capitals

Capital Area	Areas of Resilience	Areas of Risk
Natural	Abundant and diverse natural capital values, including: diversity of natural resources, abundant coal resources, agricultural and conservation lands	Balancing conflicting land uses
Economic	Unemployment rates well below NSW averages Lower than average levels of housing stress Strong economic support from mining sector	Shortage of skilled labour Lack of economic diversity in the region and dominance of mining industry employment and associated occupations
Human	Significant population growth in the Upper Hunter region Above average proportion of the population below 34 years old Increasing number of students completing Year 12 or other certificate courses High levels of technical skills in the community	Ageing population Below average rates of completion of Year 12 Below average levels of post-school education (with the exception of Certificate-level qualifications) Poorer health indicators and outcomes Limited access to health services
Physical	Comparatively good provision of utilities, built infrastructure and transport infrastructure for a regional area	The provision of some public utilities is under strain with an increasing population Transport options are limited Hospital/medical services under strain Lack of diversity in housing stock Higher than average housing costs
Social	Higher than average rates of volunteering Proactive planning regarding business & infrastructure needs	Rate of volunteerism decreasing 2006-2011 Low cultural diversity Increased crime rankings for all offences 2007-2011 (excluding liquor offences)

4.3.7 Adaptive Capacity in the Community

In order to extend the sustainable communities approach to assess the adaptive capacity of communities within the study area, communities were plotted based on their overall CSI score (Coakes and Sadler, 2011). As has been discussed previously, the CSI provides a relative measure of community sensitivity to change, with a highly sensitive community being considered less resilient and consequently exhibiting less adaptive capacity to accommodate change in a positive way. A less sensitive community is considered more resilient and is likely to exhibit a higher adaptive capacity (Coakes Consulting, 2013b).

Sensitivity with regard to each of the capitals was assessed through a range of parameters (although for the current assessment insufficient parameters were available for Natural Capital, so it was excluded from the analysis). The methodology and detailed assessment undertaken has been included in full in **Appendix C**.

Results, as they relate to each Capital, are shown in **Table 4.6, Table 4.7, Figure 4.8** and **Figure 4.9** including the comparison communities mentioned in **Section 4.0** and graphed in **Section 4.4** to **Section 4.7**. Community resilience or sensitivity scores for relevant LGAs and for townships assessed at UCL level have been combined to provide an overall indicator of community sensitivity, which are presented in both tables respectively. Further discussion regarding community sensitivities is provided in relation to each capital.

Table 4.6 – Sensitivity Sub-Indices: LGA Analysis (Coakes Consulting, 2013b)

	Economic Capital	Human Capital	Physical Capital	Social Capital	Combined Community Sensitivity
Cessnock LGA	0.42	0.51	0.10	-0.01	1.02
Gloucester LGA	0.05	0.81	0.63	-0.57	0.92
Newcastle LGA	-0.16	-0.02	-0.49	0.91	0.24
Bega Valley LGA	0.07	0.26	0.05	-0.14	0.24
Orange LGA	0.14	0.03	-0.37	0.29	0.09
Gunnedah LGA	-0.02	0.25	0.20	-0.41	0.01
Upper Hunter Shire LGA	-0.50	-0.05	0.61	-0.05	0.00
Port Stephens LGA	0.29	-0.02	-0.24	-0.05	-0.02
Lake Macquarie LGA	0.16	0.15	-0.29	-0.06	-0.04
Narrabri LGA	-0.20	-0.09	0.47	-0.36	-0.19
Muswellbrook LGA	0.09	-0.71	-0.09	0.42	-0.29
Singleton LGA	-0.36	-0.78	-0.03	0.21	-0.95
Maitland LGA	0.03	-0.33	-0.54	-0.18	-1.02

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater resilience and thus adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.

Table 4.7 – Sensitivity Sub-Indices: Township Analysis (Coakes Consulting, 2013b)

	Economic Capital	Human Capital	Physical Capital	Social Capital	Combined Community Sensitivity
Merriwa UCL	0.51	1.11	0.35	-0.55	1.42
Scone UCL	-0.12	-0.10	0.26	0.49	0.52
Denman UCL	0.11	0.09	0.28	-0.09	0.40
Cessnock UCL	0.17	0.74	-0.32	-0.33	0.26
Aberdeen UCL	-0.35	0.09	0.50	-0.38	-0.14
Muswellbrook UCL	0.03	-0.34	-0.47	0.46	-0.32
Singleton UCL	-0.11	-0.56	-0.23	0.46	-0.44
Maitland UCL	-0.13	-0.12	-0.83	0.33	-0.74
Branxton UCL	-0.11	-0.91	0.47	-0.41	-0.96

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.

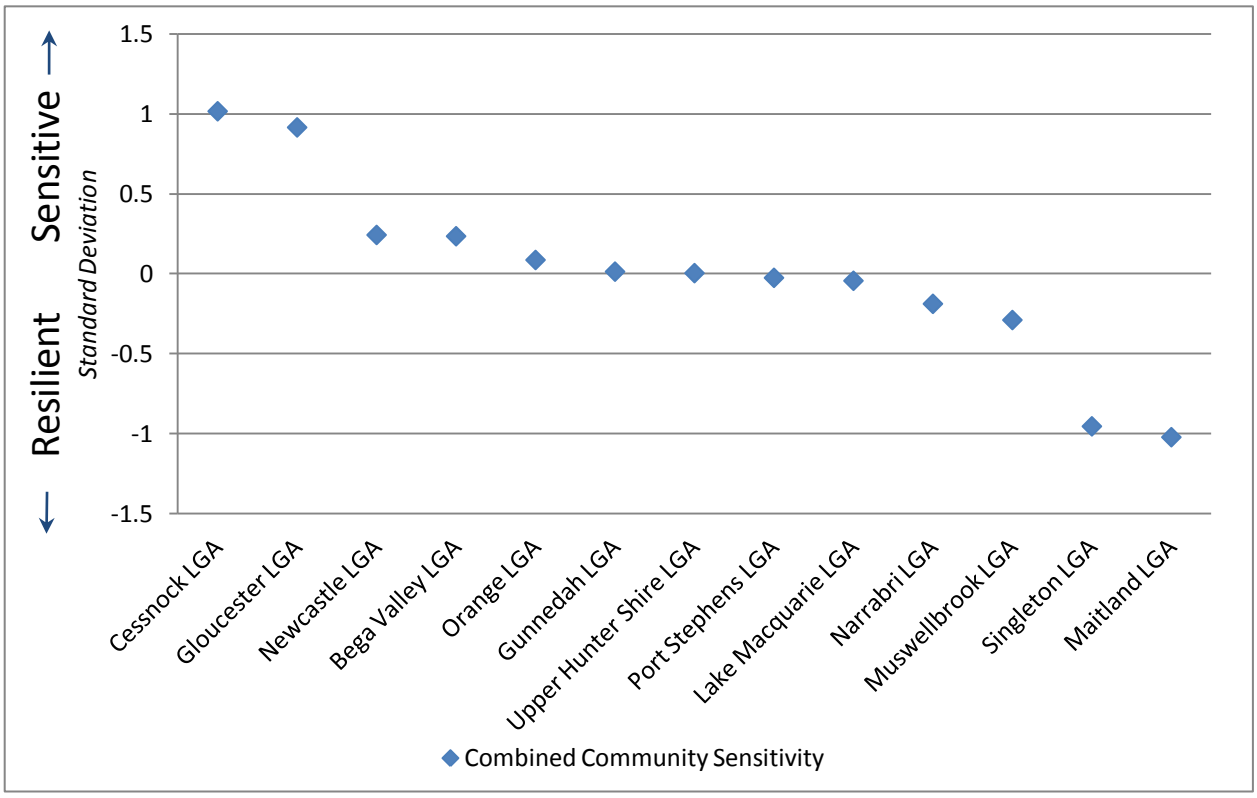


Figure 4.8 – Community Sensitivity Index: LGA Analysis (Coakes, 2013b)

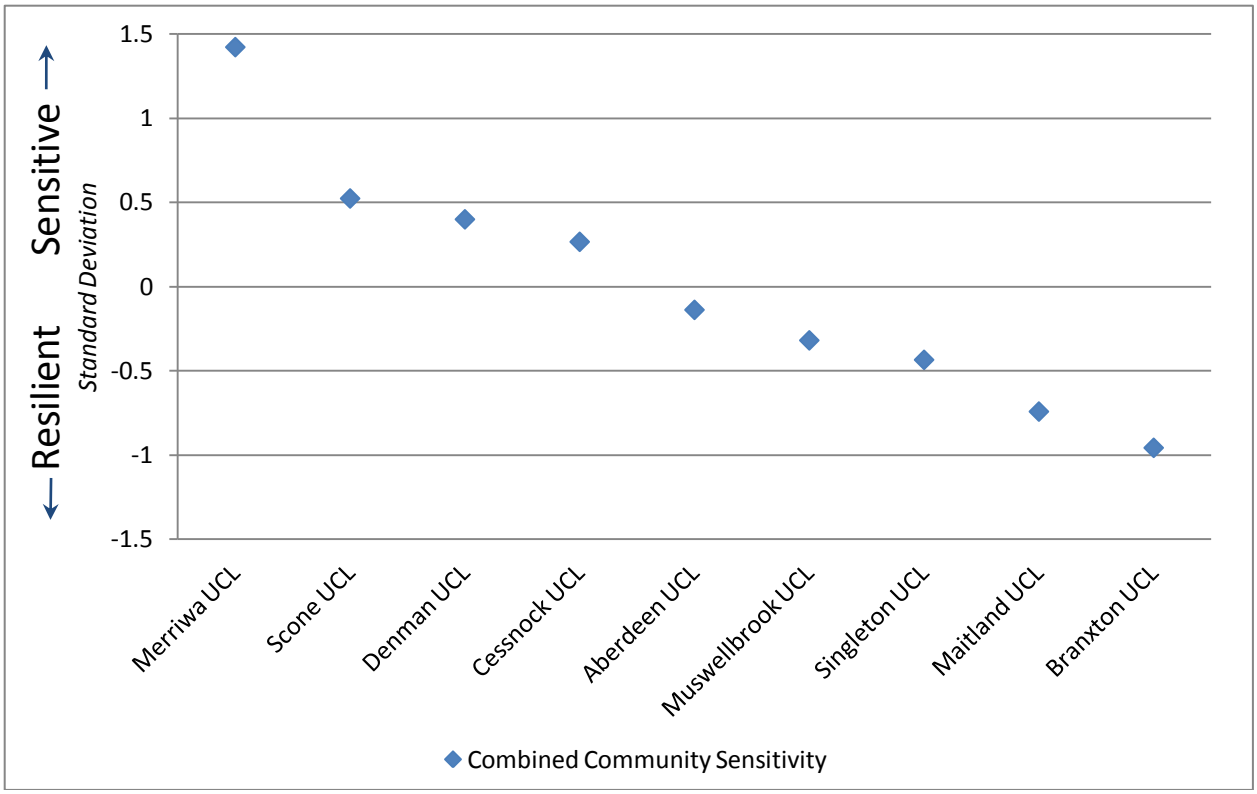


Figure 4.9 – Community Sensitivity Index: Township Analysis

The development of the CSI, utilising the Sustainable Livelihoods approach, has immediate relevance in the development and implementation of effective SIA programs. A key objective of SIA is the effective management of social change. Consequently, the development of the CSI and application of community sensitivity analysis provides a useful approach at various phases of an SIA program to inform this process (Coakes Consulting, 2013b).

For example, within the profiling phase of SIA, the application of the CSI is useful in identifying which communities are likely to be more sensitive to change prior to a proposed project development or policy initiative. Such an analysis may assist in refining the social impact assessment to focus on specific communities that may exhibit greater vulnerability, and consequently less adaptive capacity to manage the proposed change. For example, where considerable structural adjustment is anticipated within an industry sector, an improved understanding of the status of a community's key capitals is essential in the effective management of change at the local and regional level.

Furthermore, the application of CSI is useful in the strategy phase of an SIA program to identify key capital areas within a community that may require further development, so as to enhance positive project impacts or mitigate negative impacts. Furthermore, as has been previously outlined it is also important to consider the inter-relationship that exists between capitals in developing appropriate strategies to address impacts at a community level. Where one capital is depleted, other community capitals are also likely to become compromised. For instance, should human capital be depleted, in terms of deterioration in education levels or community health; the subsequent maintenance of built capital (e.g., economic infrastructure) may also be affected. The analysis of community capitals therefore provides useful information for policy and decision makers by enabling a focus on the strategic implementation of social investment policies or community development/enhancement programs that may assist in managing the weaker capitals, and further optimising the stronger capitals.

The application of CSI is not limited, however, to assessing adaptive capacity to specific change as part of an SIA program; as it may also add value in relation to broader strategic assessment and decision making and investment planning.

Therefore in summary, more resilient communities are considered to have a higher adaptive capacity to social change. In other words, when change occurs at a community level, such as the development of a new project, such communities may be more able than others to adapt to that change in a positive way. Furthermore, by breaking down a localities capital assets, using the analysis above, we are able to more fully appreciate where the strengths and vulnerabilities within a community lie and where further capacity building may be required.

In combining all sub-indices for a measure of overall community sustainability, **Figure 4.8** indicates that the key LGAs within the study area – Muswellbrook, Singleton and Maitland – are all relatively more resilient than the other communities compared. Other LGAs identified through the TRC-Analysis, as being relevant to Mount Owen operations and the Project, such as Cessnock and Newcastle are considered more sensitive overall in comparison to the other communities in the index (Coakes Consulting, 2013b).

Additionally at the township level shown in **Figure 4.9**, Singleton, being the closest Urban Centre Locality to the Project, is considered relatively resilient to change. Singleton, however, is considered less resilient than Maitland or Branxton, which while related to the operation, are not linked as closely (Coakes Consulting, 2013b).

Other townships of interest on the CSI are Cessnock and Muswellbrook. When compared at the township level these two UCLs appear to sit more centrally on the scale i.e. they are neither the most resilient nor the most sensitive to change (Coakes Consulting, 2013b).

4.4 Governance

4.4.1 Local Government

The Singleton LGA is governed by the Singleton Shire Council. The Mayor is directly elected by residents of the Singleton LGA, and the additional nine councillors are elected proportionally as a single ward. The September 2012 election resulted in the appointment of independent Cr John Martin as Mayor. All Councillors are independent. **Table 4.8** provides a list of councillors currently elected to the Singleton Council.

Table 4.8 – Singleton Councillors (Singleton Council, 2014)

Role	Councillors
Mayor	John Martin
Deputy Mayor	Godfrey Adamthwaite
Councillors	Ruth Rogers Sue Moore Tony McNamara Val Scott Danny Thompson Bob Keown Tessa Capsanis Hollee Diemar Jenkins

4.4.1.1 Social Planning Policy Framework in Singleton

Singleton Council released a long term Community Strategic Plan '*Our Place: A Blueprint 2023* in June 2013 (Singleton Council, 2013). The plan focused on four key pillars:

- Our Community – Safe, Healthy, Smart, United;
- Our Places – Sustainable, Accessible, Affordable, Adaptable;
- Our Environment – Enhance, Protect, Balanced, Aware; and
- Our Community Leadership – Collaborative, Informed, Efficient, Engaged.

Mining is a key industry in the Singleton LGA and there are currently 20 coal mines located within the LGA which produce approximately 57 million tonnes of coal a year (Singleton Council, 2013). In its Community Strategic Plan '*Our Place: A Blueprint 2023* in June 2013 (Singleton Council, 2013), Council has identified several concerns related to the presence of mining in the region (Singleton Council, 2013b), including:

- Housing and accommodation;
- Increased cost of living;
- Prevalence of a drive-in/drive-out workforce;
- Health/community impacts of mining shift work;
- Loss of community/demise of surrounding villages; and

- Stress on infrastructure and services.

It should be noted, however that recent changes in the current economic climate, as a result of the downturn in the mining industry, may have shifted these issues slightly, for example, decreased stress on housing and accommodation due to less mining workforce demand (refer to **Section 7.2.1** for discussion specific to this issue).

4.4.2 State Government

The Singleton LGA is located within the Upper Hunter State Electorate and the Upper Hunter Region for policy and planning, which extends from Spring Ridge in the north to Yengo National Park in the south, from the Talbragar River in the west to Bundook in the east.

The Upper Hunter State Electorate is currently represented by National Party Member, George Souris. The Member for the Upper Hunter is also Chair of the Legislative Assembly Committee on Law and Safety since his appointment in mid 2014.

Over the past couple of years, there has been much discussion at a State Government level regarding resource management and planning within the Upper Hunter and the Hunter Valley region more broadly. Key recent NSW State Government initiatives, policies and plans of relevance to the region include:

- *Strategic Regional Land Use Policy: Upper Hunter Regional Land Use Plan* (Department of Planning and Infrastructure, 2012a);
- *A New Planning System for NSW: White Paper* (Department of Planning and Infrastructure, 2012b);
- *NSW State Infrastructure Strategy* (Infrastructure NSW, 2012);
- *NSW Aquifer Interference Policy* (NOW, 2012);
- *Hunter–Central Rivers Catchment Action Plan* (Hunter-Central Rivers Catchment Management Authority, 2013); and
- *Lower Hunter Regional Strategy* (Department of Planning, 2006) (under review).

In developing these policies, plans and strategies, consultation has been undertaken with a range of local residents and key stakeholders within the Upper Hunter and broader Hunter region.

4.4.3 Federal Government

The Singleton LGA is currently represented by the Hon. Joel Fitzgibbon MP (Australian Labor Party). The Member for Hunter since 1996, in the lead up to the election he became the Minister for Agriculture, and campaigned on a platform of agriculture and mining co-existing ‘side by side’. He was appointed as Shadow Minister for Agriculture on October 18, 2013.

The Australian Liberal/National Coalition took government after the September 2013 election on a platform of economic stability and border control. One of their first actions on taking government was to commence the repeal of a carbon pricing mechanism. The government also maintains the stated intent of repealing the Minerals Resource Rent Tax. These and other policies related both directly and indirectly to the mining industry are expected to continue to evolve, and may influence people’s experiences and expectations of mining within the local and regional area.

4.5 Regional Issues, Values and Aspirations

Consultation was undertaken with 58 regional stakeholders drawn from across key community sectors as part of a *Regional Issues Assessment* prepared for Glencore by Coakes Consulting in 2012identified a number of community values, issues and opportunities associated with mining in the region that were considered important to residents and stakeholders within the Singleton LGA (Coakes Consulting, 2012).

Stakeholders were drawn from across key community sectors (at the regional level) including local government, education, health, housing and emergency services, and were asked for their thoughts regarding mining in the region. In addition to consultation, the *Regional Assessment* drew on findings from four key regional documents, which had themselves been informed by extensive regional community consultation, namely:

- *NSW Strategic Regional Land Use Plan: Upper Hunter* (Department of Planning and Infrastructure, 2012a);
- Upper Hunter Mining Dialogue (Australian Centre for Corporate Social Responsibility, 2011; NSW Minerals Council Ltd., 2013)
- *Singleton Council Strategic Plan* (Singleton Council, 2013); and
- *Sustainable Communities Project* (BHP Billiton, 2011).

4.5.1 Regional Values

Regional values emerging from Coakes' regional consultation and assessment related to:

- Community involvement and feelings of social cohesion;
- Community engagement and contributions from neighbouring mines;
- Road safety and traffic management;
- Access to services, including health, aged care and emergency services;
- Population health;
- Natural and sustainable environment;
- Housing affordability and availability;
- Supporting education and training initiatives;
- Supporting a more equitable distribution of wealth;
- Encouraging employees to live locally;
- Growth of local businesses;
- Diversification and sustainability of industries in the local area; and
- Sense of health and wellbeing.

4.5.2 Media Coverage of Regional Mining related Issues

A media analysis was also undertaken to further identify, analyse and reinforce details about regional community opinion, political actions, economic and industry development and a range of other regional interests and concerns.

The articles were primarily sourced from regional media, including *The Newcastle Herald*, *The Singleton Argus*, *ABC News* and *The Muswellbrook Chronicle.* In addition, a small percentage of articles were drawn from free online specialist publications, such as *Mining Australia* and metropolitan media such as *The Sydney Morning Herald*.

Most of the issues and challenges identified in Coakes' *Regional Issues Assessment* were reflected in the local and regional media coverage, with key issues and opportunities associated with mining including:

- Balancing the long-term impacts and economic benefits of mining for the region;
- Addressing land use conflicts more effectively and developing coordinated approaches to land management and rehabilitation;
- Responding to the continued downturn in mining and ongoing mining related job losses in the Upper Hunter;
- Enhancing infrastructure, housing and service provision and improving planning for these for the region (e.g. roads / transport; housing accessibility, affordability and mix; health services);
- Addressing community sustainability and protecting core community values;
- Addressing mining-related health concerns (e.g. air quality and dust, health research and assessments);
- Ensuring employment and training opportunities for local people;
- Protecting the environment and natural capital of the area;
- Improving information sharing with the community by government and industry; and
- Managing cumulative impacts of mining in the region.

A representative selection of key media items has been summarised from the commencement of 2011 and are presented in **Appendix D** along with tables breaking them into regional values and concerns.

4.5.3 Issues and Opportunities related to Mining in the Region

Table 4.9 summarises the key regional and community issues related to mining in the Upper Hunter as identified by Coakes' consultation with regional stakeholders and through media analysis.

Table 4.9 Summary of key regional and community issues and opportunities

Theme	Issues	Opportunities
Land use, resource development and the natural environment	• Increasing land use conflict between coal mining, other industry and residential uses • Concern for future use of land and rehabilitation of mining land • Concern for natural environment and impacts of mining on waterways – for recreation and drinking	• Addressing land use conflicts more effectively and developing coordinated approaches to land management and rehabilitation • Improving information sharing with the community from government and industry • Enhancing value of the environment and natural capital of the area • Developing alternative energy options
Economic development and employment	• Weakening coal price impacting employment rendering contractors vulnerable • Lack of local employment in mining industry • Concern regarding lack of mining-related work given to local businesses	• Investing in education and training to retain local employment • Developing economic diversification and resilience
Services and infrastructure	• Increase in mining traffic impacting road infrastructure & Drive-In / Drive-Out (DIDO) workforce decreasing safety on roads • Lack of adequate access to community services including health and child care	• Introducing public transport and shuttle systems for mining industry employees to reduce traffic on the roads and improve safety • Supporting government initiatives to improve community services
Community health, amenity and heritage	• Concern for lack of access to health services • Increasing concern for dust impacts on health and water • Community demand for increased monitoring of air quality and blast fume impacts	• Addressing mining-related health concerns (e.g. air quality and dust, health research and assessments) • Improve work-life balance of mining employees and address shift work-related issues • Improve communication with the community

Source: Regional Issues Assessment (Coakes Consulting, 2012)

5.0 Perceived Issues and Opportunities associated with the existing Mount Owen Mine and the proposed Project

A key component of the SIOA is the process of understanding, from a community perspective, the impacts and opportunities associated with the Project, as well as the broader community values and land uses associated with the assessment area.

This phase of the SIOA program had four main objectives:

- To identify perceived issues/impacts and opportunities associated with the existing Mount Owen operations;
- To identify perceived issues/impacts and opportunities associated with the Project;
- To identify perceived issues/impacts and opportunities associated with cumulative mining operations and their relevance to Mount Owen; and
- To identify strategies for management and opportunities for enhancement of perceived issues/impacts.

These objectives were achieved through the Project team's consultation with:

- Neighbouring landholders (N=47) residing in proximity to Mount Owen across the localities of Hebden, Camberwell, Falbrook, Middle Falbrook and Goorangoola;
- Tenants (N=14) residing in Glencore owned properties in proximity to Mount Owen;
- Aboriginal community groups or individuals (N=60) who participated in the cultural heritage assessment for the Project;
- Service providers and key regional stakeholder groups (N=58) who were consulted as part of a wider Coakes Consulting *Regional Issues Assessment* prepared for Glencore (Coakes, 2012);
- Representatives of local community groups (N=4) and regional NGOs (N=1) with varying interests in the locality e.g. infrastructure sustainability, land management, education;
- Government agencies and politicians (local and State) (N=14);
- Mount Owen Complex Community Consultative Committee – community representatives (N=8) and representatives from the Singleton Council (N=1) and the DP&E (N=1);
- Other community residents with an interest in the Project (i.e. those who attended a Community Open Day but had not already been consulted as part of earlier landholder consultations) (N=13); and
- Mount Owen and Ravensworth workforces as part of the TRC-Analysis methodology (N=135).

Methods used to consult with the groups identified above included:

- Personal meetings by the Project team with neighbouring landholders (**Section 5.2**);
- Telephone interviews with tenants (**Section 5.3**);
- Open Days and Community Information Sessions, held at the Mount Owen site in May 2013 and October and November 2014 and Mount Pleasant School in December 2013, to which landholders and tenants received personal invitations to attend;
- Review of consultation data associated with the Project's Aboriginal Cultural Heritage Assessment (ACHA) to identify any specific social and economic issues that may have been raised and recorded by the authors of the report (**Section 5.4**);
- Personal meetings and project briefings by the Project team and key specialists with government at local and State levels (these are documented in **Section 4.0** in the EIS);
- Personal and group meetings by the Project team with representatives of community groups and NGOs with a particular interest in the locality and mining related issues and service providers in the Singleton LGA (**Section 5.5**); and
- Development and distribution of five Community Information Sheets to landholders and stakeholders, including an invitation to contact the Project team to discuss the Project and provide feedback.

Consultation was also supplemented with a review of Mount Owen complaints data for the past 3 years (**Section 5.1**).

For the purpose of the current analysis, stakeholders have been organised into the main groupings identified above. This categorisation of stakeholders is necessary given that local stakeholders, residing in proximity to Mount Owen, may have quite different issues/impacts to stakeholders that live further away or reside in other areas across the region (e.g. service providers, representatives from community organisations).

Table 5.1 summarises the stakeholders involved in the consultation program by stakeholder group.

Table 5.1 – Summary of Consultations

Type/Geographic Region	Number of Stakeholders
Local landholders (43 landholders undertaken in rounds 1 and 2 plus 5 additional in round 3)	47
Open Day participants (additional to those already consulted in landholder meetings)	13
Tenant interviews	14
Local community groups	4
Environmental NGOs	1
Regional stakeholders/service providers	58
Government (local/State)	14
Aboriginal stakeholders	60
Mount Owen CCC community representatives	9
Mount Owen Flora and Fauna Interagency Group	1
Mount Owen Workforce	135
Total Consultations	*356*

The following sections summarise the issues and opportunities associated with Mount Owen's existing operations and the proposed Project within the context of the wider mining industry within the local area through the eyes of those consulted.

In many instances, the community perspectives presented below will relate to individual experience of existing operations, potential impacts of future development, as well as experiences of cumulative impacts of industry activities in the area. Where possible, these stakeholder-identified issues are attributed to the relevant source.

The purpose of identifying the range of issues and opportunities associated with the Project is to provide an overall assessment of those issues that are most important, from the perspective of the community. This information is important to understand at the onset of a project; to enable social issues/impacts to be fully integrated in assessment, planning and design.

Where relevant, data obtained from other relevant community data sources, i.e. community perception survey undertaken in the Mount Owen area in 2012 for Xstrata Coal (now Glencore), by the Hunter Valley Research Foundation (HVRF 2012), and through analysis of the company's complaints data, is also presented. Spatial analysis has also been undertaken in relation to some of the more prominent issue themes to provide further detail and definition around particular perceived issues/impacts identified.

5.1 Complaints Analysis

A review of all complaints for the three year period between July 2011 and June 2014 has been undertaken to provide some operational context to issues identified by landholders during the SIOA consultation.

Mount Owen maintains an ongoing stakeholder Complaint Register to record all community complaints, investigations and outcomes. The Register is available to the public via the Mount Owen website (www.mtowencomplex.com.au).

Mount Owen records all relevant contact with the community as complaints even if an investigation concludes that the Mine's activities remain in compliance with Project Approval (and other regulatory) limits or the reported instance is not able to be attributed to the Mount Owen operations (e.g. a contact regarding a blast is recorded as a complaint even if the investigation finds that no blast from the Mount Owen Complex occurred at the time reported).

5.1.1 Number and Nature of Complaints

Mount Owen received, investigated and recorded 16 complaints within the three year period between July 2011 and June 2014. The most common topics for complaint were blasting and noise, which together accounted for 75 per cent (N=12) of all complaints received during the period.

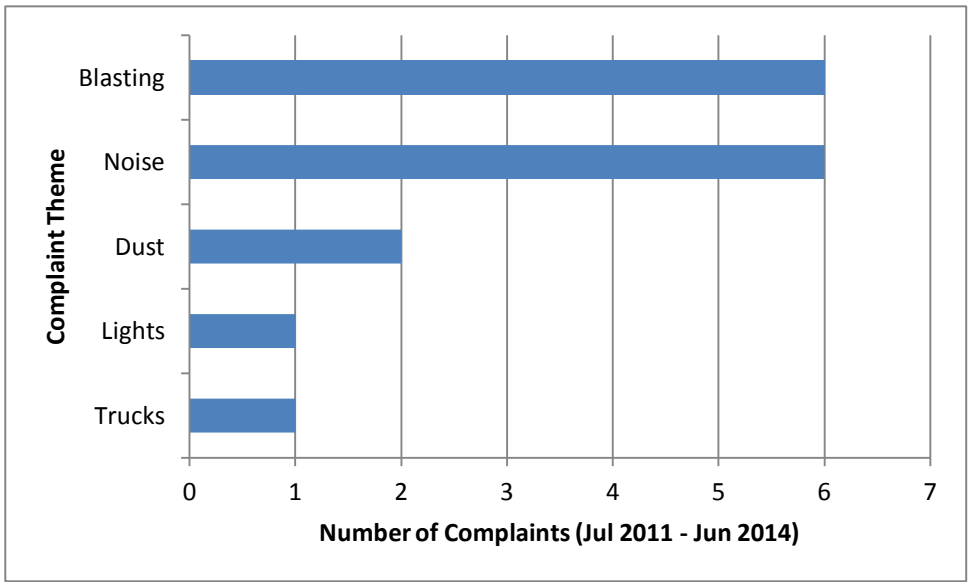


Figure 5.1 – Complaints Received by Mount Owen July 2011 – June 2014 (N=16)

Source: Mount Owen Complaints database (2014)

Blasting complaints focused on larger blasts that were perceived as 'shaking' the complainant's house, including one instance whereby the complainant had noted they had been awoken from their sleep. Noise complaints included general noise from site machinery, in particular noises from excavation, loading and shovelling activities.

Dust complaints related to generalised dust at the resident's property, as well as specific plumes reported to be visible off-site. A truck related dust complaint reported mud on vehicles wheels that were observed to be leaving the site. The single lighting complaint related to the positioning of site lights that disturbed a landholder's dogs, causing them to bark.

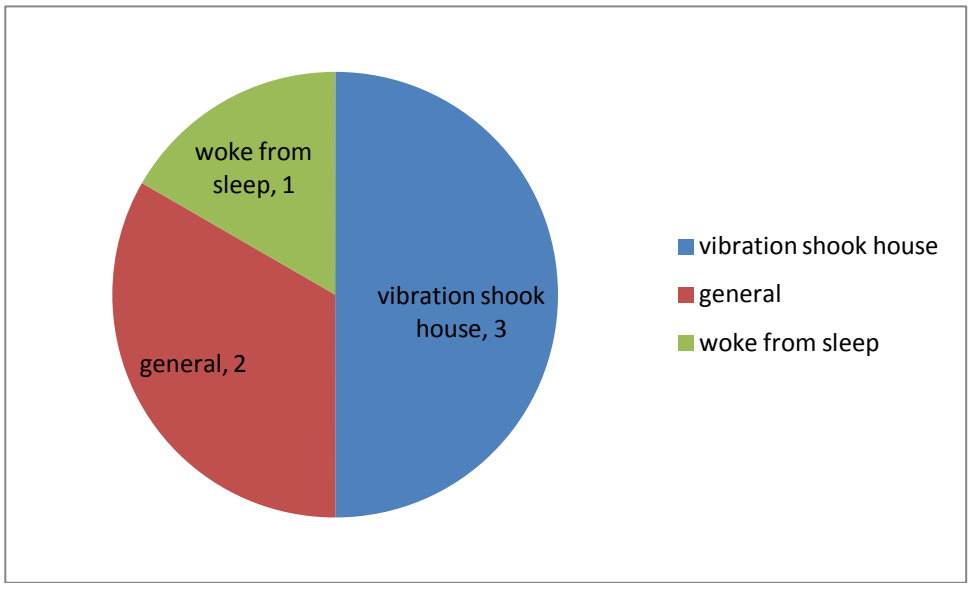


Figure 5.2 – Breakdown of Complaint Category – Blasting (N=6)

Source: Mount Owen Complaints database (2014)

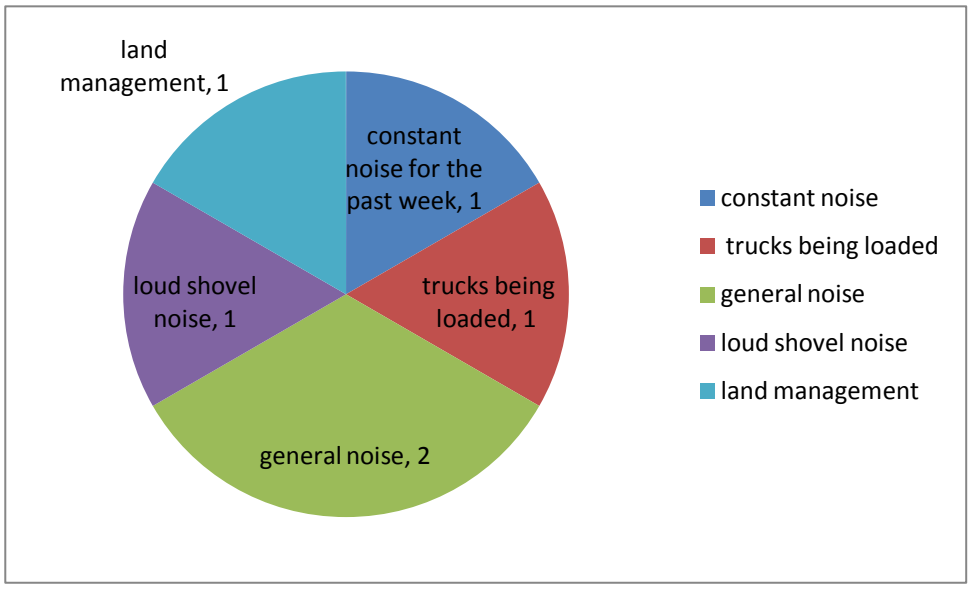


Figure 5.3 – Breakdown of Complaint Category – Noise (N=6)

Source: Mount Owen Complaints database (2014)

All complaints were investigated by Mount Owen Complex's Environment and Community Manager and, where required, additional management measures put in place. This included repositioning of lights (to address lighting), relocation of real time monitors (to address noise) and refreshment of site communication regarding vehicle hygiene (to address dust from off-site trucks). All blasting complaints were found to relate to blasts that were compliant with approval limits.

5.1.2 Time of Complaints

All of the complaints were received during the middle of the reporting period, with a peak between July and November 2013. There were five complaints received in 2012, and 11 in 2013. No complaints were reported for the most recent six month period between December 2013 and June 2014.

Complaints tended to occur in clusters, both in terms of month and time of day experienced. For example, during July to December 2013, there were 4 night time noise complaints (of the 6 total noise complaints received) reflecting perhaps the time of year and winter evenings, when noise can be considered worst case.

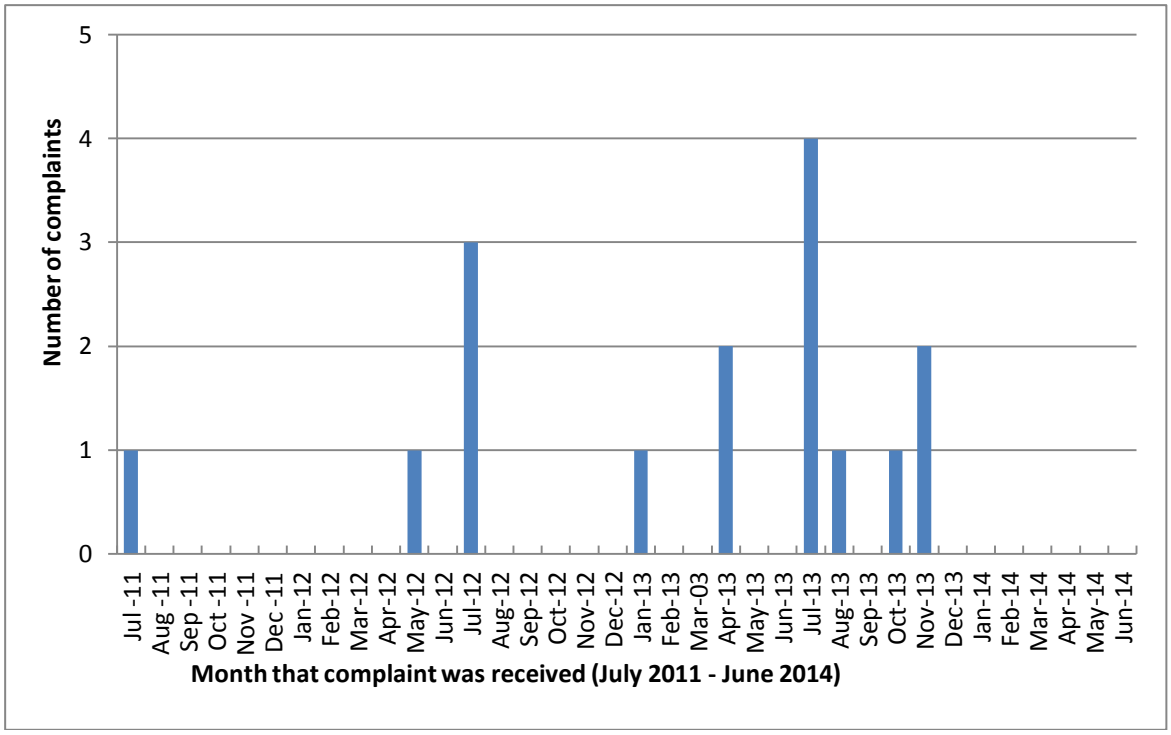


Figure 5.4 – Date of Complaint (N=16)

Source: Mount Owen Complaints database (2014)

Most complaints were received during daylight hours, with a peak of complaints around 12 noon. There were no complaints made between 12 midnight and 6 am, although one call around the 6 to 8 am period referred to night-time noise that was still occurring at the time of the call.

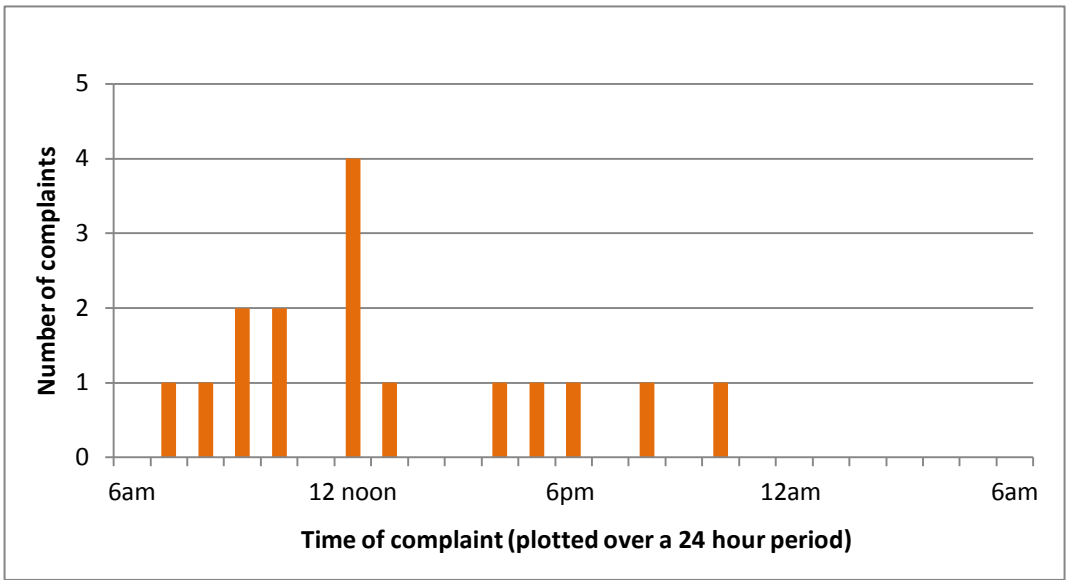


Figure 5.5 – Time of Day when Complaint Occurred/Received (N=16)

Source: Mount Owen Complaints database (2014)

5.1.3 Complaint Origin

Complaints were received via direct receipt through Mount Owen site complaint mechanisms, either through the Mount Owen Complaint Hotline (N=9) or directly through the Mount Owen Complex Environment and Community Manager (N=6). Only one complaint was made via the NSW Environment Protection Authority (EPA). This high level of direct contact suggests good community awareness and confidence regarding the Company operated Mount Owen complaints capture system.

Figure 5.6 presents the communication channel through which the complaints were captured

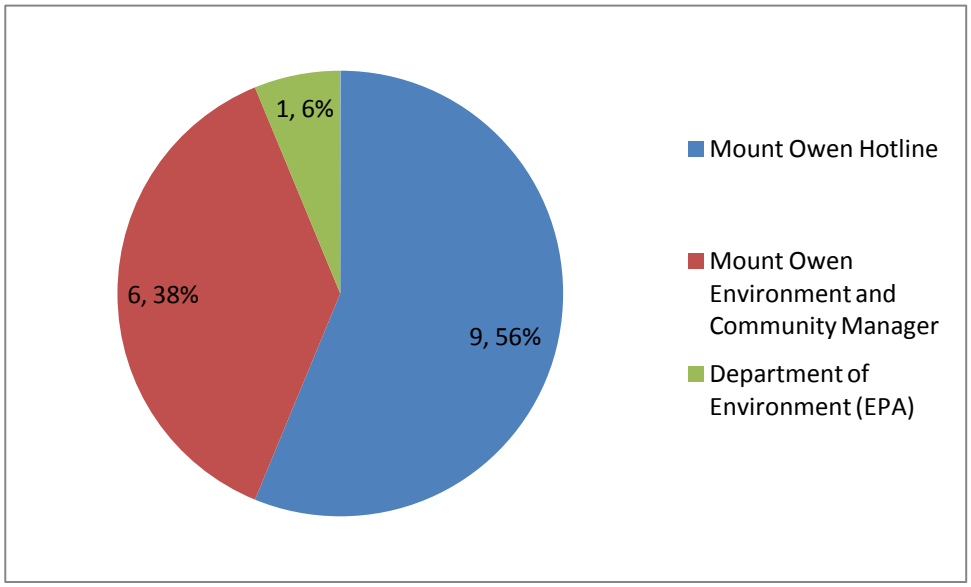


Figure 5.6 – Source of Complaint (N=16)

Source: Mount Owen Complaints database (2014)

Of the 15 complaints received over Mount Owen's direct system, over half (i.e. eight) came from two households (as presented in **Figure 5.7** below). One of these households was concerned specifically about blasting and the other was concerned about noise impacts. The remaining seven calls came from individual households, with varying issues recorded.

Figure 5.7 provides a breakdown of complaints received by individual household.

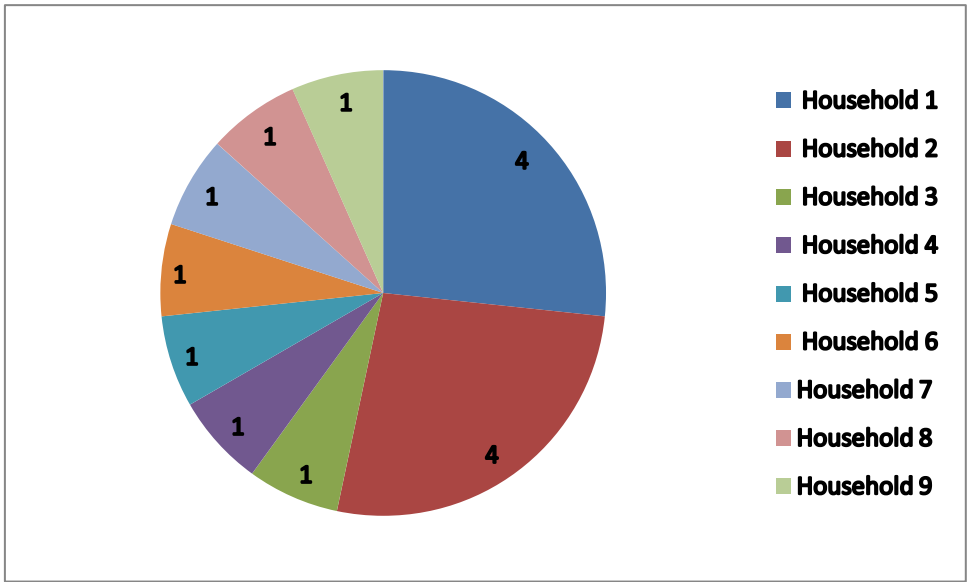


Figure 5.7 – Breakdown of Numbers of Complaints per Complainant Household (N=9)

Source: Mount Owen Complaints database (2014)

5.1.4 Summary of Complaints Analysis

In summary, key points emerging from the complaint analysis are as follows:

- Blasting and noise have been the the main issues of complaint associated with the current Mount Owen Mine and Ravensworth East Mine operations;
- Complaints have tended to cluster around a small number of complainants with half of all complaints received from two households;
- Geographic origin of complaints were clustered in Middle Falbrook, with the balance originating from the Greenlands and Camberwell areas;
- Complaints tend to reflect concerns of community members and do not appear to be indicative of Mount Owen's compliance with Project Approval limits. For example, all of the blasts that were the subject of complaints were undertaken within approval limits; and
- Households are using Mount Owen's direct complaint system rather than making complaints via government agencies, suggesting a good level of awareness and confidence regarding the system.

In general terms, the Mount Owen operations appear to have a relatively good complaints record, with a low number of complaints recorded across the period analysed, and no complaints recorded from January to June 2014.

5.2 Neighbouring Landholders

Consultation was undertaken with 47 neighbouring landholders with properties in the immediate vicinity of the existing Mount Owen operations. Discussions were held over four rounds of consultation between July 2012 and October 2014 with the following objectives:

- **Round 1:** To introduce key Project staff, provide an early briefing on the Project, and scope issues (July/August 2012);
- **Round 2**: To provide further briefings, scope perceived issues and experienced impacts associated with Mount Owen's current operations, and identify early perceptions regarding the Project (October 2012, May 2013, November 2013). A Community Open Day at the Mount Owen site, featuring display of project information and site tours, was also held during this period (May 2012); (N=43 landholders);
- **Round 3:** To inform landholders of outcomes of environmental assessment findings and gather feedback to inform further planning, assessment and mitigation measures (October-December, 2013). A Community Information Session, held at the Mount Pleasant School, was also held during this period (December 2013); (N=47 landholders);
- **Round 4:** To update landholders regarding the refined project and updated environmental study findings, and seek further feedback to inform the EIS (September/ October 2014). A Community Open Day at the Mount Owen site was also held during this period (October and November 2014).

Section 5.2.1 below summarises the findings from the first two rounds of consultation which involved discussions with 43 landholders. As these discussions were held early during the planning phase, they were considered primarily 'issues scoping' in nature, with findings informing preparation of this Issues Scoping chapter of the SIOA.

5.2.1 Impact Themes

The most common perceived impact themes identified by landholders regarding the current Mount Owen operation, as well as other mining operations in the local area, related to air quality and noise, with about 70 per cent of landholders (N=43) identifying one or both as a current issue. This theme was followed by economics impacts (60 per cent), land management (58 per cent), blasting (55 per cent) and road infrastructure (51 per cent).

Whilst many of the perceived impacts were raised in terms of direct attribution to Mount Owen, most were also discussed in cumulative terms, with residents reporting difficulties in fully distinguishing issues and impacts associated with individual sites, given their proximity to multiple mining operations i.e. Integra and Ashton Coal operations.

Other less prominent issues related to environmental impacts, such as water and visual amenity, as well as more socially oriented issues such as sense of community, community contribution and processes of community engagement, the latter being discussed mainly in terms of positive impacts or opportunities.

Figure 5.8 presents the key impact themes as reported by local landholders during the consultation process.

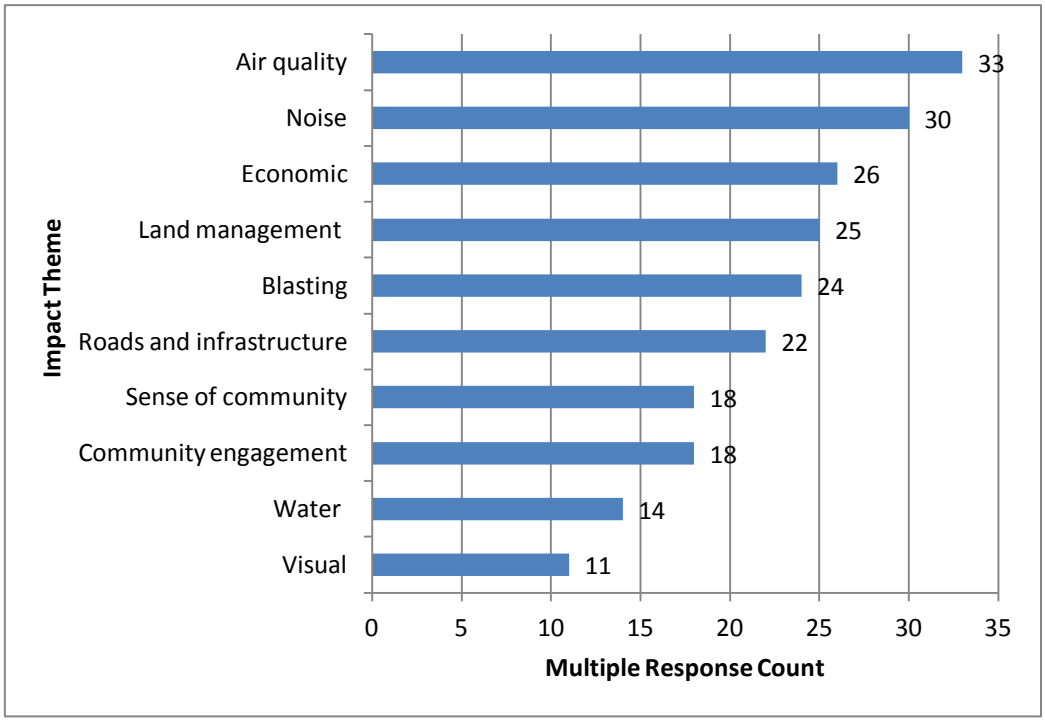


Figure 5.8 – Perceived Impact Themes Identified by Neighbouring Landholders (N=43)

Note: Includes both positive and negative issues/impacts. Multiple responses permitted.

Issues raised by landholders are consistent with findings from Glencore's 2012 Community Survey undertaken by the Hunter Valley Research Foundation (HVRF 2012), which included interviews with 37 residents from the localities of Hebden, Camberwell and Glennies Creek. This survey identified air quality (46 per cent of respondents) and noise (30 per cent) as the top perceived issues relating to Mount Owen's operations in the area. Some differences emerge, however, when analysing patterns of landholder complaints to Mount Owen, which exhibit an overwhelming focus on blasting and noise, with only two complaints received regarding dust/air quality impacts (see **Section 7.4.1.1**).

In relation to the Project specifically, some landholders expressed concerns regarding the encroachment of the Project towards their properties and the potential for acquisition of property depending upon the outputs of noise and air quality studies. As is the case with any project, landholders raised a number of questions about the project and responses received were relatively balanced regarding the potential project impacts, as summarised in the quotes below:

Stakeholder Quotes – Project Specific:

'Mount Owen is coming closer'

'Mount Owen will be too close'

'We do not want to leave here'

'How large is the new area? What depths do you go to?'

'Hope you're not here to buy me out'

'I'm not phased at all'

'May as well keep going - not going to stop anytime soon'

'Don't have any problems with proposal. No different to the other mining issues surrounding us'

'Keen to see future plans - wants to know what's happening'

'How much of the pit will you have open at one time?'

'For 20 years was told that no mines would be close to property'

'As long as you keep going the other way, I do not care'

'You would have to commence before we would know what concerns we have'

'Not a lot of problems from Mount Owen'

'Moving the pit - it will be closer - it could be a concern - hard to tell right now'

Each of the impact themes identified in **Figure 5.8** are discussed in more detail below, with sub-issues emerging from the consultation data also recorded. The themes and graphs integrate both positive and negative comments, with positive comments highlighted in green within each of the respective figures.

5.2.1.1 Air Quality

Consultation with landholders identified cumulative air quality impacts (i.e. dust) affecting general amenity as the top issue of concern regarding mining in the local area. Very few identified Mount Owen in relation to specific dust issues, with more of a general tendency to regard dust as a cumulative concern to which Mount Owen and the Project are contributors.

Further analysis of the consultation data in regard to air quality identified the following key sub-issues as shown in **Figure 5.9**. For the majority of landholders consulted, general amenity relating to air quality was a main concern, followed by impacts of dust on health, and dust present in water tanks affecting drinking water quality. The general maintenance of property as a result of the impact of dust i.e. sooty gutters, dirty windows, dirty pools, was also identified by local landholders.

For some landholders, dust was seen to be exacerbated by certain weather conditions, with impacts varying according to wind direction. A few landholders also identified the need for improved air quality monitoring and dust management measures to be put in place, with more effective regulation of local coal mines.

Despite the prevalence of comments relating to this issue, analysis of Mount Owen complaints data indicates only two complaints (out of a total of 16) received regarding dust and dirt in the two year period reviewed (July 2011 – June 2014); with no air quality complaints reported since August 2012.

Spatially, air quality issues were spread across the local area of consultation, with a higher number of concerns evident within the Middle Falbrook area, as presented in **Figure 5.10.**

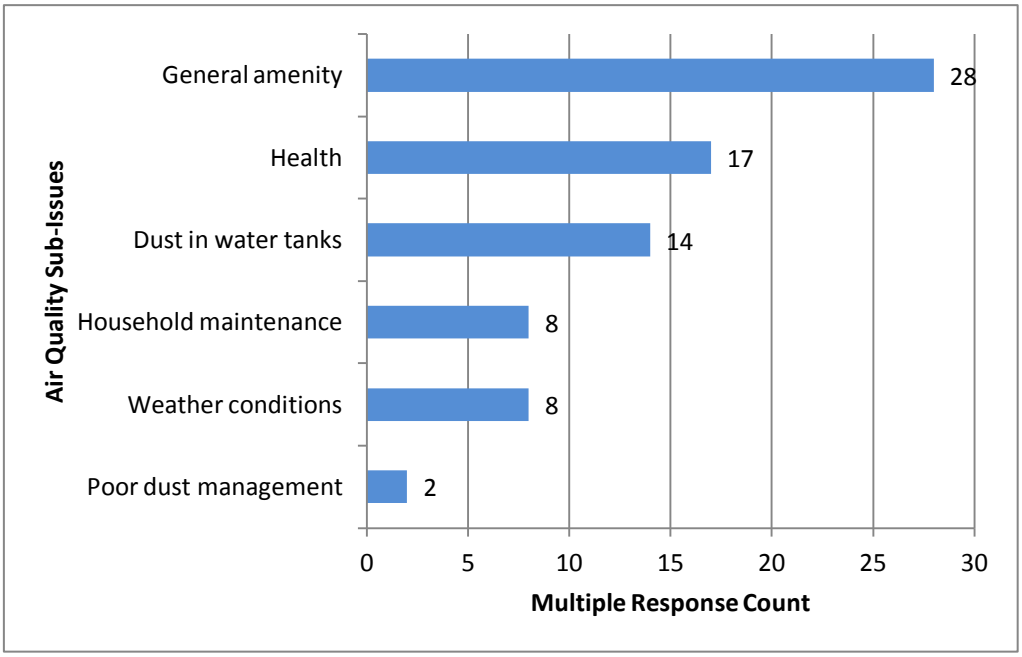


Figure 5.9 – Neighbouring Landholder (N=33) Identified Issues/Impacts (Air Quality)

Note: Multiple responses permitted.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Air Quality:

'We have trouble with westerly winds'

'The air is like a thick fog'

'House is disgusting. Cleaning windows everyday'

'Health is the main issue. The kids have asthma'

'Once you get past the range, the air quality is different'

'We lived in Sydney, you don't know what you are breathing in - here we do, at least we know.'

'Little bit of dust, but that's part of life'

'Dirt. Soot in the gutters'

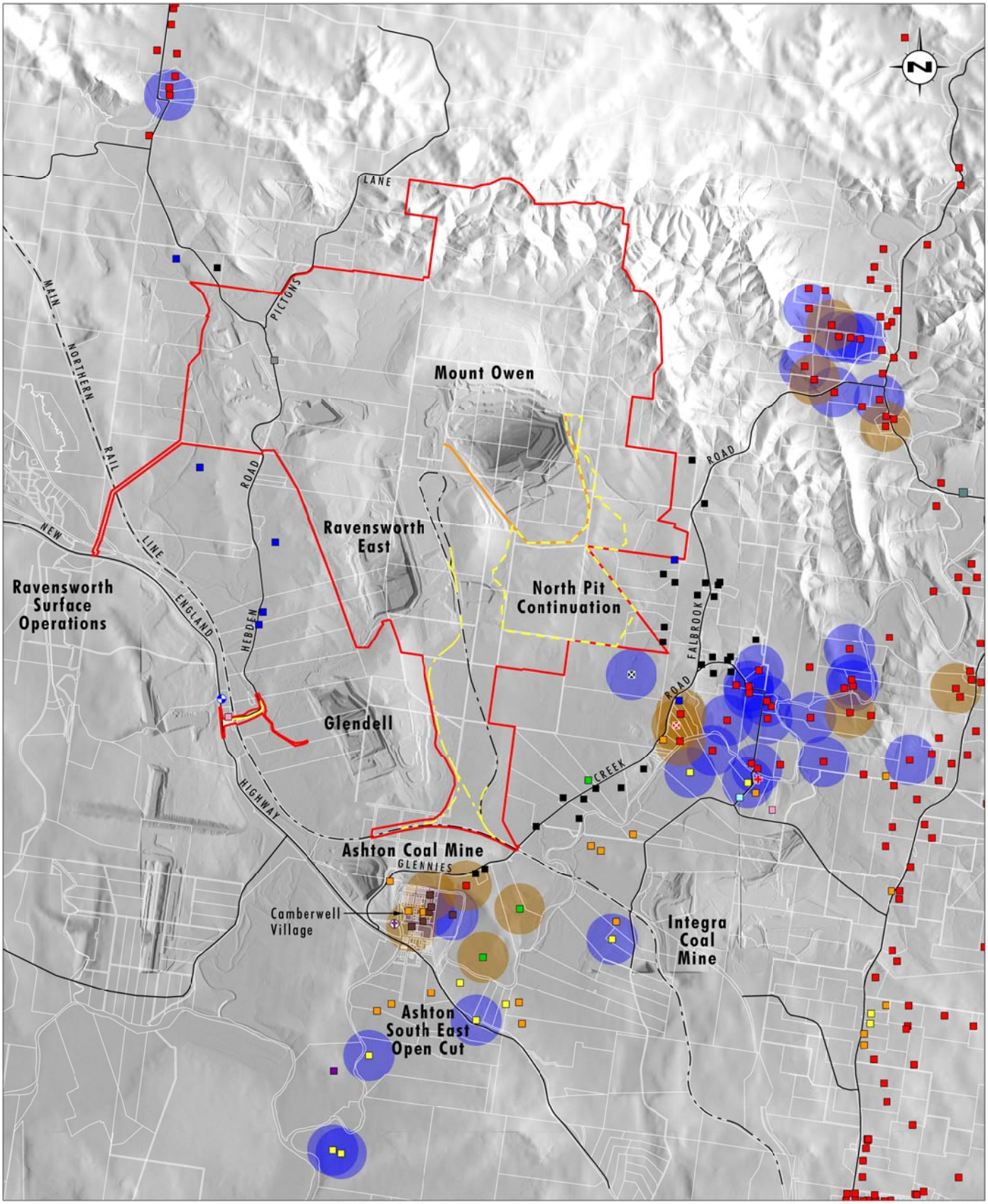
'Don't hear much or receive much dust – we are quite sheltered here'

'There is a haze over the whole stinkin' valley'

'Dust. Cumulative. I'm not blaming anyone'

'Need to continue to implement 'world's best practice''

'Due to ridge we don't have as big a dust problem. Dust might get worse with the Project'



Data Source: Mount Owen (2014), Department of Lands (2009)

0 1 2 4km
Scale 1:90 000

Legend

- Project Area
- Approved North Pit Mining Extent
- Proposed North Pit Continuation
- Proposed Rail Upgrade Works
- Proposed Hebden Road Upgrade Works
- Identified as an Impact or Issue
- Not Identified as an Impact or Issue
- Mine Owned Residence - Derelict
- Mine Owned Residence - Vacant
- Community Hall
- Church
- Glennies Creek Fire Brigade
- Private No Dwelling
- Subject to Acquisition Rights - Glencore No Dwelling
- Currently Subject to Acquisition Rights - Dairy
- SEOC Acquisition - Noise Trigger
- Private Residence
- Private Residence - Currently Subject to Acquisition Rights - Glencore
- Private Residence - Currently Subject to Acquisition Rights - Other Mines
- Mine Owned Residence - Glencore
- Mine Owned Residence - Other Mine
- Mt Pleasant Primary School
- Former Hebden Public School
- Daracon Site Office

FIGURE 5.10

Air Quality Spatial Impact Analysis

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20141009 10.16

5.2.1.2 Noise

In relation to the perceived impact of noise, the following sub-issues were evident across the landholders consulted (as shown in **Figure 5.11**). The general impact of noise on amenity was most frequently raised, followed by noise experienced at different times of the day, most notably in the early morning and in the evening. The cumulative impact of noise was also noted by a number of landholders. An analysis of Mount Owen complaints data (refer to **Section 5.1** reinforces this, identifying noise, along with blasting, as one of the two most common topic of complaint over the last three years (six complaints out of a total 16 received).

In relation to operational noise, a number of specific noises were identified as being more disturbing than others, namely the sound of beeping from trucks reversing and more general operational noise such as motor noise and scraping buckets. Operational noise was also noted predominantly in the 2012 Community Survey (HCRF, 2012). Rail noise was also identified as an issue, particularly braking and engine noise. Once again, weather conditions were seen to influence the noise impacts experienced by certain landholders, with noise considered at its worse during periods of low cloud and given certain wind directions.

A number of other landholders interviewed (n=6) acknowledged noise as something that they did experience, but felt it was not a major concern or issue.

Spatially, concern regarding noise appears similarly distributed to the patterns of air quality noted in **Section 5.2.1.1** above (refer to **Figure 5.12**).

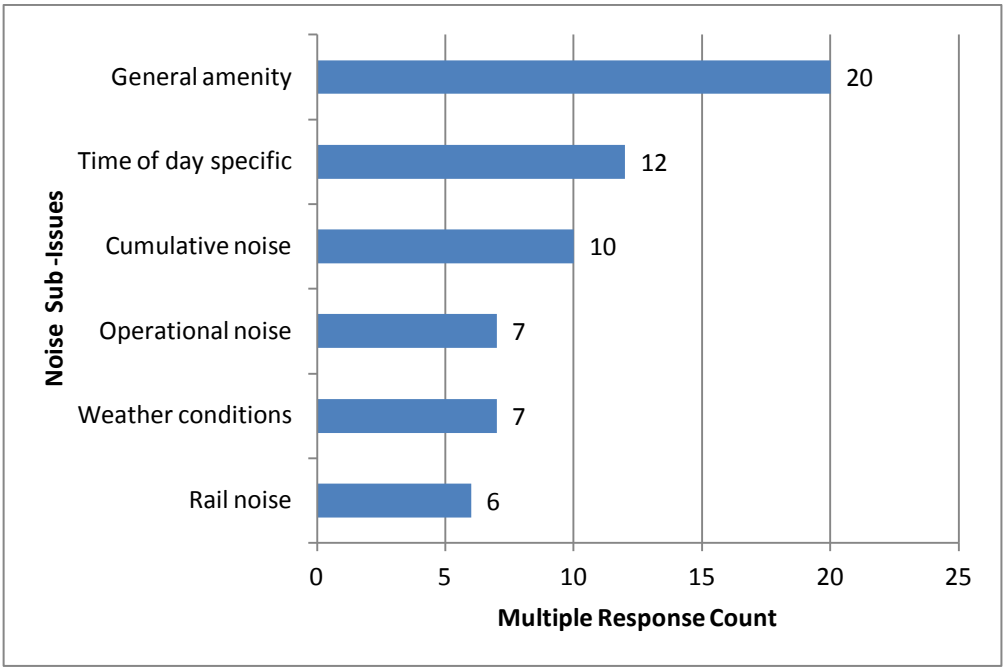
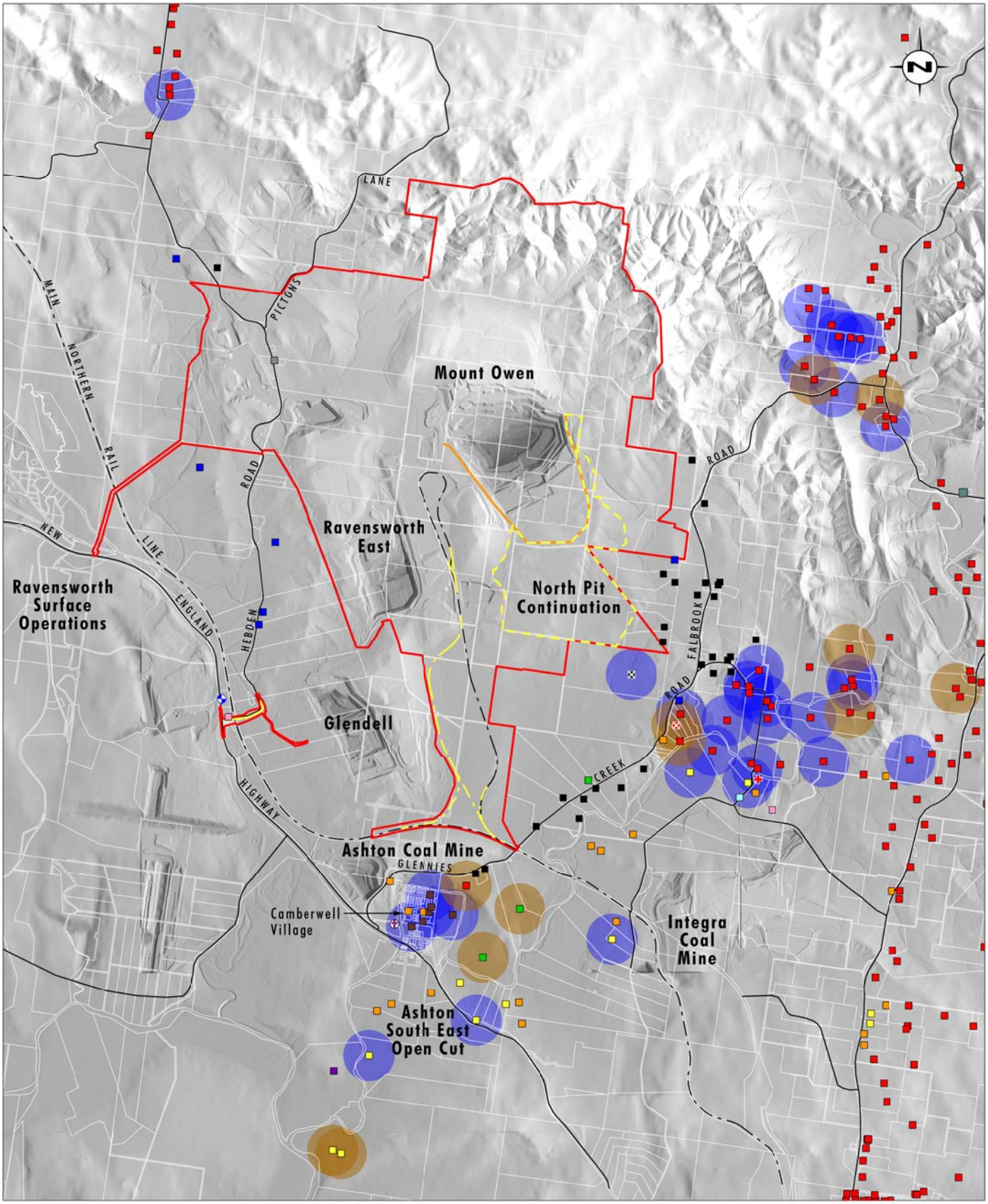


Figure 5.11 – Neighbouring Landholders (N=30) Identified Issues/Impacts (Noise)

Note: Multiple responses permitted.



Data Source: Mount Owen (2014), Department of Lands (2009)

0 1 2 4km
Scale 1:90 000

Legend

- Project Area
- Approved North Pit Mining Extent
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FIGURE 5.12

Noise Spatial Impact Analysis

File Name (A4): R13/3109_866.dgn
20141009 10.19

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Noise:

'Noise production from trucks reversing beepers and scraping of buckets at Mount Owen'

'Noise is an issue, especially at night'

'Noise is noticeable early mornings, especially on weekends'

'Noise increased in the past 12 months. Never used to hear anything'

'We experience noise but nothing major'

'We hear clack clack clack!'

'Can hear noise in bedroom'

'Mount Owen drives us bonkers up there on the hill'

'Noise – depends on which pit and the weather'

5.2.1.3 Economic Impacts

A large number of landholders (n=26) commented on a wide range of economic benefits and impacts to the local area, Singleton and the wider Upper Hunter region, due to the presence of mining (refer to **Figure 5.13**). The most common commentary related to the positive economic contribution of mining locally as a result of employment (n=20), stimulus for local business (n=8) and due to the social and community investment undertaken by mining companies (n=14).

In contrast, a number of landholders highlighted what they saw as a range of negative economic impacts, most predominately the devaluation of their properties and subsequent challenges to sell, increased cost of living and decreasing housing affordability (perceived to be pushed upward by high mining wages).

A further negative flow-on effect of strong wages within the mining sector was the competition for skilled workers, leaving those in other sectors unable to compete. There was also a concern that not enough economic benefits, including royalties, were being returned to the local community, where the impact of coal mining is being felt the most.

The more recent downturn in the mining sector was also acknowledged to be having an impact on the local area. For example, one landholder commented that a number of local residents had been made redundant.

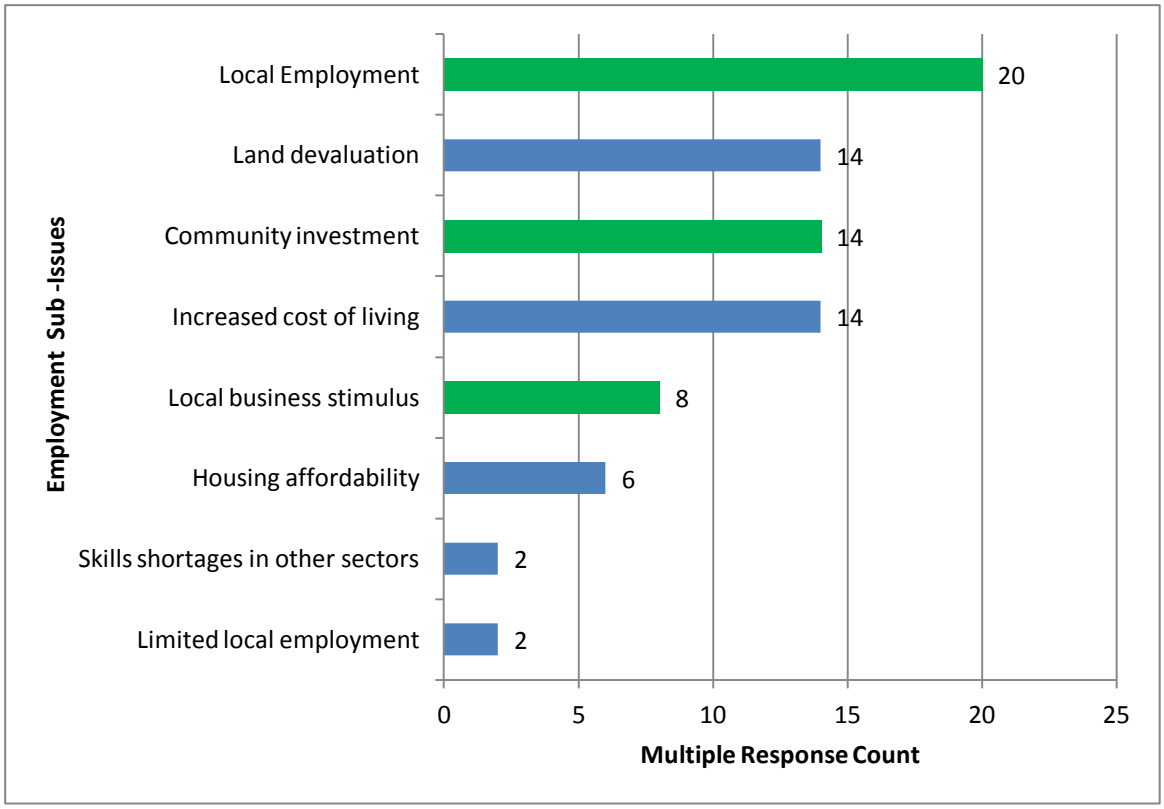


Figure 5.13 – Neighbouring Landholders (N-26) identified issues/impacts (Economic)

Note: Multiple responses permitted. Green shading indicates positive comments.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder quotes – Economic:

'Support to local sports is great'

'Income for local business'

'Houses cost more'

'Employment is good'

'Redundancies are now an issue'

'There is a lack of money going into the town'

'Good for local economy – flow on effect'

'Singleton is so expensive - not everyone works in the mines and earns a lot of money'

'People complain about having mines in the area, but Singleton wouldn't be here without them'

'You take more than what you give'

'I wouldn't be employed without them'

'Businesses struggle to keep staff – now working in mining – lack of skilled workers'

'We'd like to move but we just can't sell our house'.

5.2.1.4 Land Management, Environmental Impacts and Rehabilitation

Twenty five (25) landholders identified issues associated with land management, environment and rehabilitation. In this regard, issues related to current management practices, as well as thoughts regarding rehabilitation and future land use following closure (refer to **Figure 5.14**).

General environmental degradation, such as impacts to vegetation, soil quality, local waterways and wildlife, were some of the key environmental concerns identified; with many noting a need for improved environmental monitoring and management. There was also a view that there should be increased attention on the management of mine owned and buffer lands. Management concerns included pest and wild animal control, with dingo, kangaroo and rabbit populations regarded as increasing, and some landholders reporting livestock attacks by wild dogs (not dingos). Reference was also made to the spread of weeds on mine owned land and transference to adjoining properties. Increased fire hazard and bushfire risk, on mine controlled land, was also noted.

Post mining land-use was a topic of high interest with many landholders providing thoughts on current rehabilitation practices and their vision for future land uses; which ranged from returning land to its 'natural' state, improving land for agricultural production (the most common response) through to the development of alternative recreational or commercial ventures e.g. golf club, BMX track, pony club, residential development. In general, landholders wanted greater clarification about what was going to happen when mining ended at Mount Owen.

There was also mixed thoughts regarding the effectiveness of current rehabilitation practices and outcomes. Those with negative perceptions tended to regard rehabilitated areas as looking unnatural, and suggested more appropriate practices such as 'natural' contouring, more in line with the current landscape. A common assumption was that once land had been used for mining (or 'turned upside down') it could never go back to how it was previously. In contrast, other landholders provided more positive comments about current rehabilitation, including high regard for Mount Owen's collaboration with University of Newcastle students in their rehabilitation work.

From a spatial perspective, landholder interest in land management was more focused in the Camberwell area and to the south of the existing operations (refer to **Figure 5.15**).

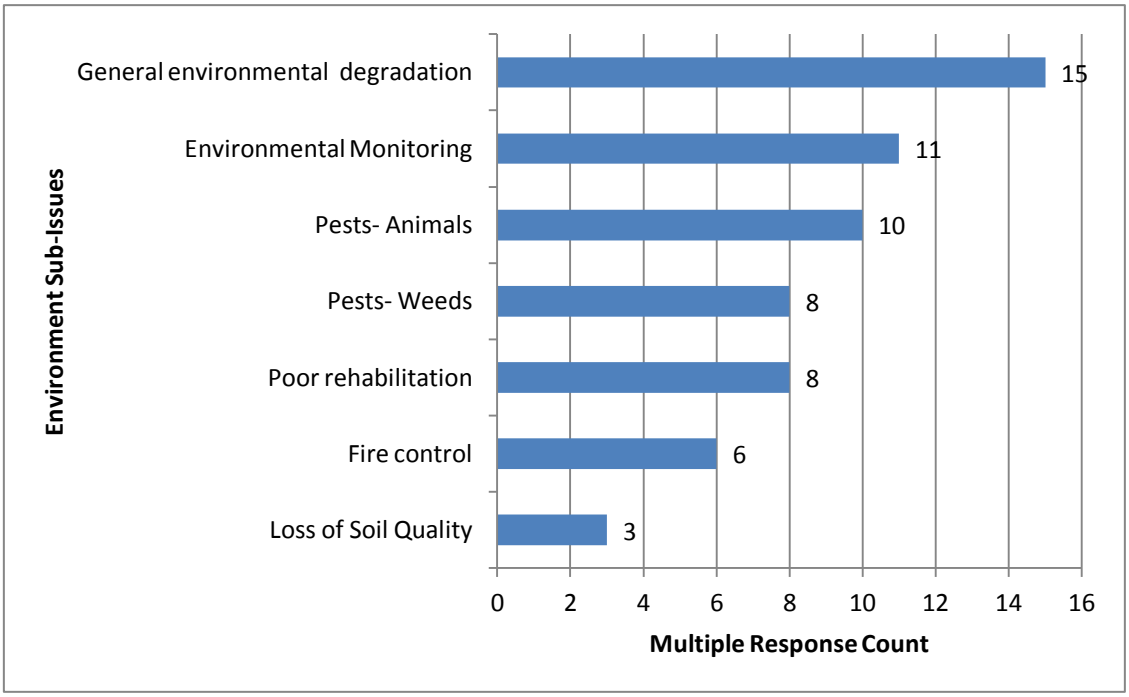


Figure 5.14 – Neighbouring Landholder (N=25) Identified Issues/Impacts (Land Management)

Note: Multiple responses permitted.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Land Management, Environment and Future Land Use:

'We have a big issue with wild dogs out here'

'Fire management is a worry on mine owned land, I would like to avoid fires'

'Rehabilitate the land to what it was'

'I would like to see Dairy farms back in the area and Cattle Country Farming land'

'Rehab needs to be hilly and mountainous. Keep it diverse'

'Land was never good land anyway. Coal activity and rehab would be the best thing to happen to it'

'We worry about the impacts on the environment and the animals'

'18 hole golf course'

'I was impressed with rehabilitation with Mount Owen and great to have the university involved'.

'Saw kangaroos on Mount Owen rehabilitation'

'You can't put disturbed land back into grazing'

'More active rehabilitation'

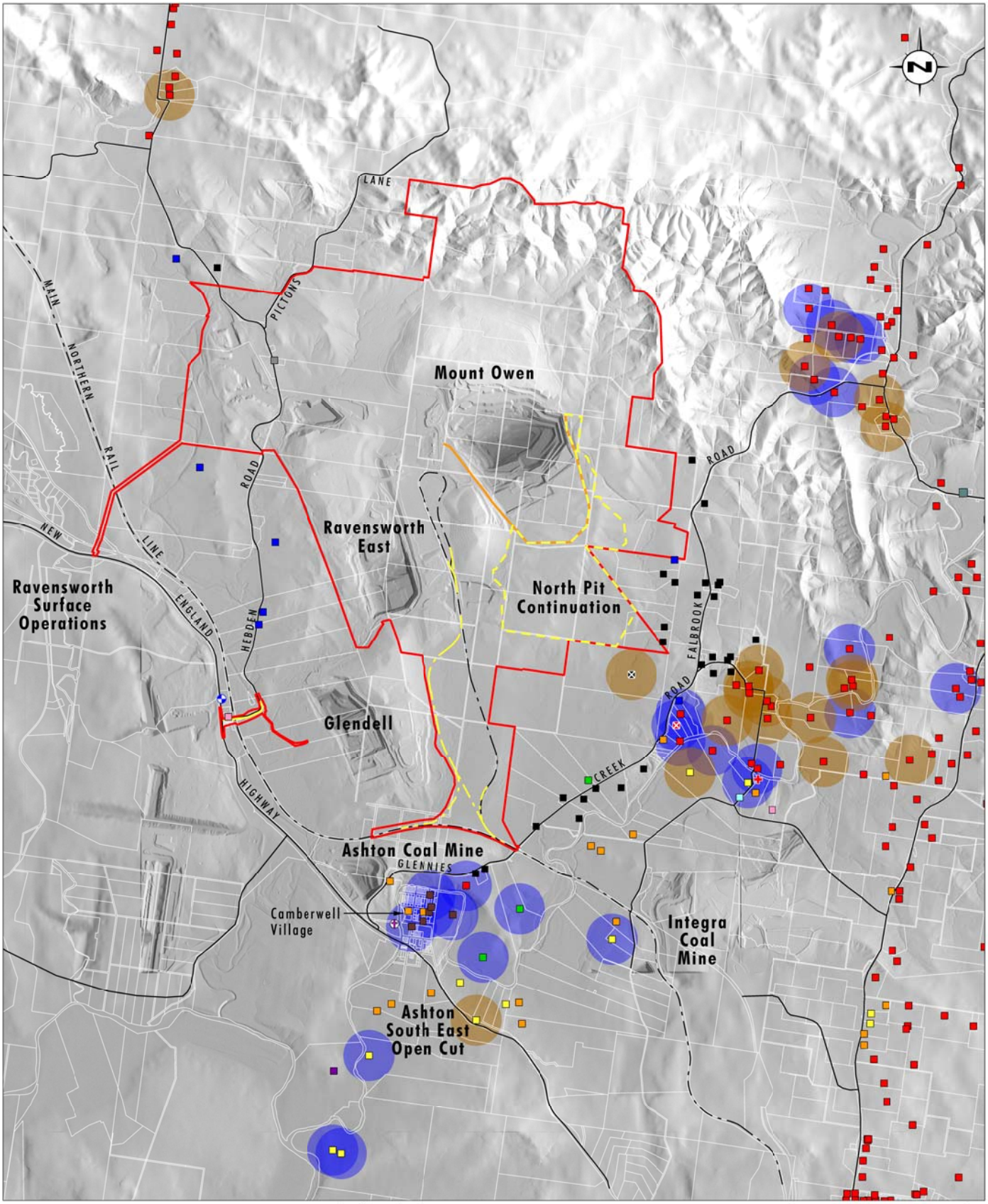
'Used to see liar birds and everything - now you see nothing'

'I'm concerned about bushfires - I want a buffer zone'

'Sometimes the land won't go back to how it was before mining but then some put the land back better than what it was'.

'Concerned about nutrient loss in soil'

'Impressed with the revegetation occurring quite naturally in the State Forest area.'



Data Source: Mount Owen (2014), Department of Lands (2009)

0 1 2 4km
Scale 1:90 000

Legend

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FIGURE 5.15

Land Management Spatial Impact Analysis

File Name (A4): R13/3109_867.dgn
20141009 10.20

'Land should go up for sale for people to actually own and live on the land again.'

'You shouldn't move what is natural it is wrong- forest and creeks'

'Race tracks for motorbikes'

'It could be a Pony Club area – make it nice and flat'.

5.2.1.5 Blasting

Twenty four (24) landholders identified concerns regarding blasting. Sub issues included the general effect of blasting on amenity, as well as the impact of vibration, including tremors after a blast and property damage (i.e. houses shaking, pictures moving, walls cracking). Other less common sub-issues included odour, dust and noise associated with blasts (refer to **Figure 5.16**).

Blasting issues attributed specifically to Mount Owen were uncommon, with a greater focus placed on cumulative impacts of blasting. Many landholders were unable to attribute blasts to particular operations.

An analysis of the Mount Owen complaints data (refer to **Section5.2**) put blasting as one of the top two common topics of complaint since July 2011 (six complaints out of a total 16 received). However, the majority of blasting complaints were received from one household, which may assist explain the level of discrepancy between its higher prominence in the complaint data than in the direct consultation findings.

This geographic pattern is further reinforced by the spatial mapping of perceived blasting issues (**Figure 5.17**) which shows a deeper concentration of concern in the Goorangoola area in comparison to other areas.

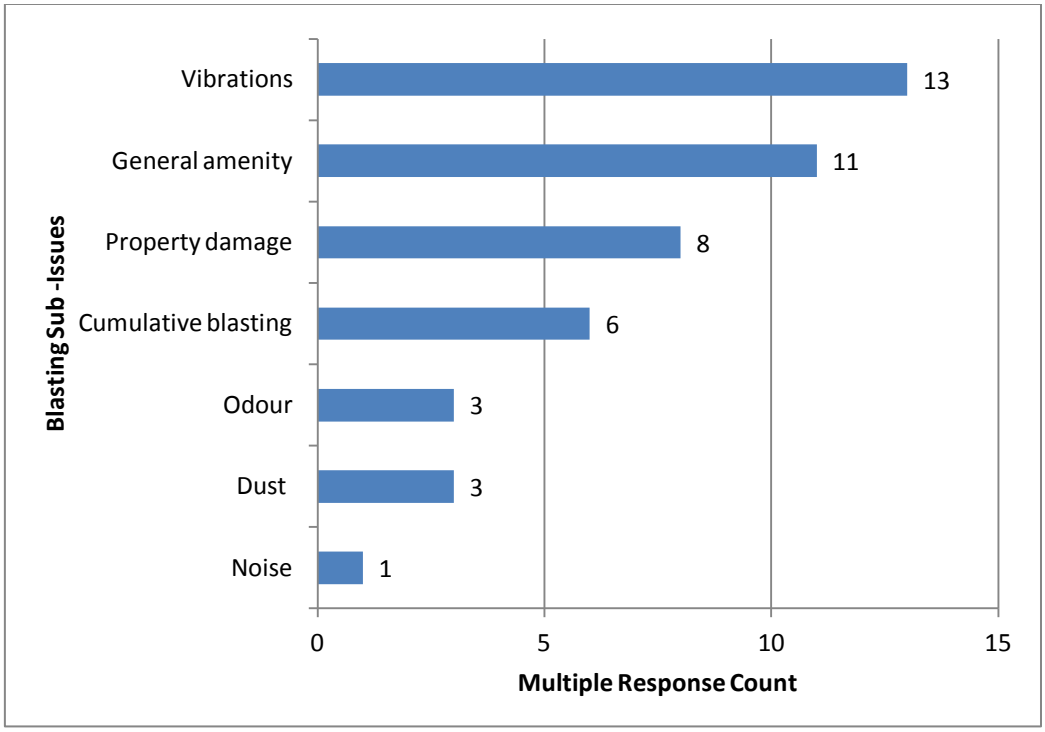
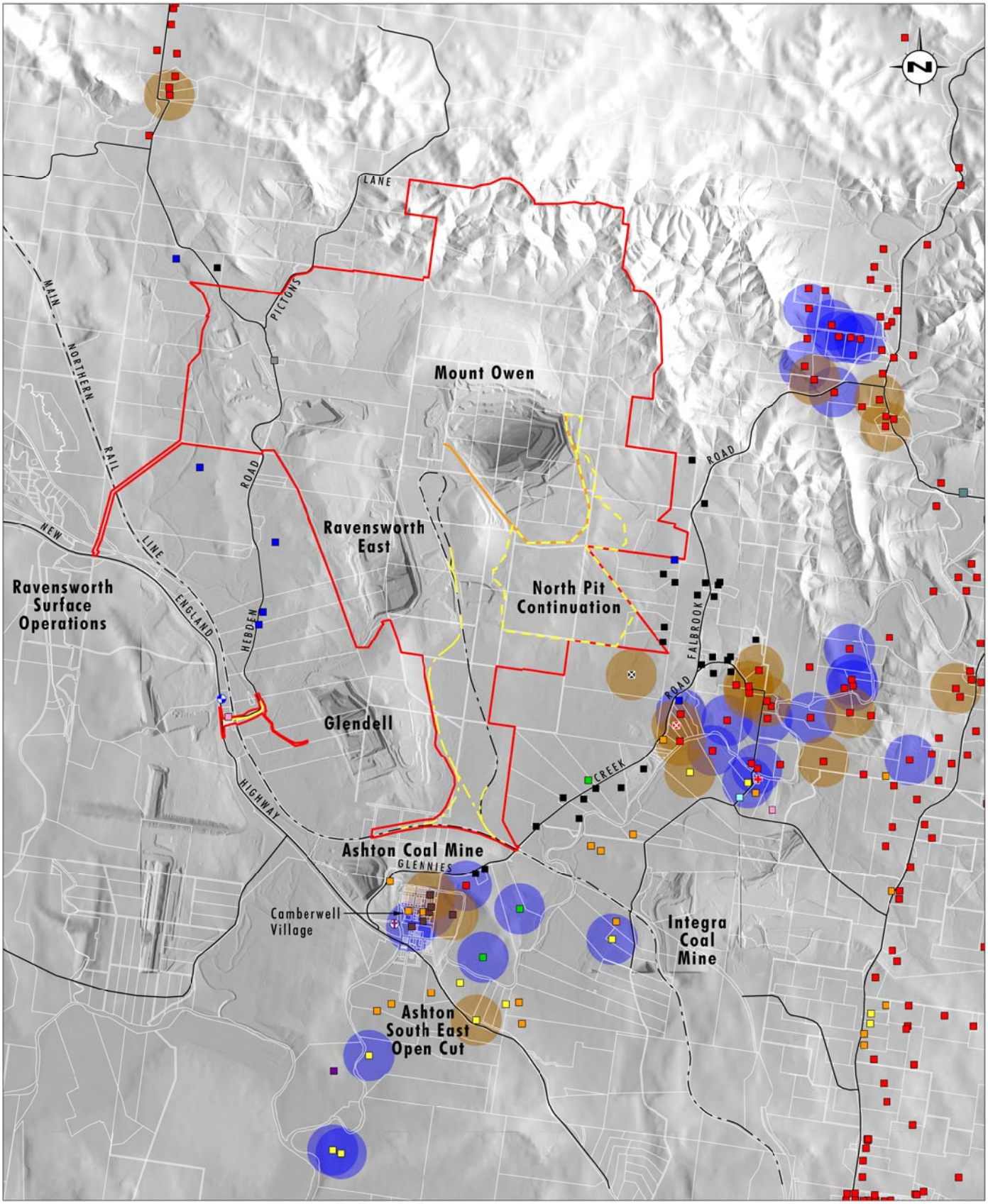


Figure 5.16 – Neighbouring Landholder (N=24) Identified Issues/Impacts (Blasting)

Note: Multiple responses permitted.



Data Source: Mount Owen (2014), Department of Lands (2009)

0 1 2 4km
Scale 1:90 000

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FIGURE 5.17

Blasting Spatial Impact Analysis

File Name (A4): R13/3109_868.dgn
20141009 10.22

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Blasting:

'There was a big mine blast, it felt like an earthquake'

'Cracks developing within last 12 months, the house is on a major fault line'

'Blasting is annoying as the dogs don't like the blasts'

'Can see the dust, house shakes, the walls get cracks in them'

'We experience odour from blast and we get a few tremors after blasts'

'The orange clouds worry me'

'We have a blast monitor'

'When blasting occurs I often feel like the house is going to fall down'.

5.2.1.6 Roads, Traffic and Housing Infrastructure

A number of landholders (22) raised issues associated with roads, traffic and housing infrastructure, with increased traffic generated by mine employees and site operations as the principal issue – most noticeable during shift changes at local mine sites (refer to **Figure 5.18**).

Landholders pointed to a number of roadways that they felt required improvements or maintenance attention, with particular focus on the Glennies Creek Road level crossing.

Railway traffic was highlighted as a particular frustration with many landholders reporting having to wait at train crossings for long periods as a coal train passed. Delays associated with trains were also regarded as a health and safety issue, given they could effectively block emergency service access to local roads. Safety issues were also further highlighted in regard to mine workers taking short cuts through nearby areas, unsafe driving behaviour and driver fatigue due to long mine shifts.

The provision of housing infrastructure to accommodate increases in mining construction workforces was also noted. The main concern being, the existing perceived stress on the local housing and rental markets (i.e. availability) and related impacts on housing affordability. Spatially, concerns regarding this theme had a higher degree of concentration within Camberwell and the Goorangoola area compared with Middle Falbrook (refer to **Figure 5.19**).

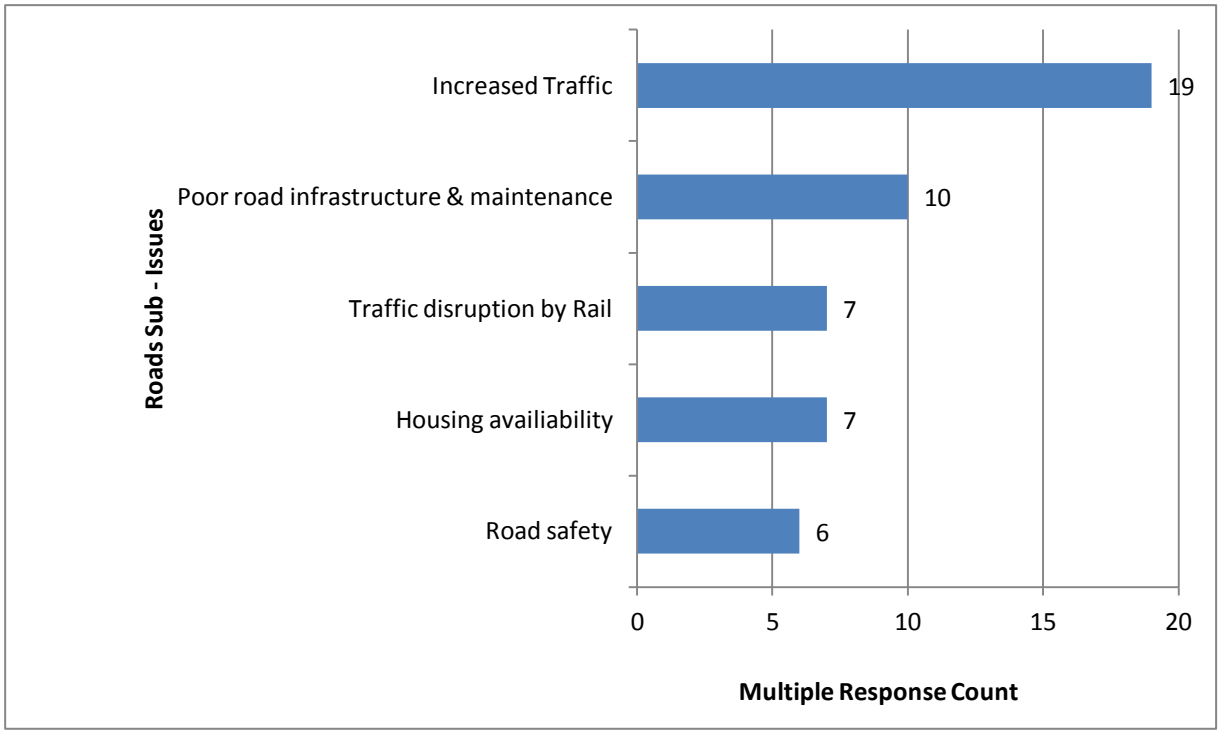


Figure 5.18 – Neighbouring Landholder (N=22) Identified Issues/Impacts (Roads and Infrastructure)

Note: Multiple responses permitted.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Roads, Traffic and Housing Infrastructure:

'The increased traffic on shift changes concerns me'

'Traffic is incredible. Not a quiet town now'

'Problems with traffic on Stoney Creek Road at shift changeover'

'We've been caught by the trains'

'I am concerned with the safety of the traffic and speeding'

'The 12hour shifts and tiredness of drivers is an issue'

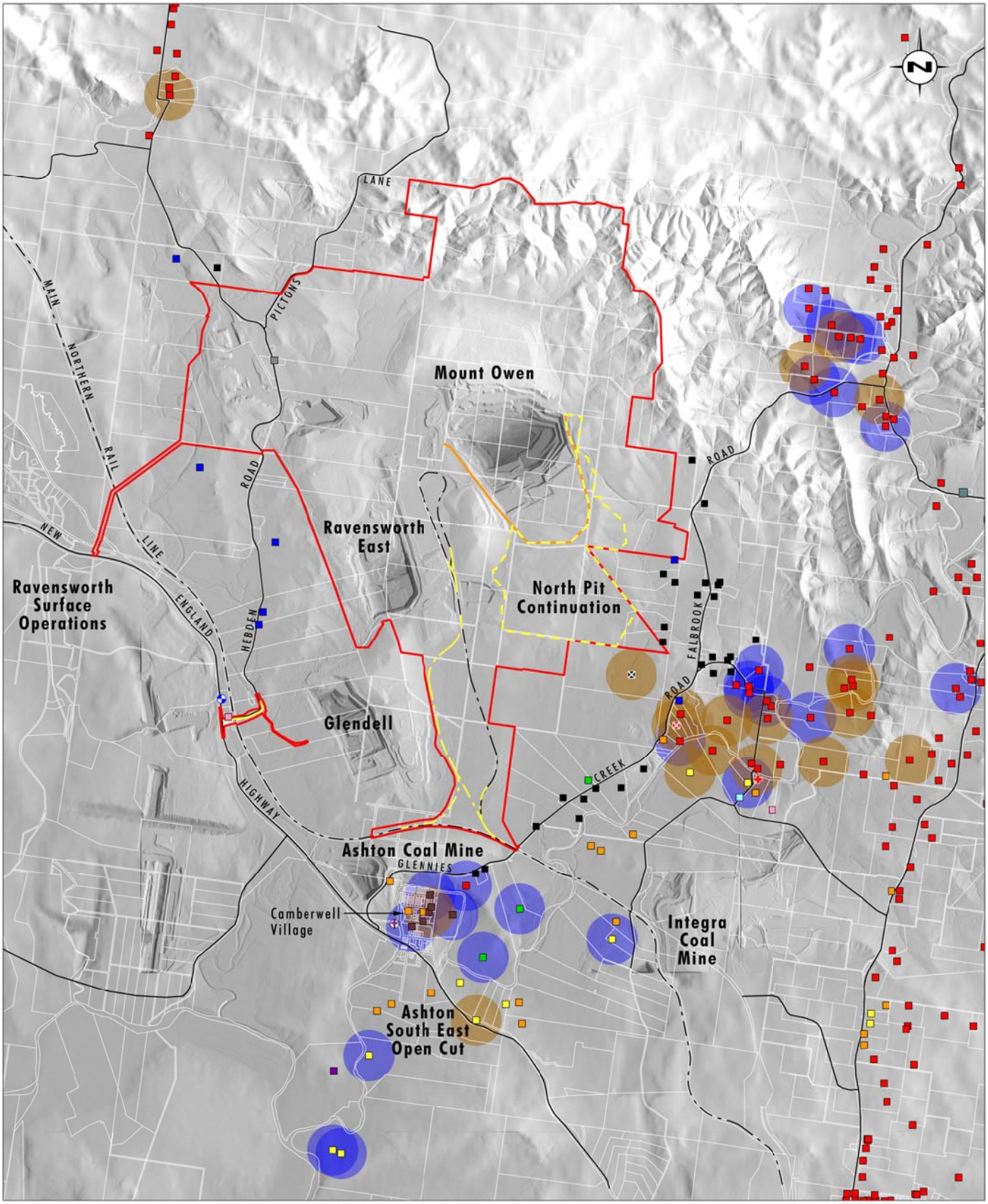
'Upgrade to railway crossing positive. Great idea - it is an awful road.'

'It has all happened too quickly for infrastructure to keep up'

'Trucks are damaging roads'

'Housing - no rentals or housing for people to live'

'Accommodation is needed for miners to stay'



Data Source: Mount Owen (2014), Department of Lands (2009)

0 1 2 4km
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FIGURE 5.19

Road and Infrastructure Spatial Impact Analysis

File Name (A4): R13/3109_869.dgn
20141009 10.24

5.2.1.7 Sense of Community

Eighteen (18) landholders raised matters (both positive and negative) that related to 'sense of community' (**Figure 5.20**).

A number of landholders highlighted what they regarded as a 'loss of community spirit' and/or other changes they felt had eroded their connections to/within the local area. Issues that were seen to have contributed to this included the transience or mobility of mining workers and acquisitions of property by mining companies, which was seen to create instability and often result in an influx of new tenants, who were regarded as having less connection or long term interest in the area.

Some expressed a strong attachment to the local area with the commitment to stay for as long as possible. Whilst this is a positive indicator of community wellbeing, the flip side was a fear of being 'pushed to the side' in an area that they loved and/or feeling under pressure to relocate. Threats to heritage and history, both Aboriginal and European, were also raised.

Landholders spoke of stresses on individuals and families, brought about by cumulative issues and impacts associated with the presence of mining and mining expansion. There were cases noted where some families had broken up and left the area, attributed in part to the stresses of living near active mines and as a result of mining impacts.

In relation to community sustainability, comments offered by landholders were more mixed. While some regarded the issues of transience, instability and stress as a major challenge to sustaining a healthy and viable community; others regarded the economic stimulation, influx of mine workers and a new diversity of people in the area, as a positive for building and maintaining community resilience over time.

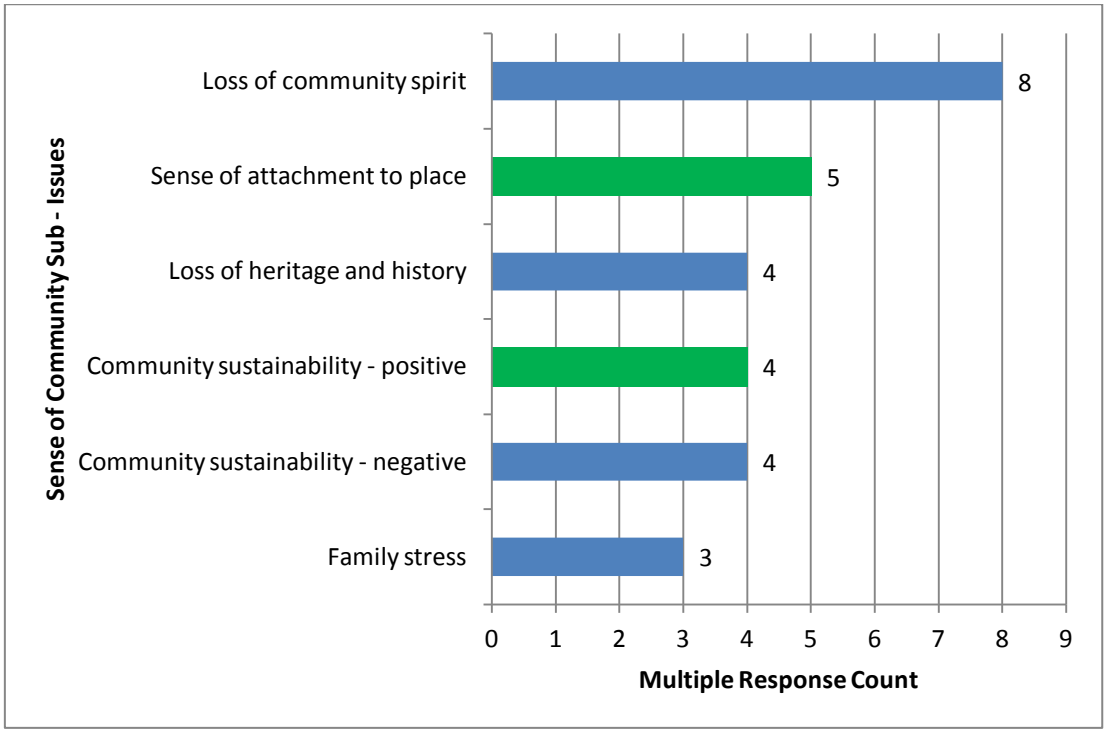


Figure 5.20 – Neighbouring Landholder (N=18) Identified Issues/Impacts (Sense of Community)

Note: Multiple responses permitted. Green shading indicates positive comment.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Sense of Community:

'There is a lack of community spirit, rentals impact on this'

'We plan to build and retire on the block'

'Mining rentals have changed community but it is better than the houses being vacant'

'Camberwell used to be a great community for bringing up children - they could ride their bikes all up the streets, but now we don't know who lives here'

'Our kids won't see country life – it is a mining town – don't want to bring kids up in this area'

'There is a loss of community. The community is gone, now everyone is strangers'

'Concerned that town character has changed'

'Acquisition – if people want to go, need to let them, rather than creating angst – can't say 'you aren't in the acquisition zones'. Not a good life if you can't open your windows or sleep'

'Mining has destroyed communities e.g.- Camberwell'

'We have lost so much of our history here'

'No community spirit- needs a community function'

'We've seen marriages breakdown as one can't handle the impacts and wants out and the other wants to stay'

'We're concerned about impacts to Aboriginal heritage'

'Singleton people are scruffy in their work gear around town'

'We welcome mining people'

'We are very accepting of the mining industry and don't believe there are many drawbacks'

'We get along with mining companies'

'Have an annual Christmas get together at Mt Olive Hall'

'Impacts from families leaving the area'

'Everyone whinges but it's all 'wooha' - if it was not mining it would be something else'.

5.2.1.8 Community Engagement and Investment

Eighteen (18) landholders provided extended comments regarding Mount Owen's communication and engagement with local community members (**Figure 5.21**). The most common comments regarded the social investment of Mount Owen in the community, and other mining companies in the local area; with a number of landholders identifying a range of opportunities for future support. However, this was tempered by comments suggesting that this investment was insufficient in itself to 'off set' mining related issues and impacts.

Landholders welcomed the SIOA engagement process, with a number giving positive feedback regarding Mount Owen's endeavours to better understand community concerns. Some landholders had not had any previous contact with Mount Owen operations, prior to the Project consultation. Most reported a desire for more engagement and communication from all companies in the area, highlighting the importance of 'talking basically', 'informing people' and 'keeping in touch'.

A number of landholders (12) called specifically for more detailed information and comprehensive engagement, with many others offering a range of ideas for future events and activities (such as family open days, community meetings in local halls etc.). Six (6) landholders called for improved complaint management, such as providing more timely investigation and response and more detailed feedback to complaints.

The difficulties in communicating complex technical information was noted by many, with a number of landholders calling for increased 'plain English' and more 'face to face' contact. An undercurrent of mistrust was suggested in some conversations, with several stakeholders expressing direct distrust or reporting previous frustrations with what they regarded as broken promises, most commonly regarding expansion, encroachment or longevity of operations.

Respondents pointed to challenges in obtaining regular reliable information, as fuelling fear, misinformation and rumour within the community, especially regarding expansions and acquisitions. Some noted the role of media in both exacerbating tension but also providing an opportunity to increase understanding with informative and balanced media coverage; 'there needs to be a reporter between both sides', one landholder noted.

More positively, there were a number of comments about specific local instances from Mount Owen regarding constructive and responsive engagement and helpful personnel, as well as positive feedback regarding regional initiatives, such as the Upper Hunter Mining Dialogue, which was credited with contributing to building trust and more meaningful relationships between industry and the regional community.

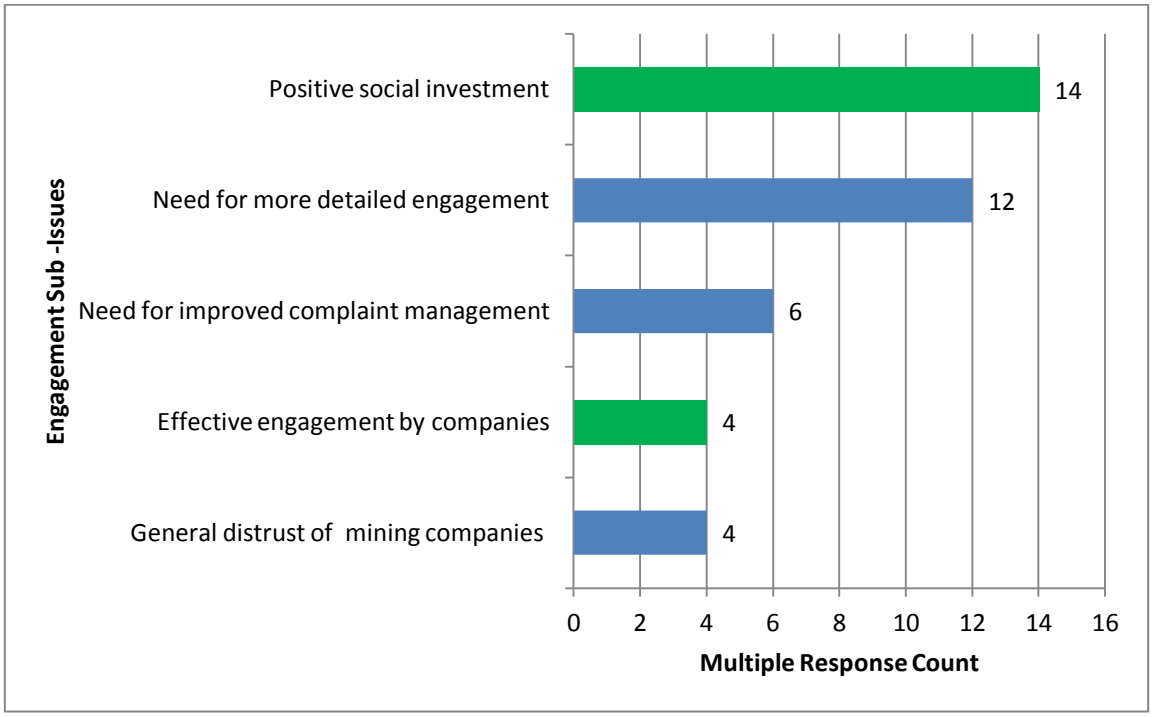


Figure 5.21 – Neighbouring Landholder (N=18) Identified Issues/Impacts (Community Engagement and Investment)

Note: Multiple responses permitted. Green shading indicates positive comment.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Community Engagement and Investment:

'Needs to be better follow up after a complaint'

'Improving but have not had much engagement'

'We've lived here all our life and never been contacted by a mining company until now'

'Community investment is good'

'Great community investment. The little schools need it'

'Sponsorship is good, but it doesn't wipe the slate clean'

'The way Mount Owen comes around and talks to people is great - so soon when it's a fair way off'

'We need to know what is happening. There is a fear of what is coming'

'Would like to see more information throughout the process e.g. Rehabilitation and present photos through the stages'

'It's pathetic that they set up these massive mines and don't bother to talk to the community. We feel squashed to the side'

'Upper Hunter Mining Dialogue has been positive for relationships'

'Need to improve engagement in plain English'

'Complaints register - is it updated much? It would be good to know what else is being complained about. Will then show that complaints are being acted on. Show mine listens'

'Find out peoples issue - tell how things are measured and what you do'

'Never been contacted before. Not really sure why we've never met anyone'

'Open day for kids to take part in - focus on family and children activities'

'Utilisation of hall - needs to be used. Information session should be held'

'Hold an annual meeting to inform the surrounding community'

'Community investment is a positive and needs to continue'

'Very good relationship - no problems at all'

'Why should we believe what you tell us?'

'Needs to be reporter [i.e. journalist] between both sides – needs to be understanding'

'Complaints need to be accepted and managed better'

'Would like to see information on wildlife stories in newsletters, e.g. Green and Golden Bellfrogs'

'This is the first contact with any mine. We have never heard from anyone'.

5.2.1.9 Water

Fourteen (14) landholders raised issues and impacts around water and water quality with most discussion focusing on the cumulative impact of coal mining on ground and surface water in the area **Figure 5.22**).

Many commented on observed changes to local waterways, such as Glennies Creek, which they regarded as decreasing in amenity, quality and flow. Others were concerned about changes they had noticed regarding water quality and supply of aquifers with some noting

that their water wells had dried up – something they regarded as potentially linked to coal mining in the local area.

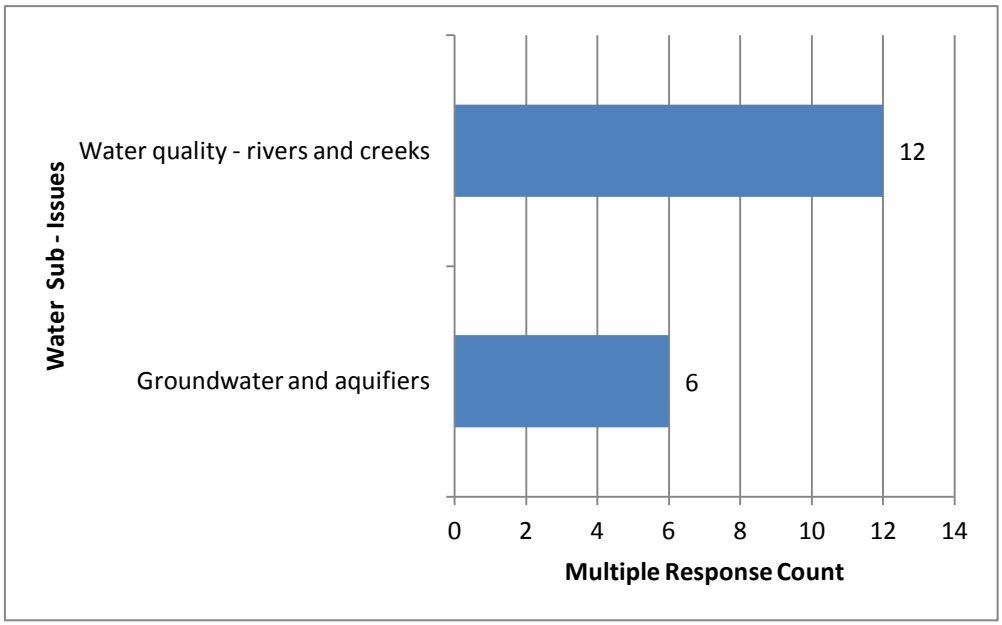


Figure 5.22– Neighbouring Landholder (N=14) Identified Issues/Impacts (Water)

Note: Multiple responses permitted.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Water:

'We have noticed a big change in river water level and quality'

'I am concerned about the aquifers, you can't put back what you pull out'

'The creek here used to be lovely, it's not anymore'

'Good ground water - gully usually full of water'

'Glennies Creek - Water drinking and irrigation'

'Water quality has changed – not as many fish, no green weed either. No impact on crops'

'How much water will you use?'

5.2.1.10 Visual Amenity

Eleven (11) landholders identified issues with cumulative visual impacts associated with local mining as shown in **Figure 5.23**. Most discussion was framed around general visual amenity, with a number of landholders noting changes to the landscape and character of the area. Cumulative impacts of mining were identified as a key concern, with landholders referring to 'the big hole, locally and all over the Hunter'.

Other visual impacts focused on light emanating from operations, including from Mount Owen. Night light was also viewed as a cumulative impact, and as part of a general glow in the locality.

Visual impacts exhibited patterns of geographic distribution, with almost all impacts emergent from the Middle Falbrook area, with the balance from Camberwell. Comparing the pattern of responses against geographic data (refer to **Figure 5.24**) shows that the majority of these areas do not have line-of-sight views to existing Mount Operations; further suggesting that the focus of concern is on general and cumulative visual amenity issues.

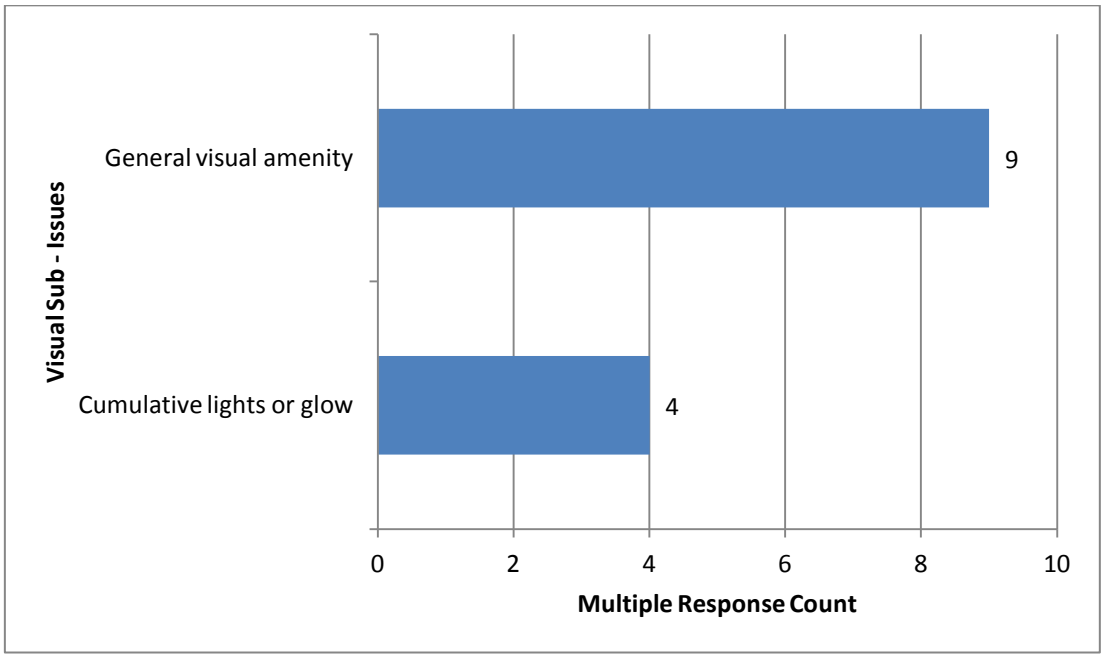


Figure 5.23 – Neighbouring Landholder (N=11) Identified Issues/Impacts (Visual Amenity)

Note: Multiple responses permitted.

The following quotes highlight some of the sub-issues discussed above.

Stakeholder Quotes – Visual Amenity:

'Can see the mines from the top of our hill. If it was visible from the house it would be annoying'

'We see a glow but not direct light'

'The mines are an eyesore, they are visual pollution'

'See a glow but doesn't really bother us'

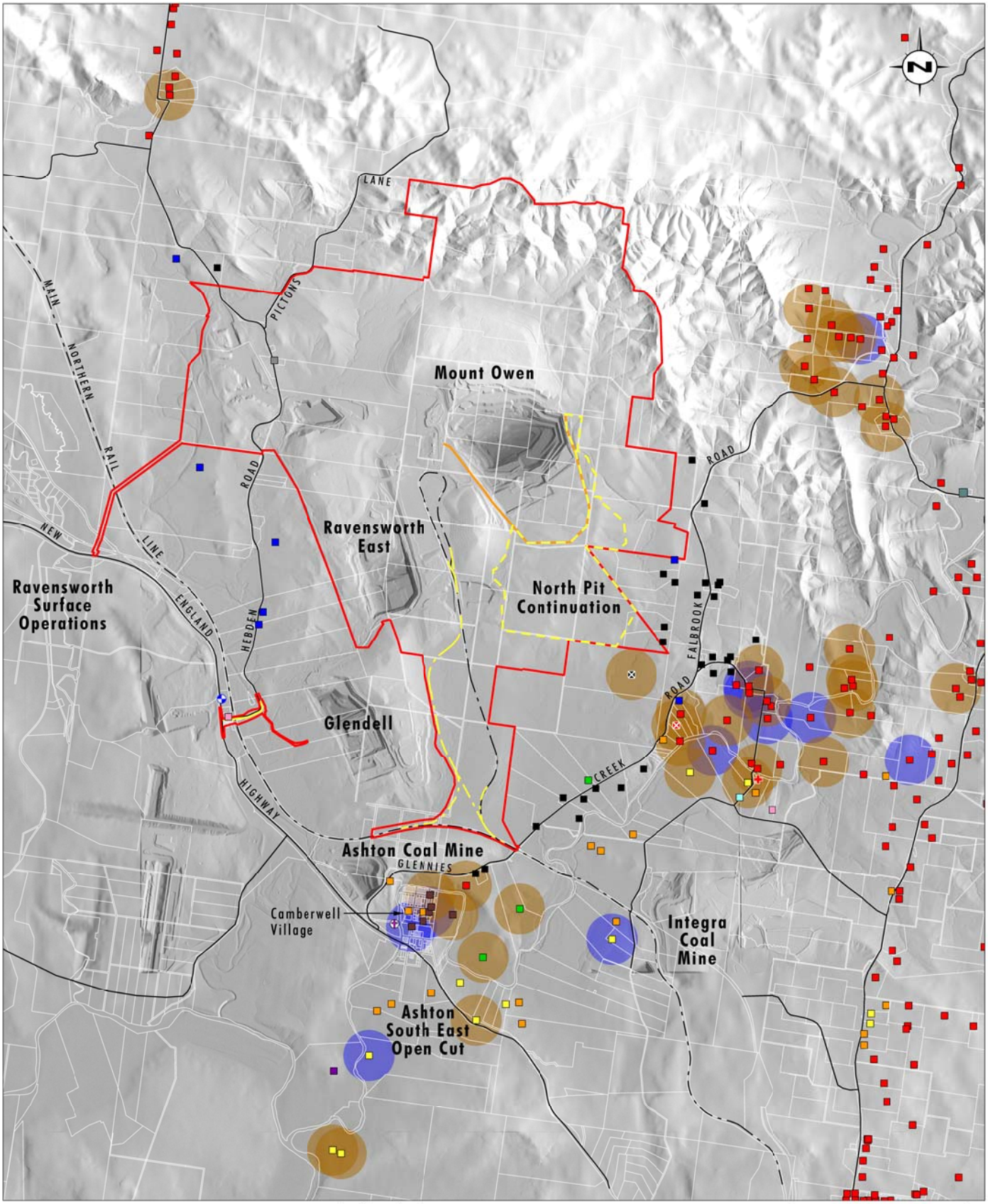
'It's ugly, not a peaceful country'

'Hard to see how it is now, it was a beautiful valley'

'Lots of big holes'.

5.3 Mount Owen Tenants

Glencore currently owns 34 properties in the Greater Ravensworth area surrounding the Mount Owen Complex with 21 of these properties currently tenanted. Tenants were invited to participate in a telephone interview (February 2013) regarding their current experience of the Mount Owen operations and thoughts regarding the Project, with 14 choosing to participate in the consultation process.



Data Source: Mount Owen (2014), Department of Lands (2009)

0 1 2 4km
Scale 1:90 000

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FIGURE 5.24

Visual Spatial Impact Analysis

File Name (A4): R13/3109_870.dgn
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Tenant comments regarding their current experiences generally reflected issues and concerns of landholders, but with a higher proportion of discussion relating to amenity issues, such as noise and dust, compared to other issue themes e.g. land and water management or community investment.

Some tenants expressed a strong attachment to place, whilst others indicated they were looking to leave the area. Dissatisfaction with maintenance of properties was also raised by some tenants.

5.4 Aboriginal Stakeholders

Extensive consultation has been undertaken with 60 Registered Aboriginal Parties (RAPs), including three knowledge holder groups, the Wonnarua Traditional Custodians (WTC), Wonnarua Nation Aboriginal Corporation (WNAC) and the Plains Clans of the Wonnarua People (PCWP), to complete the Aboriginal Cultural Heritage Assessment (ACHA) and Aboriginal Archaeology Assessment process for the Project.

As part of this the ACHA invited those Aboriginal parties who expressed an interest in the Project to participate in both the Archaeological Assessment of the Proposed Disturbance Area, but also attend workshops to share their cultural heritage values on the impact area and local region. This consultation was undertaken by Mount Owen and Australian Cultural Heritage Management (ACHM).

The aim of the ACHA was to document the range of Aboriginal cultural values of the Project Area as identified through consultation with the RAPs and through the integration of historic and archaeological information relating to the Project Area, as informed by the Aboriginal Archaeological Values Assessment. It also aimed to demonstrate effective consultation with Aboriginal communities in determining and assessing impacts, and developing and selecting mitigation options and measures.

The approach employed allowed 156 individual Aboriginal community members to contribute to the ACHA process and its outcomes, many of which are knowledge holders and elders.

According to the assessment, the process undertaken by Mount Owen and the RAPs, which included the Wanaruah Local Aboriginal Land Council, was seen as a positive and constructive assessment of the Project on Wonnarua land.

Methodology and outcomes of the consultation is documented in detail within the ACHA prepared for the EIS, with key relevant findings incorporated into the SIOA's discussion of impacts to places of community value and heritage (**Section 7.6.1**) and sense of community (**Section 7.6.2**) below.

5.5 Local Community Groups and NGOs

Consultation was also undertaken with a number of local community groups within the area, with which Mount Owen operational personnel have existing relationships. Issues discussed were specific to the interests of the individual organisations as well as general discussion of the Project. These groups included:

- Mount Pleasant School and P&C
- Glennies Creek Bushfire Brigade;
- the Wild Dog Association

- Singleton Chamber of Commerce; and
- the Hunter Environment Lobby.

5.6 Government Stakeholders

During preparation of the EIS, the wider Mount Owen Project team has also met regularly with all levels of government (local, state and commonwealth) with the key aim of keeping agencies informed of the status of the Project and outcomes of the relevant EIS studies. This has included briefings with relevant agencies and local, state and federal political representatives as detailed below:

- Singleton Council and Councillors;
- Singleton Coal Advisory Committee;
- NSW Department of Planning and Environment (DP&E);
- NSW Department of Trade and Investment (Resources and Energy);
- NSW Office of Environment and Heritage (OEH) ;
- NSW Environmental Pollution Authority (EPA)
- NSW Department of Primary Industries (including Office of Water, Fisheries, Agriculture and Land and Natural Resources);
- Forestry Corporation NSW;
- NSW Department of Health;
- NSW Local Land Services;
- NSW State Member for Upper Hunter George Souris MP;
- Federal Department of Environment; and
- Federal Member Joel Fitzgibbon MP.

A summary of the consultation undertaken with these stakeholders is documented in **Section 4 of the EIS**.

5.7 Regional Stakeholders

As has been highlighted in **Section 4.5**, consultation was also undertaken with 58 regional stakeholders drawn from across key community sectors as part of a *Regional Issues Assessment* prepared for Glencore by Coakes Consulting in 2012.

Due to the timing of the consultation, which occurred in 2012, regional stakeholders were not informed of the details of the Mount Owen Continued Operations Project, nor were they asked to comment about impacts relating specifically to the Project.

Stakeholders were drawn from across key community sectors (at the regional level) including local government, education, health, housing and emergency services and were asked to comment on:

- the general challenges and opportunities facing Upper Hunter communities;
- any iissues and opportunities in relation to mining within the region;
- the capacity of regional services to cater to further growth; and
- any specific thoughts regarding the existing Glencore operations in the region.

The force field analysis presented in **Figure 5.25** identifies the factors, as identified through consultation with regional stakeholders, that may facilitate positive development in the community in relation to the presence of mining, and factors that may inhibit community development, from the perspectives of those consulted (refer to **Section 4.5**). However, given that this data was collected in 2012, it should be noted that a number of key economic conditions within the Hunter Valley, particularly relating to the expected continued rapid growth of the mining industry and mining related employment, have changed.

As the analysis shows, impacts have both positive and negative aspects. The presence of mining in Muswellbrook LGA and the Upper Hunter Region are considered to have positive influences such as increasing employment, improving household incomes and providing community investment. However mining is considered to also have negative aspects such as the inability of local business to compete with high mining wages for staff, community investment not always being directed to the areas of greatest community need, and loss of identity as a rural community.

Responses refer to cumulative mining and not to a specific company or operation.

Force-Field Analysis of perceived mine related impacts on the Singleton LGA

Perceived positive impacts (that facilitate)	Impact Theme	Perceived Negative Impacts (that hinder)
The presence of the industry brings direct local and regional employment opportunities Indirect employment generated from the presence of the industry Opportunities for small, medium and large business enterprises to provide procurement services to the sector Mining brings young people and young families to the region	**Employment and Local Procurement**	Non-mining businesses struggle to compete with high wages of the mining sector Skill shortages experienced in non-mining sectors. Loss of local skill sets e.g. tradespeople, to mining roles Size of contracts reduces ability of local businesses to service other industry sectors Workplace arrangements (e.g. shift work, DIDO/ FIFO can impact quality of family life
The presence of the mining sector has contributed significantly to the local and regional economy and the ongoing sustainability of regional towns	**Economic Sustainability**	Local towns perceived to be dependent upon the sector Development of a two-speed economy Need for greater economic diversity to ensure longer term economic sustainability
Opportunity for the region to showcase land management and rehabilitation best practice	**Environment**	Impacts on the natural environment require rigorous management
Mining companies contribute to health and wellbeing programs within the region through their social investment activities	**Health**	The impacts of mining on health are unknown and not adequately assessed
Greater population mobility, with large number of DIDO workers in the mining sector Influx of additional population associated with employment opportunities	**Population**	Loss of sense of community due to the transient nature of the community
Presence of mining workforce creates demand for community services	**Service Provision**	Pressure on particular sectors e.g. health due to population influx
Mining drives strong investment and demand for rental and accommodation and housing	**Housing and Accommodation**	Mining companies do not provide housing and accommodation for employees putting pressure on local markets
Improved road infrastructure given mining company requirements	**Roads and Transport**	Mining companies could use their influence to highlight regional infrastructure needs Road networks becoming increasingly congested and unsafe
Strong demand for trade qualifications and apprenticeships Employment opportunities available for young people within the mining sector Company support of local educational institutions – primary, secondary, tertiary/TAFE	**Education and Training**	Lack of diversity in education and training options locally
The region has a long history of industry co-existence and change	**Heritage and Culture**	Loss of agricultural and rural identity – becoming a 'mining town' Loss of cultural heritage
Mine owned land leased back to local residents to maintain presence of other industry sectors e.g. agriculture, viticulture	**Sense of Community**	Reduction in rural populations due to land purchase and acquisition of property by the mining sector Changing nature of the community given different socio-demographics of mine workforce Social amenity issues as a result of mining impacts e.g. dust, noise
Presence of professional expertise and human resources in the region, given the presence of large corporations	**Leadership**	Opportunities for this knowledge to be better utilised for the benefit of the locality and greater leadership demonstrated
Engagement occurs between industry, key stakeholders and communities	**Engagement**	It is unclear how engagement outcomes are used by companies to inform their practice
Companies invest large amounts of money to the local community Company employees participate in local community groups and activities	**Social Investment**	Social investment and community contributions are sometimes not targeted to address local community needs or to communities experiencing the greatest level of impact from mining operations
Company contributions directed to local community groups through donations and in-kind support	**Community Participation**	Workplace rosters make it difficult for mine employees to commit to team sport and/or participate in community groups and voluntary organisations

Source: Coakes Consulting (2012)

Figure 5.25 - Regional issues relating to mining - Force Field Analysis

Source: Coakes Consulting 2012

6.0 Risking of Social Impacts

Acknowledging the constantly changing nature of communities, the aim of the current SIOA is to assess any changes to the current baseline social environment (of which current Mount Owen operations are a part) as a result of the Project proceeding. To do so, the SIOA integrates assessment of all the data presented in **Section 3.0** to **Section 5.0**, including project details, data relating to the existing community, and issues and concerns of local landholders and other key stakeholders to develop a layered picture of the potential social risks/impacts due to the Project. Social risks extend beyond merely 'technical' risks (i.e. hazards), to include potential for 'outrage', that is people's perceptions (fears/aspirations) of the risk/hazard.

In order to prioritise the identified potential social impacts, a risk-based framework has been adopted. This decision was taken to reflect best practice methods used in Australia and to afford a more seamless integration of the outputs of the SIOA in the EIS.

This approach is consistent with leading risk communication expert Peter Sandman's (1993) risk equation (Risk = Hazard + Outrage). Sandman's approach acknowledges that often there is a low correlation between a risk's technical 'hazard' (how much harm it's likely to do) and its 'outrage' (how upset it's likely to make people). Consequently, within this framework, outrage or stakeholder perception is considered an independent and no less valid component of risk. The integration of the outcomes of the hazard ranking with stakeholder perceived ranking of risks thus affords an integration of expert and local knowledge in impact assessment, and enables risk to be addressed holistically, leading to the development of more effective impact minimisation, mitigation, amelioration and enhancement strategies (see **Section 8.0**).

This integrated risk based framework comprises two staged methods: impact plotting and prioritisation (as outlined in **Section 6.1** below), and risk assessment (undertaken in the subsequent **Section 7.0**).

6.1 Impact Plotting

Firstly, the scoping of key issues and opportunities associated with the Project was refined through the development of a preliminary impact plot©[1]. The impact plot is used as a way of prioritising impacts based on a broad-brush ranking of both *technical* and *stakeholder perceived* impact (i.e. hazard, and matters of importance to the community – perceived risk) using a scale of 'low, 'medium', or 'high'. This process ensures that the range of impacts and opportunities identified as being of high risk (by either a stakeholder or from a technical perspective) are afforded sufficient assessment (see **Section 7.0**). Perceived concerns are just as important to manage as technical risks as they have the potential to result in elevated levels of community concerns, complaints and grievances if not addressed appropriately.

Prioritising impacts in this integrated manner enables appropriate assessment and mitigation strategies to be developed that not only address impacts that may require technical management but also those impacts that are perceived by stakeholders as of high risk/importance/concern (refer to **Section 7.0**).

[1] Social Impact plots are a methodology developed by Coakes Consulting (2009) as a means of integrating social and technical perspectives of risk/impact in project development.

Figure 6.1 illustrates the preliminary impact plot for the Project, as described above, providing an assessment of the potential social risks from a stakeholder and technical (project team) perspective.

It should be noted that these potential impacts emerged from an early screening of potential Project risks and perceptions to inform prioritisation of the assessment themes, and as such, do not necessarily reflect the final (mitigated) assessment rankings presented in **Section 7.8** and **Section 8.0**.

Stakeholder Risk Rating	Low	Medium	High
High	• Depreciation of property values • Need for ongoing community engagement (i.e. Lack of information and relationship)	• General cumulative mining impacts • Health impacts – dust/air emissions • Local employment and contracting opportunities • Post mining land use/form	• Increased number of residential properties falling in affectation or management zones (noise) • Increased number of residential properties falling in affectation zone (air quality) • Cumulative noise impacts on neighbours • Cumulative air quality and dust impacts on neighbours
Medium	• Blasting impacts on neighbours • Land management e.g. fire management, feral animal control • Dependency on mining sector • Reduced sense of community • Visual impacts • Conflict with existing land uses (agriculture, residential) • Increased traffic and traffic accidents (safety) • Lighting impacts • Greenhouse Gases	• Potential population change (loss) and impact on local school (Mt Pleasant Public School) • Impacts on biodiversity • Impacts on water	• Hebden Road upgrades/ realignment (+ and - stakeholder perceptions) • Impacts on Aboriginal cultural heritage • Interaction with other proximal mining operators (e.g. subsidence, impact management)
Low	• Lack of affordable housing (particularly rental accommodation) • Impacts on short term/tourist accommodation in Singleton • Impact on Glennies Creek		
	Low	**Medium**	**High**
		Unmitigated Technical Risk	

Figure 6.1 – Social Impact Plot for the Project

These impacts can be categorised under the following key themes:

- Population change;
- Impacts on capacity for community infrastructure and services due to anticipated workforce change;
- Land Management and Future Land Use;
- Social amenity;
- Cumulative impacts;
- Health and wellbeing;
- Sense of community;
- Environment; and
- Community sustainability.

Each of these themes is assessed in detail as part of the risk-based framework in **Section 7.0** as necessary, noting that detailed assessments of impacts associated with the economy and environment have been undertaken separately as part of the broader EIS.

It should also be noted that social impacts are often not mutually exclusive, with higher order impacts such as population change resulting in second order impacts such as impacts on sense of community and service provision.

6.2 Assessment of Social Impacts

The assessment of social impacts was undertaken using a consequence and likelihood framework. This involved assessing the 'worst case' (but reasonable) consequence of a given social impact category (ranked from *negligible* through to *catastrophic)*, against the likelihood that it will occur (ranked from *rare* to *almost certain*). These rankings then determine the overall risk assessment of the social impact as *low*, *medium* or *high*.

To facilitate the risking of social impacts, specific definitions have been developed for both the consequence and likelihood of the identified social impacts. The assessment of social risks also incorporates assessment that estimates potential impacts that may be associated with the Project, particularly second order impacts on service capacity and provision in the region such as housing and accommodation, as detailed in **Section 7.2.1**.

In relation to workforce change, it should be noted that scenarios have been assessed according to the peak workforce change of 330 construction workers over one year, although the increase in construction workforce for the Project will be phased over 18 months, with only 90 workers anticipated in the second year.

It is noted that some consequences due to the Project may be seen as positive impacts to the local, regional or state wide community, and these opportunities have also been assessed.

6.3 Defining the Consequence and Likelihood of Social Impacts

Consequence definitions were developed for each social impact (e.g. population change, sense of community) across a range of 'degrees of consequence' (e.g. *catastrophic, massive, major, etc.*). Furthermore, a series of likelihood definitions were established (e.g. *almost certain, likely, possible*). The development of both of these definition-sets by Coakes Consulting, has been guided by social assessment practice, best practice research findings and relevant government agency and other guidelines, including the IAIA guiding principles of social impact assessment (Vanclay, 2003) and the NSW Social Policy Directorate technical guide referred as a study resource in the Project DGRs (NSW Social Policy Directorate, 1999).

Using this framework, the risk assessment process involved four main steps:

- **Determining the consequence.** The risking approach adopted for this SIOA requires the determination of the worst-case (but reasonable), consequence of a Project factor (e.g. population change or social amenity). For some impacts it may be a negative consequence, while for others it may be a positive consequence (positive risk rankings are delineated in italics). These consequences are assessed against the impact-specific consequence ranking table (see **Table 6.1**) developed by Coakes Consulting. It is important to note that economic and environmental impacts are not included in the definitions of social consequences as these are assessed as part of the technical assessments of the EIS. Consequences are categorised as *catastrophic*, *massive*, *major*, *moderate*, *minor* or *negligible* consistent with a usual risk ranking approach.

- **Determining the likelihood.** To understand the risks presented by a Project factor, the magnitude of a consequence must be cross-referenced with the likelihood of it occurring. **Table 6.2** presents the **likelihood definitions** that have been used to assess the likelihood of social impact consequences associated with the proposed Project as *almost certain*, *likely, possible, unlikely*, or *rare* (Coakes Consulting, 2012). Likelihood definitions were determined for each of the construction workforce change scenarios assessed as part of the proposed Project.

- **Assessing the technical risk.** To assess the overall risk, the consequence determined in step one is cross-referenced with the likelihood determined in step two to determine an overall risk assessment rating (i.e. *low*, *medium*, *high*) (see **Table 6.3** Social Risk Ranking Matrix). For some impacts, this risking assessment involved referencing the respective technical reports of the EIS (e.g. traffic, economics); however most impacts have been assessed through the social risking process. It is important to note here, that the technical risk ratings represent '*residual risk'* that is, the risk remaining *after* management measures are applied. (NB: these assumed management measures are those that are proposed in sections of the wider EIS and also further documented in **Section 8.0** of the SIOA).

- **Ranking the stakeholder perceived risk.** An important component of the SIOA has been the integration of technical results with the perceived risk ranking of a Project factor or impact by various stakeholders. Consequently, stakeholder ratings of risk were determined by assessing impacts identified through the scoping phase of the SIOA (as documented in **Section 5.0**). The perceived ranking (i.e. low, medium, high) is determined by the frequency that an issue was raised by a particular stakeholder group (e.g. wider community, landholders, specific community group) throughout the consultation process. The justification for each ranking is highlighted in the discussion within each respective impact section. It should be noted that community perception risk rankings are not 'residual risk' rankings as they *do not* reflect the management measures a proponent will put in place to address the impact of the Project and may also be influenced by stakeholder perceptions of a cumulative or regional impact.

Assessment of each social impact category is presented in **Section 7.0**. At the conclusion of each impact category, a table is provided which summarises the potential geographic scope, impacted stakeholders, mitigated technical risk (i.e. the risk remaining *after* management measures are applied); and the perceived stakeholder risk.

Table 6.1 – Social Consequence Definitions (Source: Coakes and Askew, 2012)

Social Impact Factors	Social Consequence Definitions					
	1	2	3	4	5	6
	Catastrophic	Massive	Major	Moderate	Minor	Negligible
Population Change	Greater than 15% permanent population change in a *region*	Greater than 10% permanent population change in a *region*	Greater than 5% permanent population change in a *local area*	Temporary population change in a *local area* of less than 20 % **or** Permanent population change in a *local area* of less than 5%	Temporary but insignificant population change in a *local area*	Negligible population change in a *local area*
Community Infrastructure and Services	Permanent and significant reduction to the capacity of *regional* community services and infrastructure, and existing regional housing and accommodation stock	Temporary but significant reduction to the capacity of *regional* community services and infrastructure, and existing regional housing and accommodation stock	Permanent and significant reduction to the capacity of *local* community services and infrastructure, and existing local housing and accommodation stock	Permanent but insignificant/temporary but significant reduction to capacity of *local* community services and infrastructure, and existing local housing/accommodation stock	Temporary but insignificant reduction to the capacity of *local* community services and infrastructure, and existing local housing and accommodation stock	No measureable impacts on capacity of *local* community services and infrastructure, and existing housing and accommodation stock
Land Management	Permanent loss, or otherwise severe impact to entire landscape within a *region*	Permanent loss, or otherwise severe impact to 20% or more of entire landscape within a *region*	Permanent loss, or otherwise severe impact to the *local* landscape, **or** Significant offsite management impacts after mine closure	Permanent loss, or otherwise severe impact to 20% or more of *local* landscape, **or** ongoing significant onsite management impacts after mine closure	Temporary loss, or ongoing management impacts to 20% or more of *local* landscape	No measurable impacts on *local* landscapes after mine closure

Table 6.2 – Social Consequence Definitions (Source: Coakes and Askew, 2012) (cont.)

Social Impact Factors	Social Consequence Definitions					
	1	**2**	**3**	**4**	**5**	**6**
	Catastrophic	**Massive**	**Major**	**Moderate**	**Minor**	**Negligible**
Social Amenity	Permanent and significant reduction in social amenity in a *region* as a result of dust/air quality, noise, visual impacts, traffic congestion	Temporary but significant reduction in social amenity in a *region* as a result of dust/air quality, noise, visual impacts, traffic congestion	Permanent and significant reduction in social amenity in a *local area* as a result of dust/air quality, noise, visual impacts, traffic congestion	Permanent but insignificant or temporary but significant reduction in social amenity in a *local area* as a result of dust/air quality, noise, visual impacts, traffic congestion	Temporary but insignificant reduction in social amenity in a *local area* as a result of dust/air quality, noise, visual impacts, traffic congestion	No measurable impacts on social amenity in a *local area* as a result of dust/air quality, noise, visual impacts, traffic congestion
Health and Well-Being	>1 fatality **or** >5 permanent disabilities **or** Non-permanent injuries requiring hospitalisation for 5-10% of population at risk **or** Acute health effect requiring hospitalisation for >5-10% of population at risk **or**Chronic health effect requiring medical treatment for 10-15% of population at-risk **or** >$10m of health cost per hazard **or** Demand exceeds capacity of health services by >40% at any point of time	1 fatality **or** 2-5 permanent disabilities **or** Non-permanent injuries requiring hospitalisation for 2-5% of population at risk **or** Acute health effect requiring hospitalisation for >2-5% of population at risk **or** Chronic health effect requiring medical treatment for 5-10% of population at-risk **or** >$5m - $10m of health cost due to hazard **or** Demand exceeds capacity of health services by >30-40%	No fatality and 1 permanent disability **or** Non-permanent injuries requiring hospitalisation for >1-2% of population at risk **or** Acute health effect requiring hospitalisation for >1-2% of population at risk **or** Evacuation is necessary or chronic health effect requiring medical treatment for 2-5% of population at-risk **or** >$1m - $5m of health cost due to hazard **or** Demand exceeds capacity of health services by >20-30%	No fatality and no permanent disability and non-permanent injuries requiring hospitalisation for 1-2% of population at risk **or** Acute health effect requiring hospitalisation for 1-2% of population at risk and no evacuation **or** Chronic health effect requiring medical treatment for 1-2% of population at-risk **or** >$500k - $1m of health cost due to hazard **or** Demand exceeds capacity of health services by >10-20%	No fatality and no permanent disability and non-permanent injuries requiring hospitalisation for 1-5 persons **or** No acute health effect requiring hospitalisation) and no evacuation **or** Chronic health effect requiring medical treatment for about 0-1% of population at-risk **or** $100k - $500k of health cost due to hazard **or** Demand exceeds capacity of health services by >1-10%	No fatality and no permanent disability and no non-permanent injuries requiring hospitalisation and no acute health effect requiring hospitalisation and no evacuation **or** No chronic health effect requiring medical treatment **or** < $100k of health cost due to hazard **or** Demand exceeds capacity of health services by 0-1%

Table 6.3 – Social Consequence Definitions (Source: Coakes and Askew, 2012) (cont.)

Social Impact Factors	Social Consequence Definitions					
	1	2	3	4	5	6
	Catastrophic	**Massive**	**Major**	**Moderate**	**Minor**	**Negligible**
Sense of Community	Permanent and significant reduction in sense of community due to > 15% permanent population change in a *region* **or** Severe and/or permanent damage to items and/or places of community value **or** Irreversible, severe impact on other land uses – agriculture, viticulture, tourism in a region **or** Community members are in prolonged dispute and legal action	Temporary but significant reduction in sense of community due to > 10% permanent population change in a *region* **or** Serious and/or long-term impact to items and/or places of community value **or** Serious and long-term impact on other land uses– agriculture, viticulture, tourism **or** Community members are in serious and prolonged dispute	Permanent and significant reduction in sense of community due to > 5% permanent population change in a *local area* **or** Moderate and/or medium-term impact to items and/or places of community value **or** Moderate and/or medium-term impact on other land uses– agriculture, viticulture, tourism **or** Community disputes occur	Permanent but insignificant reduction in sense of community due to <5% permanent population change in a *local area* **or** Temporary but significant reduction in sense of community due to temporary but significant population change in a local area **or** Minor and/or short-term impact to items and/or places of value **or** Moderate and/or short-term impact on other land uses – agriculture, viticulture, tourism **or** Possibility for community disputes	Temporary but insignificant reduction in sense of community due to temporary but insignificant population change in a *local area* **or** Very minor and/or short-term impact to items and/or places of community value **or** Minor and/or short-term impact on other land uses – agriculture, viticulture, tourism **or** Community disputes unlikely	Negligible change in sense of community due to negligible population change in a *local area* **or** Negligible/no impact on items and/or places of community value **or** Negligible/no impact on other land uses– agriculture, viticulture, tourism, residential, industry, natural **or** Negligible community disputes
Sustainability and Intergenerational Equity	Long-term and significant decrease in capacity across all community capitals **or** Permanent loss of >1 industry in the *region*	Long-term and significant decrease in 3 or more community capitals **or** Permanent loss of >1 industry in the *local area*	Long-term and significant decrease in 2 or less community capitals **or** Permanent loss of >5 businesses in the *local area*	Short-term but significant decrease in 3 or more community capitals **or** Permanent loss of <5 businesses in the *local area*	Short-term and insignificant decrease in 2 or less community capitals **or** Temporary loss of businesses in the *local area*	No change in capacity across community capitals **or** No loss of industry/businesses in the *local area*

Source: Coakes and Askew (2012) Note: The technical assessments of economic and environmental impacts are undertaken as part of the EIS (please refer to the relevant sections of the EIS for further detail).

Table 6.4 – Social Likelihood Definitions

Likelihood Category	Definition
Almost certain	Common repeating occurrence, ongoing Will occur in most circumstances
Likely	Will probably occur in most circumstances There is at least a 50% chance that it may happen
Possible	Might occur at some time Could occur but not often 5% chance it could happen
Unlikely	Unusual occurrence Unexpected
Rare	May occur only in exceptional circumstances Unheard of in the industry

Source: Coakes and Askew (2012)

Table 6.5 – Risk Ranking Matrix

		Consequence category					
		6	5	4	3	2	1
		Slight/Negligible	Minor	Moderate	Major	Massive	Catastrophic
Likelihood category	1. Almost certain	Low	Medium	High	High	High	High
	2. Likely	Low	Medium	Medium	High	High	High
	3. Possible	Low	Low	Medium	Medium	High	High
	4. Unlikely	Low	Low	Low	Medium	Medium	High
	5. Rare	Low	Low	Low	Low	Medium	Medium

Source: Adapted from Coakes and Askew (2012)

7.0 Assessment of Social Risks/Impacts Related to the Project

7.1 Population Change

Changes to population are a fundamental impact within SIOA, given that the size, diversity and behaviours of a community are underpinned by its population and characteristics. Population change is usually described as a first order social impact which has the potential to create a number of second order social impacts such as impacts on community infrastructure and services, change in sense of community and social cohesion.

Within a Sustainable Livelihoods approach (Hart, 1999) population change has impacts on indicators for almost all community capitals, as it can potentially elicit changes to economic outlooks, stresses on infrastructure, changes to skills bases and changes for civic engagement. In order to consistently and objectively assess potential population change impacts, this assessment utilises population change consequences adapted from Burdge (2004). These consequence definitions and their associated categories are cross-referenced with appropriate likelihood definitions (see **Table 6.2**).

It is generally regarded in the SIOA literature that a Project can influence population change by impacts emerging from three main factors:

- an influx of construction workers;
- a change to the current operational workforce; and
- acquisition of private residences in proximity to the operations.

These types of impacts are considered in **Section 7.1.1** below. As there are no proposed additional operational workers associated with the Project, this factor has not been assessed.

7.1.1 Construction Workforce Impacts

The presence of a construction workforce can have different impacts on a community than a permanent operational workforce. Usually, a construction workforce is temporary and transient in nature; often residing in a location due to its proximity to a particular project, before moving on to the next project. Because of the temporary, transient nature of the construction work, families often do not accompany the workers, preferring to live in one permanent location while the worker travels away to work.

As described in **Section 1.1**, a construction workforce is proposed as part of the Project. The peak construction workforce is projected to be approximately 330 personnel for the first year, with a construction workforce of approximately 90 within the second year, of the 18 month construction period. The assessment of population change resulting from the construction workforce has involved modelling the potential workforce change in terms of numbers and nature and extrapolating associated impacts. Specifically, the analysis estimates the increase in population and assesses the subsequent demand on local and regional community service sectors such as housing and accommodation, health and education and other community services and facilities.

Three different workforce scenarios have been modelled in order to accommodate a range of workforce mixes for the construction workforce as presented in **Table 7.1**. The scenarios assume that different proportions of the workforce are sourced locally versus those that may relocate to the area temporarily during the Project construction phase:

- **Scenario A** is a hypothetical 'worst-case' scenario in which all construction workers temporarily relocate into the area.
- **Scenario B** is an alternate workforce mix, based on an 80:20 (relocated : local) ratio consistent with the standard typically used within SIOA literature, as well as previous SIOA projects undertaken by Coakes Consulting (2013c).
- **Scenario C** is an anticipated workforce mix based on the TRC-Analysis conducted for Mount Owen (see **Appendix A**), which found that 46 per cent of employees and contractors at Mount Owen relocated to the Upper Hunter area for employment.

It is also noted that the national construction industry has been in consistent decline up to May 2014, with decline projected to continue into 2015. This decline has been attributed to a fall in employment levels following subdued demand for new projects, including mining projects (The Australian Industry Group, 2014). As such, it is considered likely that there may be surplus construction workers within the region who would not need to relocate in order to undertake the construction of the Project. However, due to the lack of definitive data, this potential surplus of existing construction workers has been excluded from the analysis. However, the potential for awarding contracts to local businesses and potential for local employment has been retained.

Table 7.1 – Construction Workforce Scenarios

	Construction workforce proportions and numbers by scenario					
	A (%)	**A (#)**	**B (%)**	**B (#)**	**C (%)**	**C (#)**
Existing residential construction workforce	0%	0	20%	66	54%	178
Short-term incoming construction workforce	100%	330	80%	264	46%	152
Total	*100%*	*330*	*100%*	*330*	*100%*	*330*

The TRC-Analysis (see **Appendix A**) indicates that 32 per cent of current Mount Owen operational employees and contractors live within the Singleton LGA; 22 per cent within the Maitland LGA; 10 per cent within the Muswellbrook LGA; and 7 per cent within the Cessnock LGA. Nonetheless it is considered most likely that a temporary construction workforce would tend to reside in the Singleton township in order to be close to the Project area and with access to a range of temporary accommodation and short term rental options. As such, Singleton has been assessed both separately with regard to both temporary accommodation and rental housing, and in combination with the other key localities where existing Mount Owen workers are known to live.

Table 7.2 summarises how the anticipated construction workforce for the Project fits within the Social Consequence parameters for population change as adapted from Burdge (Burdge 2004).

Table 7.2 – Temporary Construction Workforce by LGA

	Scenario A	Scenario B	Scenario C
Singleton Only			
Temporary workforce relocating to Singleton LGA (%)	100%	80%	46%
Temporary workforce relocating to Singleton LGA (#)	330	264	152
Population in Singleton LGA (ABS 2011)	22,694	22,694	22,694
Population increase in Singleton LGA (%)	1.45%	1.16%	0.67%
Social consequence (as per Table 6.1)	*Negligible*	*Negligible*	*Negligible*
Regional LGAs (proportional to TRC-Analysis ratios)			
Temporary workforce relocating to Singleton LGA (#)	149	119	69
Population in Singleton LGA (ABS 2011)	22,694	22,694	22,694
Population increase in Singleton LGA (%)	0.66%	0.52%	0.30%
Temporary workforce relocating to Muswellbrook LGA (#)	102	82	47
Population in Muswellbrook LGA (ABS 2011)	15,791	15,791	15,791
Population increase in Muswellbrook LGA (%)	0.65%	0.52%	0.30%
Temporary workforce relocating to Maitland LGA (#)	46	37	21
Population in Maitland LGA (ABS 2011)	67,478	67,478	67,478
Population increase in Maitland LGA (%)	0.07%	0.06%	0.03%
Temporary workforce relocating to Cessnock LGA (#)	33	26	15
Population in Cessnock LGA (ABS 2011)	50,840	50,840	50,840
Population increase in Cessnock LGA (%)	0.06%	0.05%	0.03%
Social consequence (as per Table 6.1)	*Negligible*	*Negligible*	*Negligible*

The perceived stakeholder risk for this factor has been ranked as *low* as there was little concern expressed by neighbouring landholders regarding proposed construction workforce generating local population change, and regional concerns related to secondary impacts to community infrastructure and services (which are discussed in **Section 7.2**), rather than population change in itself.

As the analysis indicates, whether the Singleton LGA area is considered independently (as the only location for the construction workforce influx) or in combination with other regional LGAs, the impact of the temporary construction workforce on population change is considered negligible and low impact across all scenarios.

Table 7.3 – Summary of Project Impact – Construction Workforce Population Change

Project Aspect	Geographic Scope	Stakeholders Potentially Impacted	Scenario	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact of construction workforce increase on population	Local Area	Workforce Local residents	A	Low	Low
			B	Low	Low
			C	Low	Low
Impact of construction workforce increase on population	Singleton LGA Maitland LGA Cessnock LGA	Workforce Singleton, Maitland and Cessnock residents	A	Low	Low
			B	Low	Low
			C	Low	Low

7.1.2 Impacts from Potential Acquisition

There are three private residences that have been identified as meeting the Project's acquisition criteria based on potential noise and air quality impacts.

Table 7.4 presents the residential properties that have been modelled to fall above acceptable criteria for noise and air quality and therefore be subject to new acquisition rights.

Table 7.4 – Potential residences acquisitions for the Project

Property Number	Year of Operations for Acquisition	Reason for Inclusion in Acquisition Area	Use
21	10	Noise criteria	Rural residential
22	10	Noise criteria	Rural residential
23	10	Noise and air criteria	Rural residential

When a property is affected by acquisition rights, it provides the owner of the property with the legal option to request that Mount Owen purchase their property and binds the mine to enter into negotiations to purchase the property at a fair and reasonable price. It *does not* mean that these properties must be acquired by the Company, or will be automatically acquired, in order for the Project to progress.

Further, if a property does become acquired, it is possible that it may continue to be occupied by residents (either by new tenants or by the original landholder) following its purchase by Mount Owen. As such, acquisition 'rights' do not necessarily translate into an actual property purchase, and in turn, a property purchase does not necessarily translate into population change or decrease.

In the case of the current Project, the three residences which are now subject to new acquisition rights sit within the larger population of 240 households within the Camberwell and Bridgman State suburb localities. Using an average household size multiplier of 2.7 (Bridgeman, Census 2011), this equates to approximately 8 people, or 1.4% of the existing Camberwell and Bridgman population of 577 people. It is also noted that impacts driving all for the potential new acquisitions are not predicted to occur until the 10th year of the Project.

Consequently, the *population change* associated with the potential Project acquisitions are categorised as *low* technical risk but a *medium* stakeholder perceived risk, given the degree of sensitivity to acquisition issues in the community and potential community concern regarding any contribution to existing population decline trends, regardless of how proportionally small.

Other impacts associated with acquisition, such as impacts to community infrastructure or concerns regarding community sustainability and sense of community, are discussed in later sections of the report.

The Air Quality Impact Assessment prepared for the EIS also predicts that a total of 11 mine-owned dwellings (owned by Glencore) would be affected by air quality levels that exceed relevant impact assessment criteria at some point during the mine life. To manage this, air quality predictions will be reviewed by Mount Owen to determine the suitability of mine-owned dwellings for habitation during certain periods of the mine life, which may necessitate Mount Owen to request a tenant to vacate a dwelling. This would be undertaken in accordance with the conditions of the tenancy agreement.

Table 7.5 – Summary of Project Impact – Acquisition Population Change

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact of acquisition of local resident population	Local Area	Landholders subject to acquisition Wider community	Medium	Low

7.2 Impacts on Community Infrastructure and Services

A project's impact on community infrastructure and services is often one of the more tangible social impacts of a project and is considered a secondary order impact largely influenced by population change. Project factors that can impact community services and infrastructure include:

- changing demand due to an increase in temporary or permanent population;
- changing behaviours of users, such as workforce rosters determining patterns of peak service utilisation; and/or
- direct impacts on physical infrastructure during project construction and/or operation.

The following section describes the Project's potential impact on the following social aspects:

- accommodation and housing;
- community facilities and services; and
- road infrastructure.

7.2.1 Accommodation and Housing

While no broader social impacts arising from population growth are anticipated, the temporary influx of workers associated with the construction phase is relevant to temporary accommodation and short term housing availability in the Singleton LGA.

In order to estimate the potential impacts on housing and accommodation, the following assumptions have been made:

- Workforce modelling is based on the *peak* number of construction workers i.e. 330.
- Temporary workers are more likely to prioritise temporary accommodation as a first option, and then short term rental housing.
- Each worker relates to one unit of housing, be it one house, one room or one apartment. It is noted that a proportion of workers may share accommodation, however 'one worker, one room' has been used in order to model a worst case scenario. Units of housing are referred to as 'rooms' to be consistent with wider literature (e.g. ABS, 2013).

- Establishments such as guesthouses, B&B's, and other similar styles of accommodation may be less attractive to temporary workers, and have consequently been excluded from the analysis. Temporary accommodation establishments of less than 15 rooms are not included within the *Tourist Accommodation, Small Area Data* reported on by the ABS, so no additional calculations were required using the available data.

- The average vacancy rate of short term accommodation in the Singleton LGA at the time of Project construction is assumed to be 33 per cent, which is consistent with the NSW average vacancy rate since 2012. While the average vacancy between January and November 2012 in Singleton was below this average (31 per cent), it rose sharply between December 2012 and March 2013 moving up to an average of 51 per cent (ABS, 2013). This movement corresponds with the reported redundancies and layoffs in the mining sector (Tasker 2014) and could be considered indicative of the wider downturn in the coal industry and is suggestive of an ongoing trend. Both the NSW average and Singleton LGA vacancy rates are considered within **Section 7.2.1.1**, however, when comparing the rate of change of the Singleton LGA indicator and changes within the ABS tourist accommodation data release schedule, the NSW average rate is considered a more stable and conservative parameter, and consequently used for the remainder of the analysis.

7.2.1.1 Temporary Accommodation within Singleton

The ABS records temporary and tourist accommodation data at two scales: 'Statistical Local Area' (SLA) and Statistical Area Level 2' (SA2). SLAs are often approximate to LGAs, and SA2s are focused on more urbanised areas. An SA2 level allows for a more fine-grained and representative analysis, as the majority of larger accommodation establishments tend to be within urbanised areas. As such an SA2 level of analysis has been chosen for the current assessment.

According to the ABS (2013), there were a total of 323 short-term and temporary accommodation rooms in the Singleton SA2 as of December 2012. The figure below shows accommodation capacity in Singleton (approximately 165 rooms when calculated using the Singleton LGA vacancy rate or 106 rooms when calculated using the conservative NSW average vacancy rate) for each of the construction workforce scenarios. Comparison between predicted accommodation availability when using the Singleton LGA and NSW average vacancy rates is presented in **Figure 7.1** and **Figure 7.2**.

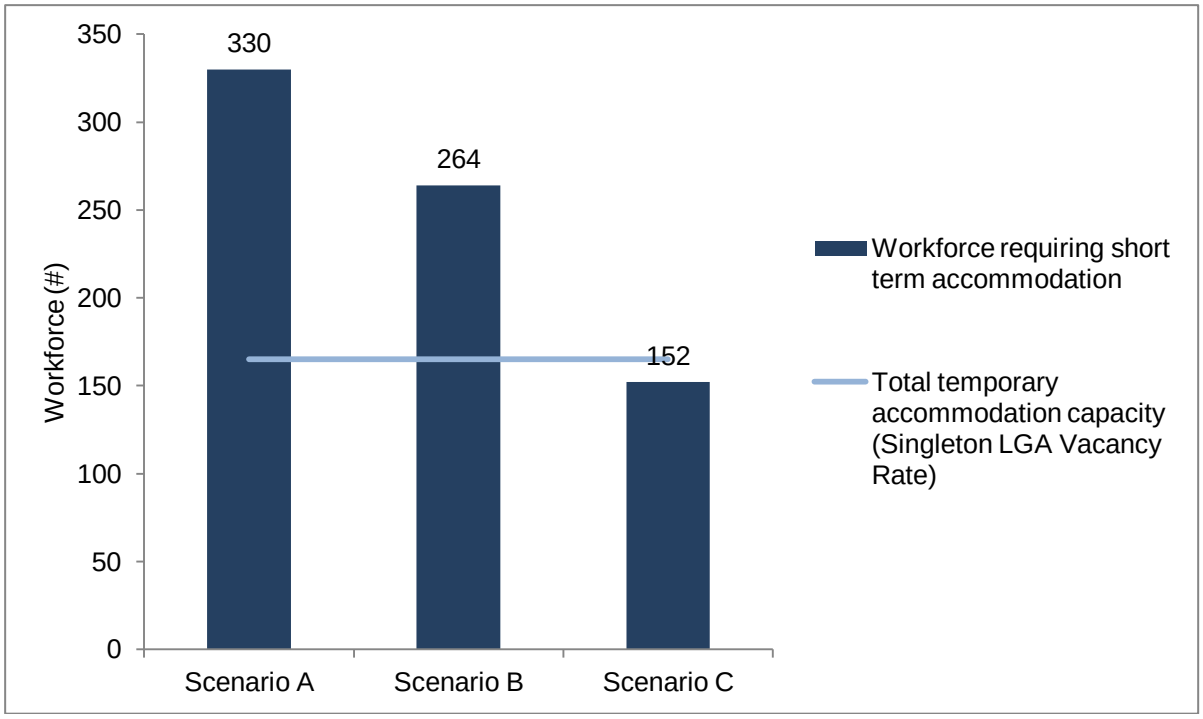

Figure 7.1 – Temporary Accommodation Scenarios and Associated Capacity in Singleton (Singleton LGA Vacancy Rate)

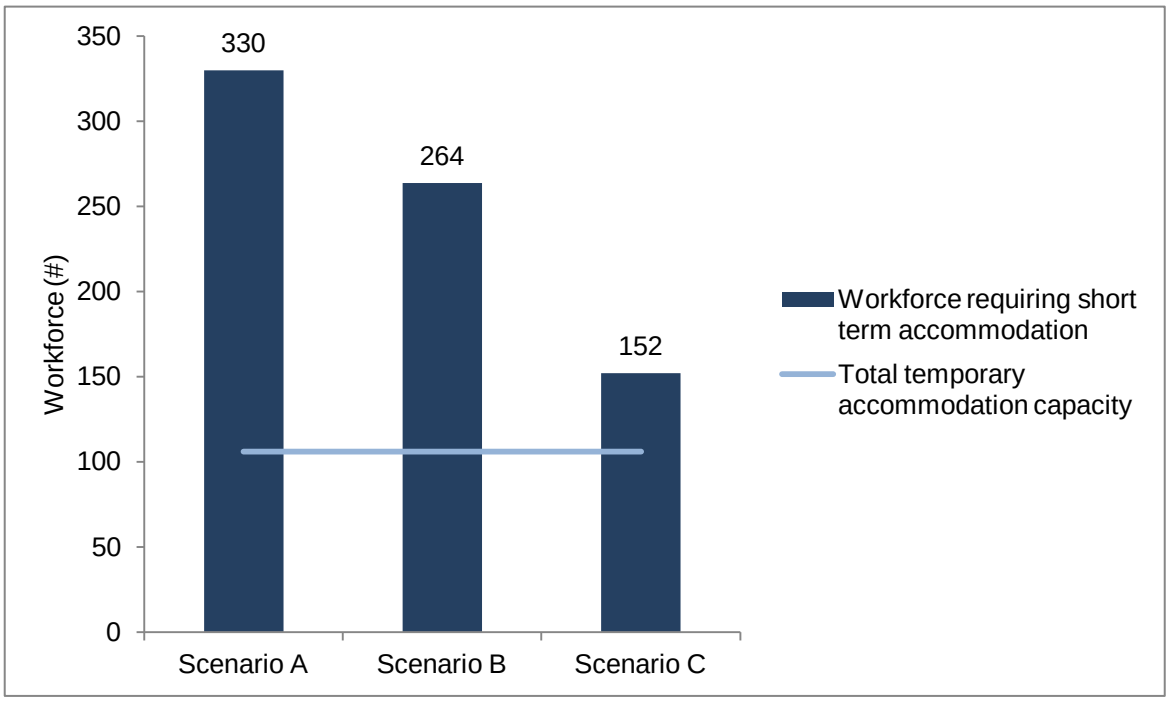

Figure 7.2 – Temporary Accommodation Scenarios and Associated Capacity in Singleton (NSW Average Vacancy Rate)

Source: ABS (2013)

This first level of analysis (i.e. temporary accommodation in Singleton SA2) indicates that there is insufficient capacity for the proposed construction workforce within temporary accommodation establishments within Singleton alone for scenarios A and B when using either of the NSW average or Singleton LGA vacancy rates (33 per cent and 51 percent respectively). For scenario C, there is capacity when using the Singleton LGA vacancy rate, however, when using the more conservative NSW average, further accommodation will be required.

As noted previously, it is likely that some construction workers will investigate temporary accommodation options within the wider region, as well as more semi-permanent accommodation options within the local rental market. These considerations are modelled within **Section 7.2.1.2** and **Section 7.2.1.3** respectively.

7.2.1.2 Short Term Rental Housing in Singleton

The additional incoming construction workers, whose needs may be unable to be met by the existing temporary accommodation market in Singleton, may prefer or otherwise seek rental accommodation. The capacity of the rental market to accommodate the additional construction workers within Singleton SA2 alone is presented in **Table 7.6** and displayed in **Figure 7.3** assuming the more conservative NSW average vacancy rate.

Whilst construction workers modelled in Scenario C are able to be absorbed, Scenarios A and B may represent impacts to the rental market in Singleton.

Table 7.6 – Estimated Rental Properties in Singleton SA2

Scenario	Remaining construction workforce(#)	Available rentals[1] (#)	Additional rental dwellings required (#)
A	224	170	54
B	158	170	0
C	46	170	0

1: Average monthly active listings March 2013-March 2014, calculated from custom dataset from Australian Property Monitors 2014.

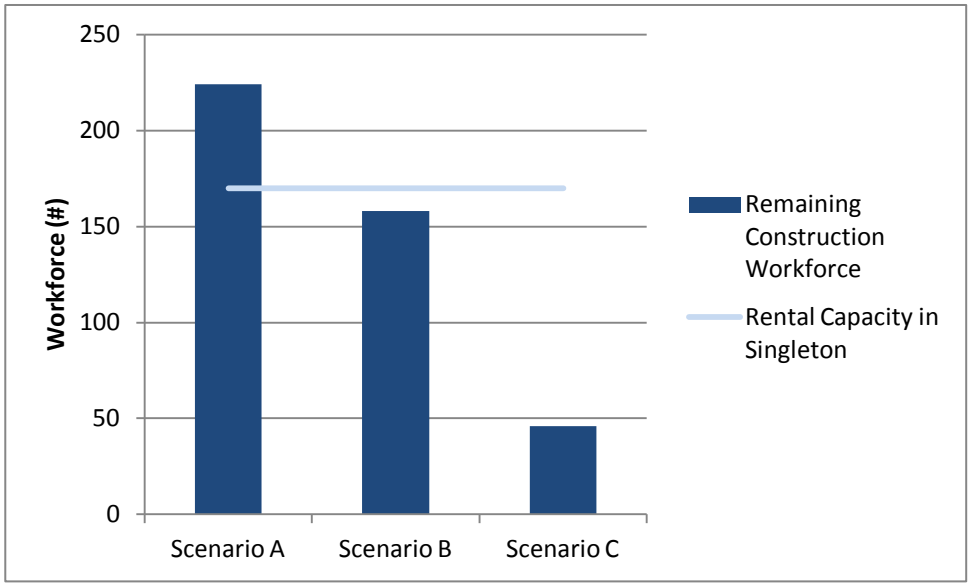

Figure 7.3 – Rental Housing Scenarios and Capacity (Singleton only)

Consequently, the more the Project can draw on existing local construction workforces, the less potential for impact there will be on the temporary accommodation and short term rental markets in Singleton. For example, if construction workers are drawn from the local area in a manner consistent with current workforce patterns at Mount Owen (as within Scenario C, the most likely scenario) it is likely that existing temporary and rental accommodation within Singleton will suffice for all workers. However, Scenario A (the least likely scenario) fills many of the vacancies in the rental market (Singleton only).

7.2.1.3 Additional Temporary Accommodation Options in the Surrounding Area

As suggested above, construction workers are likely to look further than just Singleton to meet their accommodation needs (whether by need or by preference). As such, rooms at temporary and tourist accommodation establishments in other urban centres where Mount Owen workers currently reside are also considered in addition to temporary accommodation and short term rental housing available in Singleton in **Table 7.7**.

Table 7.7 – Approximate Capacity within Accommodation Establishments in the Area

Area	Establishments	Total Rooms (#)	Available Rooms (#)
Cessnock	7	227	75
Maitland	3	114	38
Maitland – West	3	135	45
Muswellbrook	8	256	84
Sub-total	**21**	**732**	**242**
Singleton	8	323	107
Singleton (rentals)	-	-	170
Total	***29***	***1,055***	***519***

Source: Australian Property Monitors 2014;

Total approximate room availability across the region, as shown in the above table, indicates sufficient capacity for all scenarios, including the projected 'worst case' scenario A.

It is further noted that numerous other accommodation options have been excluded from the analysis, which might also contribute to accommodation capacity. These include:

- Workers sharing rooms/rental houses;
- Establishments with less than 15 rooms;
- Rental accommodation outside of the Singleton SA2;
- Workers staying with family or friends in the area;
- An additional 893 rooms – or 295 available rooms – located within the Branxton – Greta – Pokolbin SA2 (i.e. located within the primary Hunter Valley vineyards region);
- Less conservative parameters for temporary accommodation or short term rentals (e.g. Singleton SA2 had a temporary accommodation availability of 51 per cent as of December 2012) (ABS, 2013); and
- Less conservative parameters for rental accommodation (e.g. ad hoc monitoring of rental availability in Singleton indicates higher rental availability than calculations from ABS Census data).

7.2.1.4 Summary of Housing and Accommodation Impacts

An analysis of temporary accommodation such as motels and short term housing, such as rental properties, was undertaken to determine the existing capacity within the Singleton area and surrounding region. Understanding of current and anticipated future capacity is important in order to predict the sufficiency of existing accommodation options to cater to a construction workforce of up to 330 temporary workers proposed as part of the Project.

Based on the information currently available, should a high proportion of the construction workforce be sourced from outside the local area, such as for Scenario A (100 per cent) or Scenario B (80 per cent), and all workers choose to seek accommodation in Singleton, peak demand for temporary and short-term housing and accommodation is likely to slightly exceed capacity, when calculated using the conservative NSW average vacancy rate of 33 percent. As noted above, the equivalent vacancy rate for Singleton (55 percent) is considerably higher but given the volatility of the indicator, this analysis has relied on the more stable and conservative NSW figure.

However a comprehensive analysis incorporating short term rental housing in Singleton and temporary accommodation within other key urban centres within the surrounding region, indicates sufficient capacity for all construction workers proposed as part of the Project. Noting that capacity can change rapidly within a region, such as the increase in capacity that has occurred with the downturn in the mining industry since mid-2012, it is considered that even under Scenario A (the 'worst case'), the impact of the Project on housing and accommodation within the Singleton LGA will be *minor*, resulting in a *medium* social impact. However, if we consider availability of accommodation within the nearby settlements in the broader region, the impact is considered most *likely* to be *low*.

Table 7.8 – Summary of Project Impact – Housing and Accommodation

Project Aspect	Geographic Scope	Stakeholders Potentially Impacted	Scenario	Perceived Stakeholder Risk	Mitigated Technical Risk
Housing and accommodation impacts from incoming construction workforce	Singleton LGA only	Accommodation seekers Construction workforce Tourism industry Landlords	A	Medium	Medium
			B	Low	Low
			C	Low	Low
	Wider region (Singleton LGA + Muswellbrook LGA + Maitland LGA)	Accommodation seekers Construction workforce Tourism industry Landlords	A	Low	Low
			B	Low	Low
			C	Low	Low

7.2.2 Impacts on Community Services and Facilities

Impacts to community infrastructure can occur when there is insufficient capacity within existing relevant health, education, childcare, aged care, youth services, recreational facilities or other community services and facilities to cater for the increased population growth associated with a Project.

As there are no proposed changes to approved operational staffing levels for the Project, impacts to community infrastructure due to permanent population increase are not considered in the potential impacts of the Project. Similarly, community demand associated with the continued retention of Mount Owen's existing workforce is not considered an impact given the wide geographic scope and small scale of the existing workforce spread and the assumption that a catchment's existing population is already sufficiently catered for within existing local, regional and state population planning. Further details regarding the usage of healthcare and other community infrastructure by existing Mount Owen employees and contractors is provided in **Appendix A**.

It is noted that the temporary construction workforce (those sourced from outside of the area) may require medical care and some targeted recreational facilities whilst working on the Project. As detailed within **Section 4.0**, the physical capital sensitivity, which includes health and other social infrastructure, was considered to be of average sensitivity in Singleton and Muswellbrook LGAs, and relatively resilient within the Maitland LGA. It is assumed that a temporary construction workforce will not bring their families and, as such, no potential impacts to education, childcare and other family based community infrastructure have been identified.

The potential for impact to community and services arising from population changes associated with possible acquisitions is considered negligible due to the small number of properties in relation to the wider population, and the potential for the properties to remain tenanted for some, if not all, of the Project life.

Accordingly, it is considered that both the mitigated technical risk and perceived stakeholder risk relating to adverse impacts on community infrastructure is *low.*

Table 7.9 – Summary of Project Impact – Community Facilities and Services

Project Aspect	Geographic Scope	Stakeholders Impacted	Scenario	Perceived Stakeholder Risk	Mitigated Technical Risk
Impacts on community services from construction workforce	Local Area Singleton LGA	Construction workforce Health facilities Recreational facilities	A	Low	Low
			B	Low	Low
			C	Low	Low

7.2.3 Impacts on Road infrastructure

Local landholders identified a range of general and specific impacts and/or insufficiencies regarding existing road infrastructure in the local area. Landholders also expressed concern regarding increases in local traffic from mine related activities such as employee vehicles or from trucks entering or leaving the site. Consequently, this risk has been classed as a *medium* stakeholder perceived risk in **Table 7.10** below.

The technical Traffic Assessment for the Project reviewed estimated traffic increases and concluded that there would be no significant impact on the existing road network from construction or other associated temporary traffic.

Further it reported that significant infrastructure works to upgrade road and rail infrastructure (i.e. Hebden Road overpass and Hebden Road Bridge) will benefit all Hebden Road users by enhancing road safety, reducing vehicle delays and driver frustration and improving traffic service levels on Hebden Road.

For example, the replacement of the Hebden Road rail level crossing with an overbridge will remove waiting times for vehicles on Hebden Road (which can currently back up onto the New England Highway at times), and alleviate landholder frustrations at waiting at crossings for long periods as coal trains pass.

Consequently, the impact of the temporary construction workforce on local road infrastructure is assessed as a *low* technical risk, *possible* to occur but a *minor* consequence, given the temporary nature of the two year construction period term.

Balancing that, is the positive impact of Project road infrastructure upgrades which is assessed as 'high', due to the certainty of the upgrades occurring and the identified benefits for landholders, commuters and other local and regional (i.e. New England Highway) road users.

Table 7.10 – Summary of Project impact – Road Infrastructure

Project Aspect	Geographic Scope	Stakeholders Potentially Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact of construction workforce traffic on road safety	Local Area Singleton LGA	Local residents Workforce Wider Community	Medium	Low
Impact on road infrastructure	Local area Singleton LGA	Local residents Workforce Wider Community	Medium	*High (positive)*

7.3 Impacts on Social Amenity

7.3.1 Air Quality

Air quality associated with mining operations in the Upper Hunter has emerged as the key concern for local landholders and many regional stakeholders with particular focus on the cumulative impacts of multiple mining operations in the region. Landholders noted issues relating to their current experience of air quality, as well as concerns that further development of coal mining in the area would result in increased negative impacts.

Overall, 32 landholders (out of the 43 consulted during the first two rounds of consultation) identified dust as a key challenge of living in an area with the most common impact relating to general amenity with specific mention of issues associated with home maintenance. Concerns regarding impacts of dust on health were also raised, and this is discussed further in **Section 7.4.1**). As such, perceived stakeholder risk has been rated *high.*

Many near neighbours noted the cumulative impacts of dust from multiple operations, but in most cases, were unable and/or unwilling to attribute their experience of air quality impacts specifically or solely to Mount Owen. This is reinforced from findings from an analysis of Mount Owen complaints data over the past three year period which found low levels of air quality complaints directed specifically to the Mine to address.

Cumulative air quality impacts are recognised at a regional level and several studies have sought to explore and address their measurement and mitigation. A key improvement in 2010 was the establishment of the Upper Hunter Air Quality Monitoring Network, with the purpose of providing reliable publically available regional air quality monitoring data direct to the community via a web-based internet system. Since then, there has been an increasing

number of technical studies and stakeholder initiatives g (e.g. the Upper Hunter Particle Characterisation Study), however the focus of most of these studies/initiatives has been consideration of potential health links (not social amenity per se).

At a Project level, technical studies completed as part of the EIS included detailed modelling of air quality impacts to the local area. This modelling has identified one private residence predicted to experience air quality impacts above the acceptable levels that trigger acquisition. It is noted however that there is still potential for the generation of offsite 'nuisance' dust that remains below regulatory levels.

Consequently, the impact of dust emissions on social amenity in the locality for the current Project can be regarded as *medium* (a *likely* temporary but insignificant reduction in air quality from a social amenity perspective) (see **Table 7.11**).

Table 7.11 – Summary of Project Impact – Air Quality

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Dust emissions – impact on social amenity	Local area	Local residents	High	Medium

7.3.2 Noise

Noise was the second most prominent issue raised by local landholders (see **Section 5.2**), with the cumulative nature of noise impacts also noted. Neighbouring landholders were concerned about general operational noise and rail noises, with night time and early morning periods of particular concern. Others acknowledged noise as something that they experienced, but felt it was not a major concern. Consequently, the perceived impact of noise, on social amenity, is ranked as a '*high'* perceived stakeholder risk.

On a technical level, noise modelling for the Project has identified three residences that are predicted to be affected by noise levels over 40 decibels and therefore subject to potential acquisition.

Eight private residences have been modelled to receive noise levels between two and five decibels above the proscribed Project Specific Noise Levels (PSNL) and will therefore be subject to active management measures (e.g. air conditioning, improved sealing to windows and installation of insulation) based on discussions with relevant landholders. A further ten private residences have been modelled to experience levels up to two decibels greater than the PSNL. Some households outside of the acquisition and management zones are likely to hear Project noise, although this has been modelled to be below regulatory levels.

Consequently, the mitigated technical level of impact of noise from the Project on social amenity is ranked as a temporary but marginal consequence (*minor*), which is *likely* to occur, resulting in a *medium* impact for those affected by the Project. For those outside management zones, the impact is considered *low.*

Table 7.12 – Summary of Project Impact – Noise

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Noise emissions – impact on social amenity	Local area	Local Residents Mount Owen School	High	Medium

7.3.3 Blasting

Blasting was the fifth most common impact identified by landholders as a current concern associated with local mining operations. Landholders were concerned about vibrations shaking their houses, moving pictures, cracking walls and emitting noise, dust and odour.

A technical blasting report prepared for the EIS used a ground vibration and air blast predictive model to assess the impact of proposed blasting on a range of receptors, including local residences. The report found that blasting activities can be managed effectively with detailed blast design and monitoring measures, to ensure that relevant criteria is not exceeded at any private residence or sensitive location.

Should Project operations and the Integra Underground Mine overlap, a Blast Management Protocol will be developed in consultation with Integra Underground Mine to coordinate blasts and collectively manage any potential impacts.

Consequently, the blasting impacts of the projects are predicted as a *low* technical impact and a *medium* perceived stakeholder risk.

Table 7.13 – Summary of Project Impact – Blasting

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Blasting – impact on social amenity	Local s area Singleton LGA	Local Residents Mount Pleasant School	Medium	Low

7.3.4 Traffic

Traffic impacts on social amenity were raised frequently in relation to Mount Owen's current operations. Local stakeholders commented on issues associated with current mine related traffic in the area, particularly around cumulative employee shift changes, unsafe driving by mine workers, and delays associated with heavy vehicle and rail movements which was regarded as both a nuisance and safety issue. Given these views regarding current operations and the generalised perception that the Project would bring more of the same or at least prolong their current experience, this impact has been ranked as *medium* from a perceived stakeholder perspective.

A technical traffic assessment has assessed the actual impact of the Project's impact on traffic on the road network. The assessment found no significant long term traffic impacts due to the Project, maintaining the same levels of operational workforce, shift patterns and hours of operations; as well as no significant increase in mining vehicle or rail traffic. The assessment confirmed that the project does not propose to haul coal material along public roads.

Increases in traffic will be confined to the construction period, by way of construction worker traffic and heavy vehicles carrying equipment and materials, however this has been assessed as not likely to significantly adversely affect the road network or road conditions.

Furthermore, the traffic assessment found that the proposed Hebden Road infrastructure upgrade and other road and rail works will benefit all road users (not just mine workers and suppliers) by enhancing road safety, reducing vehicle delays and driver frustration and improving traffic service levels.

Consequently, impacts of traffic on social amenity as a result of the Project have been ranked as a *low* technical risk.

Other specific traffic issues relating to road safety (**Section 7.4.2**), road infrastructure (**Section 7.2.3**) and traffic noise (**Section 7.3.4**) are assessed in the specific sections referenced.

Table 7.14 – Summary of Project Impact – Traffic

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Traffic – impacts on social amenity	Local area	Local residents	Medium	Low

7.3.5 Visual Amenity

As outlined in **Section 5.2.1.10** impacts on visual amenity were raised by near neighbours during consultation, but did not feature as a significant concern relative to other themes. Comments centred on general changes to landscape as well as lighting emanating from the Mount Owen Complex and other operations. Night time glow was also noted by a number of landholders.

Findings from the Project's Visual Assessment, describe the area's existing visual character, particularly the night time scenic quality, as not typically rural. The study describes night light and glow emanating from mining operations, power stations and other industries as common, and there is also glow from the nearby villages and townships. The nightscape is also characterised by the lights of moving vehicles, including those travelling along the New England Highway, and vehicles operating in the mines. The report concludes, that, whilst it is not natural, the night glow and traffic movement recorded now characterises the background night environment in the Upper Hunter.

Mount Owen is currently implementing a range of measures to reduce its contribution to night time amenity impacts, including the use of shielding and directional lighting. These management measures will continue to be implemented during the project, with additional measures to ensure project specific lighting, such as use of mobile lighting during operations that are located in-pit, is shielded from nearby private residence view points and do not impact on road users, particularly at the section of Middle Falbrook and Glennies Creek Road.

The visual assessment also found that there are two public viewing locations and two residences that currently have views of the site which will used for the Project's surface operations, but concludes that any impacts can be mitigated through the screening effect of rehabilitation and development of final landform to conform to the surrounding natural environment. Furthermore, the assessment found that once rehabilitation is undertaken, the visual impacts of the ongoing mining operations will be less than the present impacts.

The assessment also investigated the impact of visual changes associated with upgrades to road and rail infrastructure proposed as part of the Project. It found that the proposed Hebden Road Bridge, Rail Overpass and other rail works will not be visible from any residences, both during and after construction, and that any minor changes to views of commuters will be consistent with views currently experienced on this part of the transport route through the Hunter Valley.

As such, it is predicted that the visual impacts of the projects will have a *low* technical impact and is also rated as a *low* perceived stakeholder risk, based on consultation findings.

Table 7.15 – Summary of Project Impact – Visual Amenity

Project Aspect	Geographic Scope	Stakeholders Potentially Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Visual changes – impacts to social amenity	Singleton LGA	Local residents and Commuters	Low	Low

7.4 Impacts on Health and Well-Being

The World Health Organisation defines health as '*a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity*' (WHO, 2003). The health status of an individual and/or a community can be understood as a range of interactions between human biology and the environment. These can be categorised into the three following key determinants and sub-issues:

- *Social and economic environment:*
  - income and social status;
  - education;
  - social support networks;
  - health services; and
  - employment and working conditions.
- *Physical environment:*
  - safe water and clean air;
  - healthy workplaces; and
  - safe houses, communities and roads.
- *Individual characteristics and behaviours:*
  - genetics; and
  - gender.

To understand the potential social consequences of health and wellbeing due to the Project, consequence definitions from the WA Department of Health: *Health Risk Assessment Process in Western Australia* (2010) have been used to inform likelihood and consequence risking analysis (see **Table 6.1**). Such rankings are not currently available in NSW. As Table 6.1 illustrates, there can be a number of social consequences of poor health and wellbeing, including actual incident/illness itself, impacts from ongoing treatment and support (i.e. time, suffering and inconvenience), and costs associated with treatment and support and burden on health service provision.

Research has been undertaken by the Hunter Valley Research Foundation (HVRF) on how residents in the Valley perceive their health with the outcomes documented annually in their report *Wellbeing Watch* (HVRF, 2013). The 2013 study reports that approximately four out of five Hunter residents consider themselves to be in good, very good or excellent health (79 per cent). Self-reported health is also presented within the Social Health Atlas (PHIDU, 2014), and reports that:

- 67.7 per cent of people in NSW report having good, very good, or excellent health; and
- 70.3 per cent, 66.4 per cent, and 66.1 per cent of people in Singleton, Muswellbrook and Maitland LGAs report having good, very good, or excellent health respectively.

These results are lower than those reported by the HVRF (2013), yet indicate similar self-reported health status' between the study area and that of NSW more generally. Additionally, Singleton, Maitland and Muswellbrook LGAs are also considered to have relatively resilient human capital as discussed in **Section 4.3.7**, which is indicative of a generally healthier population.

In relation to health and wellbeing, two key health related aspects of the Project were identified as requiring further assessment: air quality and increased traffic on the road network during construction.

7.4.1 Air Quality Impacts on Health

As discussed in **Section 5.0**, general impacts on air quality as a result of dust from coal mining operations were one of the most frequently identified issues during consultation with local landholders and wider regional stakeholders, with concerns regarding potential health impacts regularly noted. Of particular concern to landholders was the potential for the impact of dust on the respiratory health of individuals and family members.

Available data indicates that the rates of respiratory system disease (including asthma and chronic obstructive pulmonary disease) were lower in Singleton LGA and the Upper Hunter (24.5 and 24.3 per 100 adults respectively) than for NSW and Australia (both 25 per 100). Maitland's rate was higher than all of these areas, with 27.1 adults out of 100 having a respiratory system disease (PHIDU Social Health Atlas 2011).

In terms of hospitalisation for respiratory disease, Singleton's rates (1.69 per 100 adults hospitalised for at least one night per 12 months) were lower than NSW and Australia (1.79 per 100), and considerably lower than Muswellbrook (2.25 per 100) (despite having the same proportion of adults with respiratory illness), as well as for the Upper Hunter generally (2.09 per 100) (PHIDU Social Health Atlas 2014).

In regards to more day to day health management (and responding to community concern that hospitalisation data only capture severe disease), a 2013 NSW Health study on GP data for residents of Singleton, Muswellbrook and Denman with data for other rural (non - metropolitan) NSW residents, finding no evidence of a significant difference in problems managed or medications prescribed. It did, however, note a diverging trend for respiratory problem management over time (whereby NSW rates dropped whilst Singleton/ Muswellbrook/Denman stayed the same) that it identified as worthy of further exploration.

Regional attention to air quality has also been increasing, and is regularly discussed in regional news coverage. Health focus has primarily been on the finer particles, particularly on $PM_{2.5}$ and smaller particulates which are considered to have the most potential to impact human health due to their capacity to penetrate the lungs when inhaled. Initiatives such as the Upper Hunter Air Quality Monitoring Network (established in 2009), the Upper Hunter Valley Particle Characterisation Study (discussed further below) and the website *Hunter Air and Health* (a community web resource aimed at providing a 'one stop shop' for data regarding air quality, industrial development and health) are just some of the government, academic and community resources being directed to the issue.

One specific community led initiative included the *Hunter Air and Health* network's well-attended two day 'Community Scientific Engagement Forum' (September 2013) focusing on air quality and health issues, with sessions discussing the health impacts of coal dust, environmental monitoring data in the Hunter, and contextualising health issues in land use conflicts. The forum featured local, regional and international researchers, regulators and practitioners, and was supported by high profile regional organisations such as the Hunter Medical Research Institute (HMRI), the University of Newcastle and CASANZ (Clean Air Society of Australia and New Zealand), with seed funding from the NSW Department of Trade and Investment.

A 2012 report commissioned by Beyond Zero Emissions (Australia) (October, 2012) provided an international review relating to health and social harms of coal mining in local communities. The review concluded that while there are several studies about the social harms of coal mining in the Hunter region, few Australian studies directly examine the health effects of coal mining or coal burning power stations on the health of local communities, with the vast majority of the evidence cited in the report being from international studies conducted across a variety of countries – United States, United Kingdom, Canada, Spain, Turkey, Israel, Eastern Europe and ASIOA.

The report concluded that what was needed is evidence from well-designed local studies that are capable of quantifying associations to underpin cost-benefit analyses, to inform public and political debate and decision making and guide policy and planning regarding minimising harm and maximising benefits of industry activity.

Since this time, there have been a number of initiatives at the regional and national level seeking to provide further information, and associated clarity, regarding the health impacts of dust from cumulative Upper Hunter coal mining operations. Of key significance is the Australian Senate *Inquiry into the Impacts on Health of Air Quality* held in 2013, and which heard a wide range of views from individuals and organisations, including a number from the Hunter region. The Committee focused on three types of emission sources – diesel, coal and wood fires – noting that all, if not properly regulated and managed, had potential to impact adversely on health. It also noted the variability within populations regarding air quality health risk factors, such as age, socio-economic disadvantage and pre-existing health (Australian Senate Community Affairs Reference Committee, 2013).

Another important initiative has been the NSW Government's Upper Hunter Valley Particle Characterisation Study which commenced in January 2012, commissioned by the NSW

Department of Environment and Heritage (OEH) with funding from the CSIRO, NSW Health and the NSW Office of the Environment, and reported its outcomes in September 2013.

The Particle Characterisation Study analysed the composition of fine particles 2.5 microns and smaller in diameter ($PM_{2.5}$) in the Upper Hunter Valley towns of Singleton and Muswellbrook, with the aim of providing these communities with scientific information about what fine particles are present in their local environment. $PM_{2.5}$ is associated with greater health risks than coarser particle pollution due to its increased capacity to enter the lungs, however, the bulk of coal dust emissions are coarser than $PM_{2.5}$.

The study found that that wood smoke, secondary sulphate (potentially sourced from power stations), industry aged salt, vehicle emissions, soil and biomass smoke (from bushfires and hazard reduction) were the most common types of $PM_{2.5}$ particles found in the air samples. Fugitive coal dust was identified as a possible subset of the soil particles analysed which were found to contain small amounts of black carbon (black carbon may potentially contain coal dust).

The amount of black carbon was equivalent to 1 per cent of total $PM_{2.5}$ at Singleton, and 4 per cent of total $PM_{2.5}$ at Muswellbrook and was considered relatively low compared to the contributions of major sources. The study also noted that the black carbon could also include particles from non-road diesel vehicle emissions that are re-suspended during mining activity. It was also noted that other studies carried out in Australia did not contain black carbon.

Given the considerable community concern, rigorous stakeholder interest and ongoing media attention regarding this issue, the perceived stakeholder risk regarding air quality impacts on health is ranked as *high.*

Regarding technical impacts, the direct technical assessment related to the Project is informed by wider EIS air quality modelling, conclusions and management mechanisms, which require any property that is modelled to experience air quality levels above regulatory levels (which have been set at thresholds to protect health) to be automatically entitled to acquisition rights. This applies to properties that are impacted by Project specific modelling (i.e. emissions generated by the Project only) and by cumulative impact modelling (i.e. when emissions from the Project are considered with emissions from other mining operations in the area).

However, given the current gap in conclusive technical studies on the health impacts of cumulative coal dust on communities in the Hunter Valley and the variability of the pre-existing health status amongst individuals which might place them at greater risk, balanced against the small percentage of Upper Hunter $PM_{2.5}$ particles assessed to possibly contain coal dust, health indicators suggesting relatively typical rates of respiratory illness and the application of acquisition rights to address impacts generated directly by the Project, it is concluded '*possible'* that the Project could contribute to, or exacerbate, existing chronic health effects but that the consequence is likely to be minor resulting in a technical risk of *low.*

Table 7.16 – Summary of Project Impact – Air Quality and Health

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Dust emissions – impact on health and wellbeing	Singleton LGA	Local Residents	High	Low

7.4.2 Road Safety

The Upper Hunter region relies heavily on private road transport, with over 73 per cent of employed people living in the Singleton and Muswellbrook LGA's getting to work as either a driver or passenger (Census 2011)

Landholders consulted regarding the Project expressed a high degree of interest in roads generally (see **Section 5.0**) with some landholders raising specific concerns about road safety – existing workforces taking short cuts through nearby areas, experience of unsafe driving behaviour of some mineworkers and concern associated with fatigue and perceived difficulties of driving home after long shifts.

The issue appears more pressing for regional stakeholders who expressed a general perception regarding potential road safety impacts attributed to an increase in traffic from drive-in, drive-out workforces, as well as the long distances travelled each day by mining employees, exacerbated by long shifts and fatigue. This issue was also raised by stakeholders consulted during the Sustainable Communities Project (BHP Billiton, 2011).

The issue has also been recognised as a serious concern by regional bodies such as the NSW Minerals Council who have released a *Courteous and Safe Driving Guide* in 2012 in response to community feedback over increasing mining traffic, particularly heavy vehicles, in the Hunter Valley. The guide was developed in conjunction with mining companies and includes tips on securing loads, sharing the road, and managing fatigue.

This coupled with high media attention on road safety issues, as a result of the prominent presence of the mining industry and general community perception regarding poor provision of appropriate road transport networks in the Hunter region, make road safety a key community issue and it is therefore ranked as a *medium* perceived stakeholder issue.

A technical traffic study undertaken as part of the EIS included a review of the relevant state government vehicle crash database for Glennies Creek Road, Forest Road, Hebden Road and at all mine access intersections for the five year period to mid 2012, as well as assessing existing access road conditions against RMS and Austroad road safety checklists. The conclusion of the assessment was that road safety is not expected to be impacted, and that the local road system will benefit from the upgrades proposed as part of the Project.

It should also be noted that outcomes of the TRC-Analysis (**Appendix A**) highlight that the majority of existing Mount Owen employees (43 per cent) reside in residential locations close to the Mount Owen operation (within ½ hour drive), and a further 24 per cent within an hour's drive, thus reducing the travel distance between work and home.

For these reasons, in risking this impact, a consequence ranking of *minor* has been assigned with a *possible* likelihood; resulting in a *low* predicted impact across all workforce scenarios (note Scenarios A, B and C, as discussed in **Section 7.1.1** above).

Table 7.17 – Summary of Project Impact – Road Safety

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact of construction workforce traffic on road safety	Local area	Construction workforce Road users Local residents	Medium	Low

7.5 Environment

As part of the EIS, a range of specific environmental impact studies have been undertaken. Some of these assessments, such as air quality and blasting, have been discussed elsewhere in this report. A summary of community perceptions relating to other key environmental impacts, as identified through the scoping phase of the SIOA, is provided in the sub-sections below. Further detail on the technical environmental risk ranking of these impacts can be found in each of the respective studies within the EIS.

7.5.1 Land Management

The land within the Project Area includes part of the existing mining operations in addition to buffer lands owned by Glencore which are currently managed as grazing enterprise. Existing agriculture uses in the locality (outside land owned by Glencore) is dominated by cattle grazing, but also include fodder crops on the irrigated floodplain and terrace landforms along Glennies Creek.

Landholders identified issues associated with land management and rehabilitation as an area of considerable interest – both in terms of opportunities and risks/concerns. Concerns related to current land management practices including pest, wild animal and bushfire control on vacant mine owned land, with the potential for this concern to be further amplified by further property acquisition. An issue relating to the quality of maintenance of Mount Owen's owned and tenanted properties were also raised.

Landholders expressed mixed thoughts regarding the effectiveness of current rehabilitation practices and outcomes across the Mount Owen Complex, and a desire for greater clarification about what was going to happen when mining ended in the local area. In general, landholders could be grouped into two main groupings: those who wanted the final land use to be returned to its prior 'natural state' and/or a more 'natural' landform, and those who wanted to see the area improved or changed in some way (be that for use by agriculture, recreation, or other commercial enterprises). A key theme running through landholder discussions was a scepticism that either outcome – natural or improved – was likely to be achieved, bringing into question the importance of rigorous closure planning and community involvement in this process.

The comprehensive Agricultural Impact Statement (AIS) prepared for the Project also included detailed discussions with key agricultural landholders, with a focus on land use issues. Findings from these discussions closely align with the key issues identified by the consultation undertaken to inform the Social Impact Assessment.

Due to the frequency of comments regarding land management received during the SIOA consultation, reinforced by the consultation undertaken during the AIS, this issue has been ranked as a *medium* perceived stakeholder risk.

The AIS identified that two of the residential properties subject to acquisition also currently have small-scale agricultural land uses. The statement noted that should these properties be acquired they may potentially be managed by Colinta Holdings (a Glencore owned agricultural enterprise that currently manages agricultural production on Glencore owned land surrounding the existing Mount Owen Complex) or by other lease arrangements. Such an arrangement would continue the use of existing infrastructure and continue the provision of a small amount of local agricultural employment. Given that there are currently some 800 farms in the Singleton and Muswellbrook local government areas, the statement concluded that the change in ownership would represent a negligible impact on agricultural resources, production and enterprises, and would be more a change to land ownership rather than land use.

The statement also found that changes to the supply and viability of agricultural support services and infrastructure in the Mount Owen locality and the region are driven by agricultural and social trends operating at a scale well beyond the locality, concluding that the Project is expected to have minimal impact on local and regional agricultural services and infrastructure. This statement confirmed that the Project will have no impact on Biophysical Strategic Agricultural Land (BSAL) or any Critical Industry Clusters and will also have negligible impact on the agricultural resources including water resources and landform.

As such, the technical mitigated risk to agriculture and land management is considered *low.* Other issues associated with land management, including impacts to ecology and conflict related to future land use, are further discussed in **Sections 7.5.2** and **0** respectively.

7.5.2 Ecology

Although a key area of assessment in environmental impact programs, consultation with neighbouring landholders did not identify ecology as a key area of concern. When ecology was raised by landholders it was usually discussed in the context of an overall need to have respect for the natural environment and in relation to concerns regarding general environmental degradation, land management and rehabilitation of the post mining landscape.

Ecology concerns were more prominently highlighted by regional stakeholders, particularly environmental NGO's, who tended to view the Project within a wider bioregion focusing on connectivity and habitat for threatened species, with concerns relating to the potentially significant ecological impacts of the Project, and associated process and outcomes regarding offsets and other biodiversity mitigation measures. Consequently, ecology was ranked as a *medium* perceived stakeholder risk, given specific stakeholder group interest.

A key Project objective has been to maximise the use of previously disturbed areas and avoid disturbing existing biodiversity offset areas and the Ravensworth State Forest. Despite these efforts, the Project will result in clearing approximately 451.5 hectares of vegetation which includes 223.7 hectares of native woodland, forest and riparian vegetation and 223.1 hectares of derived native grassland. Three Endangered Ecological Communities will be impacted by the Project: the Central Hunter Grey Box – Ironbark Woodland, the Central Hunter Ironbark – Spotted Gum – Grey Box Forest and the Planted Ironbark – Spotted Gum – Grey Box Forest.

To offset this impact, Mount Owen are proposing to protect a 367 hectare property (Cross Creek Offset Site) and a 303 hectare area (Esparanga Offset Site) located near a number of existing and proposed Glencore biodiversity offset areas. These areas will provide appropriate vegetation and habitat, with additional opportunities for environmental improvement in the area.

Additionally, the Stringybark Creek Habitat Management Corridor Strategy will provide a 97.5 hectare vegetation corridor linking existing high quality habitat within the existing Mount Owen Biodiversity Offset Areas and Liddell Coal Operations and include commitments regarding establishment of spotted-tailed quoll habitat.

Consequently, ecology was ranked as a *low mitigated technical* risk.

7.5.3 Water

A number of landholders raised concerns regarding the impact of existing Mount Owen operations on water resources, with most discussion focusing on the cumulative impact of coal mining on ground and surface water quality and supply. This concern was echoed by

regional stakeholders, who expressed concern regarding cumulative impacts and mine accountability for potential impacts to background salinity and alluvial health.

Other water related concerns related to the impact of dust on the quality of drinking water, with a number of landholders (n=14) worried about dust settling in their water tanks, and associated health, hygiene and property maintenance concerns.

Water assessment completed for the Project indicates that although the Project will result in changes to the catchment areas within and surrounding the Project Area, is expected to have negligible impacts on flows, water quality and water users downstream of the Project Area. The Project will not reduce the annual flow volumes in Main Creek compared to the currently approved landform, therefore basic landholder rights on Main Creek and Glennies Creek will not be affected. The Project will result in negligible impact to the catchment area of Bowmans Creek and Glennies Creek and as such the Project is considered to have only a negligible impact on basic landholder rights downstream of the Project Area on Bowmans Creek or Glennies Creek.

Mount Owen proposes to integrate water management for the Project within the existing Water Management System, in conjunction with the implementation of a series of erosion and sediment control measures which will be utilised during the construction, operation and rehabilitation phases of the Project, to limit the potential impacts of the Project on downstream water quality.

Mount Owen will continue to manage water resources within the Project Area in accordance with the Mount Owen Water Management Plan, the Environmental Protection Licence and the Hunter River Salinity Trading Scheme.

Overall water was considered a *low* perceived stakeholder issue/and low technical risk.

7.5.4 Greenhouse Gases

Climate change and greenhouse gases were not widely discussed during stakeholder consultation, with neighbouring landholders not raising the issue at all. Some regional stakeholders discussed climate change and further development of renewable energy in the context of ongoing employment (i.e. moving from climate change/renewable industries), but did not raise specific concerns in relation to the Project's impacts on a local or wider scale.

It is noted, however, that while community consultation undertaken as part of the SIOA did not raise issues regarding greenhouse gases at a local or LGA level, the Project will be situated within the context of ongoing wider concern regarding greenhouse gases and their links to climate change, with a key focus on new or expanding coal mining operations.

Recent research by the CSIRO (Leviston, 2013) regarding Australian attitudes to climate change suggests that most people agree that climate change is happening, but remain divided about the role played by human activity. The survey also found that the majority of people (69%) consider climate change to be at least 'somewhat important' regardless of how it is occurring (i.e. naturally or man-made) suggesting a fair degree of continued interest in the theme.

This interest has potential to increase further with the recent release of the Intergovernmental Panel on Climate Change (IPCC) 5th Report (September 2013) which reports that scientists are more certain than ever that most of the warming since 1950 has been caused by human activities such as the burning of fossil fuels, agriculture and land clearing; upgrading their ranking from 'very likely' (in 2007) to 'extremely likely'. Consequently, given the level of wider stakeholder interest in this theme, the impact of greenhouse gases has been ranked as a *medium* perceived stakeholder risk.

A technical greenhouse gas assessment completed for the Project found that the Project is unlikely to impact national greenhouse gas policy objectives due to the relatively small contribution it will make to national emissions on an annual basis. The study assessed Scope 1 emissions (primarily from the combustion of diesel and release of fugitive emissions), Scope 2 emissions (associated with electricity used by the Project and Scope 3 emissions (indirect downstream emissions that will be generated by third parties during product transport and consumption activities).

Mount Owen will mitigate greenhouse gas emissions through ongoing energy efficiency initiatives, utilising alternative fuel sources and optimising productivity. This includes limiting the length of haulage routes (where feasible) to minimise transport distances and associated fuel consumption, selecting equipment and vehicles that have high energy efficiency ratings and scheduling activities so that equipment and vehicle operation is optimised. Consequently, the impact of greenhouse gases has been ranked as a *low* mitigated technical risk.

Table 7.18 – Summary of Project Impact – Environment

Project Aspect	Geographic Scope	Stakeholders Potentially Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Land management of mine owned land and areas of community and environmental value	Local area Singleton LGA	Neighbouring landholders Regional stakeholders Other mine sites	Medium	Low
Impact on Ecological values	Local area Singleton LGA Hunter region (bio-region)	Local residents Regional stakeholders Environmental NGOs Government agencies	Medium	Low
Impact on Water (ground and surface)	Local area Singleton LGA Hunter Catchment Hunter Region	Local residents Water users Wider community	Medium	Low
Greenhouse gases	National	Residents Business Government	Medium	Low

7.6 Community Sustainability, Values and Place

The following section describes the potential impacts of the Project on the sense of community, social cohesion, community connectedness (to people and place) and overall community sustainability, as a result of:

- population change due to the influx of the proposed project construction workforce;
- impacts on areas of community value and other land uses;
- levels of conflict in the locality;

- impact of potential acquisitions and flow on social effects; and
- changes to community capitals.

7.6.1 Impacts to Places of Community Value and Heritage

During consultation, landholders were asked to identify on a map the places that they most valued within the local area, as well as explain the type of value that they associated with areas around the project site (i.e. social/natural/physical/economic). **Table 7.19** lists the places of value identified by landholders across the various community capitals, and any potential impacts to these places that were noted.

These values are also mapped in the **Figure 7.4**.

Table 7.19 – Places Valued by Landholders – Value and Perceived Impact

Social/Human	**Natural**	**Physical**	**Economic**
Places of value	Places of value	Places of value	Places of value
Residential properties (home) Camberwell Village (home) Glennies Creek (recreation) Lake St Clair (recreation) Goorangala Creek – fishing (recreation) Goorangoola Rd – horse riding (recreation) Mount Pleasant School (education) Camberwell Church (cultural) Glennies Creek Hall (cultural) Ravensworth School (cultural)	Glennies Creek Goorongoola Creek Bettys Creek Swamp Creek Lake St Clair Bowmans Creek	Glennies Creek Road Fallbrook Road Bridgeman Road Goorangoola Road Camberwell church Glennies Creek Hall New England Highway Camberwell cemetery	Residential properties (property value) Mount Owen Complex (business) Integra Coal (business) Ashton Coal (business) Mt Pleasant School
Potential impacts	Potential impacts	Potential impacts	Potential Impacts
Continued opportunities for social investment No impacts to local places of recreational value Opportunity for archaeological find associated with Ravensworth village (discussed further in this section below) Landholder concern regarding land devaluation	Project designed to avoid disturbance to water ways – no impacts to valued creeks and lakes	Upgrades to Hebden Road and railway crossing leading to improved traffic flows and road safety for users No impacts to Camberwell Church of cemetery	Continued operation of Mount Owen enabling continuation of positive economic value Landholder concern regarding land devaluation 10 new properties subject to acquisition rights 7 properties placed in active management zone No impact to Mt Pleasant School

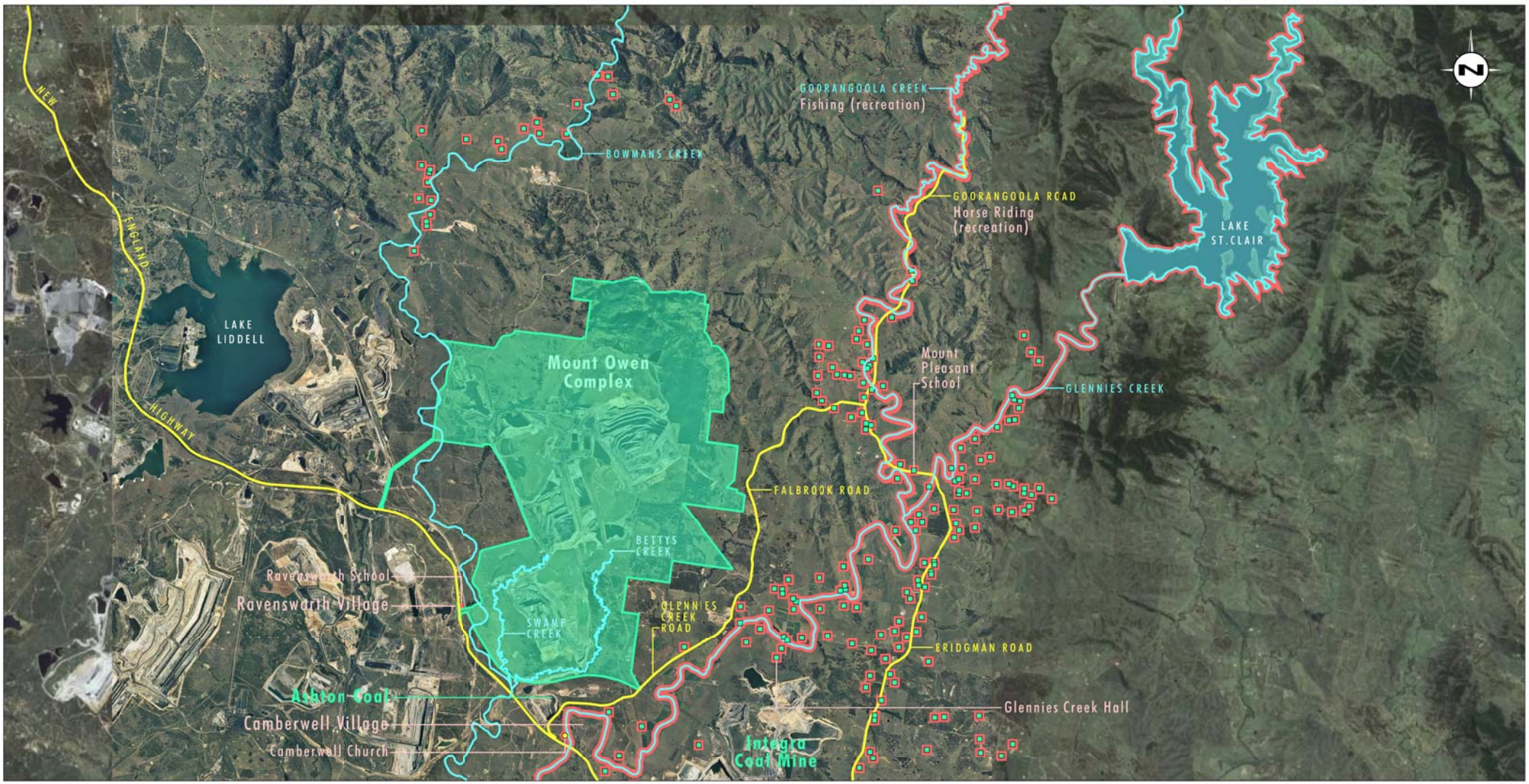

Image Source: Mount Owen (2012-2013), Google Earth (2009)
Data Source: Mount Owen (2013)

0 2.0 4.0 8.0km
1:150 000

Legend

- Social/Human Places of Value
- Natural Places of Value
- Physical Places of Value
- Economic Places of Value

FIGURE 7.4

Places Valued by Landholders Spatial Values Map

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In addition to identifying specific places of value, two landholders raised specific concerns regarding what they already saw as a continued threat to both Aboriginal and European local heritage.

An Aboriginal Cultural Heritage Assessment (ACHM 2014), prepared for the EIS, has identified 39 Aboriginal archaeological sites within the Project Disturbance Area, and pointed to the potential for indirect impacts on Aboriginal cultural heritage values (including adding to cumulative loss) in the Hunter Valley. The assessment was undertaken in consultation with 60 RAPs, who contributed to site identification, assessment and strategies for mitigation and management, as well as alternatives to address intergenerational equity.

The Assessment includes a number of measures to offset potential impacts to artefacts and to enhance opportunities for protection and promotion of cultural heritage, both within the Aboriginal and wider communities. This includes recognition of cultural values in site induction material, an annual open day to enable aboriginal groups access to relevant sites to enhance intergenerational cultural knowledge, a project to study archaeological values in the wider local area (not just the Project site) and liaising with Singleton Council regarding the potential to name new road infrastructure to recognise local Aboriginal cultural heritage and history.

The Historic Heritage assessment undertaken for the Project (Umwelt 2014a) found that there were no Historical Sites, Items of State and Local Significance or any sites/items with any form of statutory heritage listing identified within the Project area.

The assessment also found that the area of Ravensworth Village has the potential to be a locally significant archaeological resource and as a result, prior to the commencement of ground disturbance associated with the Hebden Road upgrade works, an on-site archaeological investigation of the proposed disturbance area will be undertaken subject to consultation with the Heritage Branch of the OEH. Any resource identified during such an investigation will provide an opportunity to provide the community with valuable insight regarding the history of the establishment, use and occupation of the Ravensworth Village.
Given the above findings, both the perceived stakeholder risk and the mitigated technical risk for this factor are rated as *low.*

Table 7.20 – Summary of Project Impact – Place of Community Value and Heritage

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact on places of community value and heritage	Local area Singleton LGA	Local residents Aboriginal stakeholders Wider community	Med	Low

7.6.2 Impacts to Sense of Local Community

The introduction of new groups of people to an area or the out flux of a proportion of the population can alter existing values and sense of community. Coakes (1995) discusses many different elements of sense of community including the need for shared value, social interaction and connection to a common structure (e.g. geography, gender, culture). While most communities are generally resilient to natural population change, a rapid or massive change can often have adverse social impacts as indicated by Burdge (2004).

As discussed in **Section 7.1**, the Project proposes a temporary population increase of approximately 330 construction workers across a 2 year construction period, with a peak construction workforce of 330 workers. Across all construction workforce scenarios modelled (see **Section 0**), construction workforce change is likely to make less than a 5 per cent population change to the Singleton LGA and wider study area (i.e. Scenario A at 1.45%, Scenario B at 1.16% and Scenario C at 0.67%), and is considered to have a *low* mitigated technical risk (refer to **Section 7.1.1**). No changes to the approved operations current workforce levels are proposed as part of the Project.

Another aspect that has potential to impact on sense of community relates to population change (perceived or actual) associated with property acquisition. As discussed, there are three private residences which have been identified as being subject to acquisition as result of the Project. While there is no question that the potential population impacts from the acquisition of three occupied residences, out of a wider settlement of 240 properties (and 577 people), presents *low* (negligible) technical risk for population impacts (as discussed in **Section 7.1** above), it is worth noting the community context in which the new acquisition rights will occur.

Of the 240 properties (residences and vacant land) in Bridgeman and Camberwell, 53 are already owned by mining companies, and a further 11 covered by acquisition rights (excluding those affected by the Project). Consultation with stakeholders (local and regional) and a review of regional issues (including media coverage) suggests there is considerable concern about the ongoing wellbeing and sustainability of small rural localities due to property purchase by neighbouring mining companies and subsequent population attrition. There was a perception that a large number of properties were being purchased by mining companies, either opportunistically (when people request generally to sell) or as a result of properties falling within defined acquisition zones.

In addition to population decline, other potential effects relevant to a sense of community may include: changes in demographics of the remaining population, especially toward a more mobile population with less shared community history (primarily due to the shift toward rental rather than home ownership); concerns regarding land devaluation which may affect personal autonomy, sense of empowerment and morale; changes in types of community events as demographics change; perceptions of uncertainty regarding the future, demarcations or perceived inequities created by acquisition and management zonings; and conflicts in neighbouring land uses.

Consequently, and despite the *negligible* population risk afforded by potential acquisition associated with the current Project (refer to **Section 7.1.2**), from a stakeholder perspective, this risk has been ranked as *medium.*

Table 7.21 – Summary of Project Impact – Sense of Community

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Sense of community	Local area	Local residents Wider community	Medium	Low

7.6.3 Impact on Other Land Uses and Potential for Land Use Conflict

As discussed in the capitals profile (see **Section 4.0**), the land in the Upper Hunter Region has many different land uses including rural settlements, open cut and underground coal mining, coal seam gas exploration, agriculture and viticulture, horse breeding, electricity production and World Heritage National Parks. This is reflective of the area's considerable natural assets, as well as its historical success in converting them to productive economic and social land uses.

Land use conflict can often materialise through impacts of differing land uses (e.g. noise, dust, lighting, visual impacts) or more indirectly through having to share scarce resources (e.g. water, workforce, transportation infrastructure). The main areas of potential land use conflict with coal mining in the Singleton LGA area include those of:

- Agriculture/viticulture;
- Tourism;
- Residential settlements (i.e. villages, towns); and
- Other industries and services.

Given these varying land uses, the NSW State Government has recognised the potential for land use conflict in and around coal mining in the Upper Hunter and has developed the *Upper Hunter Strategic Regional Land Use Plan* (Department of Planning and Infrastructure, 2012a), which seeks to provide guidance through the identification and prioritisation of prime geographic areas for each land use. This has been achieved through the identification and mapping of key geographic areas that illustrate differing agricultural land uses across the landscape (e.g. prime agricultural land) and strategic industry clusters (i.e. viticulture and equine workings).

Despite the identification of conflict that may occur due to varying land uses within a region, from a sustainable livelihoods perspective (Hempel 1999), industry diversity is often regarded as a key factor in contributing to economic robustness, social diversity and associated community wellbeing and sustainability, especially in the longer term.

Local stakeholder concerns regarding the potential for land use conflict were articulated through various discussions regarding:

- Flow on effects of environmental impacts (e.g. noise, dust) on the activities of nearby industries, particularly agriculture and livestock;
- Concern regarding changes to the land uses and management of acquired properties and other buffer lands, including issues associated with change of use to rental residential or vacant land, with subsequent concerns regarding long term property maintenance and management (including the potential for weeds and pests to cross over into private landholdings);
- Concern about the economic dominance of mining land-uses in the region, particularly in relation to difficulties of other industry (particularly local business) to compete for local workers given the higher wages offered by the mines;
- Changes to visual amenity and landscape values which may impact tourist value; and
- Pressure for increased housing land, including large scale green-field development, or pressure to subdivide productive rural properties to allow smaller rural block subdivisions.

Based on the perceptions outlined above, the impact of continued mining activities on other land uses in the Singleton area is ranked as a *medium* from a stakeholder perspective.

From a technical perspective, a number of studies were completed for the EIS that provide assessment of the actual predicted impact of the Project in terms of land use. These include:

- the Agricultural Impact Statement (Umwelt 2014b), which concluded negligible competing issues between the Project and alternative agricultural uses, viticulture, rural residential or agricultural tourism land uses;
- the Visual Impact Assessment (Umwelt 2014c), which found limited visible landscape change from key receivers, including major arterial roads (i.e. the Highway); and
- the Mine Closure and Rehabilitation Strategy (Umwelt 2014d), which aims to ensure sustainable post mining land use options, including using biodiversity offsets to build local and regional ecological linkages as well as areas suitable for sustaining potential future agricultural activities such as grazing; and
- the air quality, blasting and noise studies which found no significant off-site impacts predicted to affect the activities of neighbouring businesses or industry (beyond any landuse changes associated with properties acquisition of property, e.g. owner-occupied to tenanted residence).

Given the above actions, the Project's technical risk associated with impact on other land uses and potential for land use conflict is ranked as *low*.

Table 7.22 – Summary of Project Impact – Other Land Uses

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact on other land uses and conflict	Singleton LGA	Local Landholders Other land users Regional stakeholders	Medium	Low

7.6.4 Community Sustainability

As defined by Hempel (1999), a sustainable community is one in which:

> '…economic vitality, ecological integrity, civic democracy, and social well-being are linked in a complementary fashion, thereby fostering a high quality of life and a strong sense of reciprocal obligation among its members.'

As discussed in detail in **Section 4.0**, the social profile of the SIOA utilises a Sustainable Livelihoods approach and Capitals analysis. This framework allows for discussion of economic, natural, human, physical and social capitals, and identification of existing strengths and vulnerabilities which may impact ongoing community sustainability.

As discussed in **Section 4.3.7**, the three main LGAs that make up the study area, Singleton, Maitland and Muswellbrook, all exhibit relatively low sensitivity when compared to other LGAs (refer to **Table 7.22** above). All three LGAs are considered to have relatively resilient human capital values, generally as a result of lower levels of persons requiring assistance in Muswellbrook LGA, a more highly educated and slightly younger population in Singleton LGA, and consistently lower sensitivity values across most parameters in Maitland LGA (see **Appendix A**).

At the same time, the three LGAs are considered to each have different, albeit slightly lower, social capital sensitivity values: Muswellbrook is considered to have a more transient population with a relatively higher percentage of males, possibly due to the presence of multiple mining operations in the locality; Singleton has a slightly less transient population, still a relatively higher percentage of males, and moderate scores on the remaining indicators; and Maitland is considered to exhibit relatively less volunteers, with moderate scores on the remaining indicators.

Further, a comparison at the town level shows that towns in which existing Mount Owen employees and contractors reside exhibit relatively more resilient combined capital sensitivity values when compared generally across the LGAs.

This is confirmed by the TRC-Analysis which found existing employees to be well settled with strong local and regional linkages. This includes residing long term within the region (on average approximately 13 years in the same town or suburb) and participating widely in the community life, including patronage of local recreational activities, attending local schools, shopping at local business and making use of local community services and facilities.

Taking the assessments of community sensitivity at the LGA and township level into consideration, there are not anticipated to be any significant negative consequences regarding community sustainability at the scale of the study area. Communities within the study area are considered comparatively resilient, and can incorporate the range of assessed impacts, such as the proposed temporary influx of construction workers, as a result of their existing capital strengths. In general, towns in the Upper Hunter that are less strongly associated with Mount Owen employees and contractors are considered to be relatively more sensitive to change.

Consequently, the technical risk to community sustainability as a result of the Project is considered *low*, however, the perceived stakeholder risk (for reasons outlined in **Section 7.6.2** Sense of Local Community) is ranked as a *medium*.

Table 7.23 – Summary of Project Impact – Community Sustainability

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Community sustainability	Local area	Local Residents Wider community	Medium	Low

7.7 Economics

The positive economic impacts associated with the presence of Mount Owen in the region were raised consistently by landholders and regional stakeholders during consultation (refer to **Section 5**. Key benefits were identified as the generation of local employment, opportunities for local commercial contracts, social investment (i.e. funding for community groups, programs and/or infrastructure) and flow on effects of existing and continued employee and supplier expenditure.

These perceptions are supported by findings from the TRC-Analysis completed for the SIOA (refer to **Appendix A**) which identified strong positive economic benefits and other socio-economic linkages between Mount Owen and wider communities and geographic centres (these are explored further in the section below).

A detailed regional economic assessment for the Project has also been undertaken by Deloitte Access Economics, which is discussed further in the main text and Appendix 17 of the EIS.

In addition to positive economic impacts, some landholders and stakeholders identified what they regarded as negative impacts of the mining industry on the local and regional economy. This included concern regarding high mine wages causing a shortage of skilled labour in other industries, perceptions that insufficient royalties generated by mining were being returned to the region, and impacts of redundancies due to recent economic downturn in the coal sector.

7.7.1 Local Linkages

Findings from the TRC-Analysis show clearly that Mount Owen and its employees and contractors are connected through strong social and economic linkages to their local communities, with impacts flowing through:

- employment (direct impact);
- business expenditure (direct impact);
- employees' household expenditure (indirect impact);
- employees' use of local services and facilities (indirect impact);
- employees' participation in community groups and activities (indirect impact);
- suppliers' employment impact (indirect impact); and
- suppliers' business expenditure (indirect impact).

The analysis found that not only is Mount Owen highly linked to the Singleton township and LGA, but it also has strong connections with other nearby towns such as Maitland and Muswellbrook. These locations tend to be where most employees and contractors reside and consequently where a significant portion of household expenditure and use of local services occurs.

Direct economic contribution was estimated to yield a total annual economic expenditure of $59,272,567 spread across 19 locations, most significantly in Maitland and Singleton which together account for over 63 per cent of the total annual household expenditure spend by Mount Owen employees/contractors.

In addition to direct employees, suppliers to the operations were also surveyed. While insufficient responses were received to be able to generalise across all suppliers, the suppliers that did respond to the survey (24 out of 506) indicated that, on average, approximately 17 per cent of their expenditure was directly reliant on Mount Owen.

A summary of the outcomes is provided in the following table. The full breakdown of the socio-economic linkages and expenditure related directly to Mount Owen is provided in the full TRC-Analysis in **Appendix A**.

Table 7.24 – TRC-Analysis Summary (Coakes Consulting, 2013a)

	Estimated % of Mount Owen Workers	Estimated Annual Household Expenditure ($)	Estimated # of Workers and/or Family Members Participating in Sport and/or Community Groups	Estimated % of Total Healthcare Attendances by Workers and Families	Estimated % of Attendances at Education Facilities of Workers' Household/Children
Singleton	33%	18.05mil	280	40%	28%
Maitland	22%	19.08mil	140	29%	28%
Muswellbrook	10%	5.46mil	30	9%	5%
Cessnock	7%	3.78mil	40	6%	10%
Branxton	7%	805k	43	1%	2%
Newcastle	5%	6.86mil	52	8%	9%
Other	15%	5.22mil	64	7%	18%

7.7.2 Regional and State Impacts

According to the recent Deloitte Access Economics report *Prospects and Challenges for the Hunter Region* commissioned by Regional Development Australia (RDA) Hunter, about 75 per cent of the State's coal production occurs in the Upper Hunter, with mining accounting for almost 60 per cent of the Upper Hunter's economic output in 2012, and 22 per cent across the entire Hunter region. Mining is also attributed with strengthening and driving growth in mining related industry clusters around the Hunter, such as metals processing, freight transport and construction (Deloitte Access Economics, 2013).

The report projects continuation of this economic structure for the next 20 years (the time period covered by the report) with continued growth of mining, but complemented by newer start up industries, predominantly in technology, education or other services. This outcome, is again reinforced by TRC findings, which indicate that the micro-economic linkages from the Mount Owen mine (e.g. employee and supplier direct spending) extend far beyond 'local' areas, including direct links to Sydney and inter-state (refer to **Appendix A**).

A detailed Economic Assessment and Cost - Benefit Analysis were completed as part of the EIS for the Project, including consideration of environmental and social externality costs. The assessment concluded that the benefits of the Project will outweigh the costs, and that the key economic benefits will be:

- economic returns from the extended mine life for the company, workforce and other suppliers;
- creation of approximately 330 additional construction jobs during the construction phase of the Project;

- upfront Project capital investment of approximately $153 million;
- net benefits of around $758 million over the Project;
- royalties of an estimated $258 million to the NSW Government, much of which is expected to be spent in the Hunter region;
- generation of a net benefit to the Singleton community of around $306 million over the life of the Project;
- increase the Hunter economy by a projected $1.3 billion over the life of the Project;
- increase the NSW economy by approximately $1.9 billion; and
- directly and indirectly employing a peak of over 1200 FTEs workers. Of these, 1,091 are estimated to be employed in the Hunter region.

The full findings and methodology of the Economic Assessment are discussed further in the main text and Appendix 17 of the EIS.

Table 7.25 – Summary of Project Impact – Economic

Project Aspect	Geographic Scope	Stakeholders Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Local and regional economic impacts	Local area	Local Residents Wider community Local business Regional industry	*High (positive)*	*High (positive)*

7.8 Social Impact and Opportunity Assessment Summary

The social risks assessed throughout **Section 7.0** are summarised in the following table which presents the aspect, geographic scope, impacted stakeholders and mitigated technical risk for each assessed Project risk factor.

Table 7.26 – Summary of Mitigated Social Impacts

Project Aspect and Impact	Geographic Scope	Stakeholders Potentially Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact of construction workforce increase on population (Scenario A)	Local Area	Workforce Local residents	Low	Low
	Singleton LGA Maitland LGA Cessnock LGA	Workforce Singleton, Maitland and Cessnock residents	Low	Low
Impact of construction workforce increase on population (Scenario B)	Local Area	Workforce Local residents	Low	Low
	Singleton LGA Maitland LGA Cessnock LGA	Workforce Singleton, Maitland and Cessnock residents	Low	Low
Impact of construction workforce increase on population (Scenario C)	Local Area	Workforce Local residents	Low	Low
	Singleton LGA Maitland LGA Cessnock LGA	Workforce Singleton, Maitland and Cessnock residents	Low	Low
Impact of acquisition on local resident population	Local Area	Landholders subject to acquisition Wider community	Med	Low
Housing and accommodation impacts from incoming construction workforce (Scenario A)	Singleton LGA only	Accommodation seekers Construction workforce Tourism industry Landlords	Med	Med
	Singleton LGA Muswellbrook LGA Maitland LGA	Accommodation seekers Construction workforce Tourism industry Landlords	Low	Low

Table 7.27 – Summary of Mitigated Social Impacts (cont.)

Project Aspect and Impact	Geographic Scope	Stakeholders Potentially Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Housing and accommodation impacts from incoming construction workforce (Scenario B)	Singleton LGA only	Accommodation seekers Construction workforce Tourism industry Landlords	Low	Low
	Singleton LGA Muswellbrook LGA Maitland LGA	Accommodation seekers Construction workforce Tourism industry Landlords	Low	Low
Housing and accommodation impacts from incoming construction workforce (Scenario C)	Singleton LGA only	Accommodation seekers Construction workforce Tourism industry Landlords	Low	Low
	Singleton LGA Muswellbrook LGA Maitland LGA	Accommodation seekers Construction workforce Tourism industry Landlords	Low	Low
Impact of construction workforce on community services and facilities	Singleton LGA	Construction workforce Health facilities Recreational facilities	Low	Low
Impact of construction workforce traffic on road safety	Local Area Singleton LGA	Local residents Workforce Wider Community	Medium	Low
Impact on road infrastructure	Local Area Singleton LGA	Local residents Workforce Wider Community	*Medium*	*High (positive)*

Table 7.26 – Summary of Mitigated Social Impacts (cont.)

Project Aspect and Impact	Geographic Scope	Stakeholders Potentially Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Dust – impact on social amenity	Local area	Local residents	High	Medium
Noise - impact on social amenity	Local Area	Local residents Mount Pleasant School	High	Medium
Blasting – impact on social amenity	Local Area Singleton LGA	Local Residents Mount Pleasant School	Medium	Low
Traffic – impact on social amenity	Local area	Local residents	Medium	Low
Visual – impact to social amenity	Singleton LGA	Local residents and Commuters	Low	Low
Dust – impact on health and wellbeing	Singleton LGA	Local Residents	High	Low
Impact of construction workforce traffic on road safety	Local Area	Construction workforce Regional road users	Medium	Low
Land management of mine owned land and areas of community and environmental value	Local Area Singleton LGA	Neighbouring landholders Regional stakeholders Other mine sites	Medium	Low
Impact on ecological values	Local area Singleton LGA Hunter region (bio region)	Local residents Regional stakeholders Environmental NGOs Government agencies	Medium	Low
Impact on water (ground surface)	Local area Singleton LGA Hunter Catchment Hunter Region	Local Residents Water users Wider community	Medium	Low
Greenhouse gases	National	Residents Business Government	Medium	Low

Table 7.26 – Summary of Mitigated Social Impacts (cont.)

Project Aspect and Impact	Geographic Scope	Stakeholders Potentially Impacted	Perceived Stakeholder Risk	Mitigated Technical Risk
Impact on places of community value and heritage	Singleton LGA	Near neighbours Registered Aboriginal Parties Wider community	Medium	Low
Impact on sense of community	Local Area	Local residents Wider community	Medium	N/A
Impact on other land uses and conflict	Singleton LGA	Local landholders Other land users Regional stakeholders	Medium	Low
Community sustainability	Local Area	Local landholders Wider community	Medium	Low
Local and regional economic impacts	Local Area	Local Residents Wider community Local business Regional industry	*High (positive)*	*High (positive)*

8.0 Management and Mitigation

This section provides a summary of the predicted social impacts/risks associated with the Project, in particular those that have been rated as a medium (or greater) impact in **Section 8.0**. In many cases, Mount Owen has a number of existing strategies in place to address these impacts. However, in addition, other strategies have been proposed to mitigate the predicted negative Project impacts and where possible enhance the predicted positive impacts.

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Population Change				
Impact of acquisition on local resident population	Med	Low	• Iterative modelling and project design change to minimise number of properties that fall within affectation/management zones • Provision of suitable properties for use as tenancy	• Working with landholders and tenants to meet their needs to maximise opportunities for continued occupancy, where possible
Housing and accommodation impacts from incoming construction workforce Scenario A (Singleton LGA only)	Medium	Medium	• Continued participation in Upper Hunter mining dialogue Housing and Social infrastructure forums	• Inclusion of weighted consideration regarding competent and capable local/regional companies in procurement process • Provision of list of accommodation options outside of Singleton township • Ongoing communication with Council regarding matters of interest to Council, such as social and amenity, traffic, agriculture, water and offsets, as well as construction workforce scheduling, composition housing requirements etc.
Housing and accommodation impacts from construction workforce Scenario A (spread across key LGA's)	Low	Low		

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Air Quality				
Dust emissions – impact on social amenity	High	Medium	• PRP – Pollution Reduction Plan – operational document outlining existing controls to manage and reduce dust impacts • Proactive real time air quality monitoring and response (including Air Quality Management TARP) • Meteorological and air quality measuring, monitoring and reporting • Dust controls – suppression systems, chemical suppressants, etc. • Mine planning process and education of workforce to consider air quality, emissions and management • Targeted procedures to control air quality management (including blasting, mining activities e.g. dump heights) • Distribution of NSW Minerals Council 'Dust and You' fact sheet to tenants and households in the existing operational affectation and management zones • Presentation of air quality updates to the Mount Owen CCC and community members as required • 24 hour complaint hotline and investigation follow up including monitoring air quality complaints to identify specific patterns which might indicate issue regarding air quality management • Active member of the Upper Hunter Air Quality Monitoring Network (Glencore) • Participation in Air Quality working group, Upper Hunter Mining Dialogue (Glencore)	• Acquisition and/or management of properties predicted to have dust impacts above relevant regulatory levels, in accordance with requirements of Project approval • Preparation of individualised Property Information Sheets detailing predicted impact specific to the property, and processes for seeking and achieving effective mitigation • Seek to collaborate with neighbouring mines regarding specific residences common to relevant mining operations • Rainwater tanks to be cleaned at privately-owned properties every three years within a 4 km radius from the approved Project Area • Wider distribution of the 'Dust and You' fact sheet to include all landholders within 4km radius from the approved Project Area • Further community awareness raising of the air quality monitoring network and location of monitors within the locality and wider region (e.g. through newsletter) • Establishment of additional monitors and relocation of existing monitors (in conjunction with outcomes of the air quality assessment) • review of appropriate methods to monitor landholder experiences regarding mine-related impacts (such as noise, air quality blasting), with proactive follow-up by Mount Owen personnel, e.g. resident diary • Updated Air Quality and Greenhouse Gas Management Plan, as per EIS

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Dust emissions- impact on health and wellbeing	High	Low	• Continued participation in Upper Hunter Air Quality Monitoring Network (Glencore) • Continued participation in the Upper Hunter Mining Dialogue working group on Health (Glencore) • Acquisition of properties predicted to experience (or experiencing) air quality impacts higher than regulatory levels, in accordance with Project approvals. • Distribution of the NSW Minerals Council 'Dust and You' brochure to all tenants residing in Mount Owen owned properties • Continued air quality monitoring and management as outlined in the Mount Owen Air Quality Management Plan	• Seek to collaborate with neighbouring mines regarding specific residences common to relevant mining operations • Updated Air Quality and Greenhouse Gas Management Plan, as per EIS
Noise				
Noise emissions – impact on social amenity	High	Medium	• Use of sound attenuated mining fleet • Proactive real time noise monitoring and response • Quarterly attended noise monitoring to confirm compliance with Environment Protection Licence (EPL) • Glencore performance specification for new equipment • Presentation of noise updates to Mount Owen CCC and community members as required • 24 hour complaint hotline and investigation follow up including monitoring noise complaints to identify specific patterns which might indicate issue in relation to noise	• Acquisition and/or management of properties predicted to have noise impacts above relevant regulatory levels • Review of appropriate methods to monitor landholder experiences regarding mine-related impacts (such as noise, air quality blasting), with proactive follow-up by Mount Owen personnel, e.g. resident diary • Seek to collaborate with neighbouring mines regarding specific residences common to relevant mining operations • Updated Noise Management Plan, as per EIS

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Blasting – impact on social amenity	Medium	Low	• Blast Management Plan that defines procedures to mitigate impact levels, such as blast design, timing, meteorological conditions • 24 hour complaint hotline and investigation follow up including monitoring blasting complaints to identify specific patterns which might indicate issues regarding blasting	• Review of appropriate methods to monitor landholder experiences regarding mine-related impacts (such as noise, air quality blasting), with proactive follow-up by Mount Owen personnel, e.g. resident diary • Seek to collaborate with neighbouring mines regarding specific residences common to relevant mining operations • Updated Blast Management Plan, including revised monitoring locations, as per EIS
Roads and Traffic				
Traffic – impact on social amenity	Medium	Low	• Recently completed upgrade of existing New England Highway/Hebden road intersection	• Development of a Traffic Management Plan, in consultation with Singleton Council and RMS, to proactively manage traffic movements during individual construction periods • No proposed increase in operational workforce • No proposed increase in production levels and heavy vehicles movements • Construction of a rail overpass at the level crossing at Hebden Road (140 metres east of the New England Highway) • Construction of a new dual lane bridge over Bowmans Creek, located 500 metres east of the New England Highway
Impact on road infrastructure	*Medium*	*High (positive)*	• Annual road maintenance contribution to Singleton Council – CPI indexed with payment for most recent financial year totalling $12,019 (paid August 2013)	• Construction of a rail overpass at the level crossing at Hebden Road (140 metres east of the New England Highway) • Construction of a new dual lane bridge over Bowmans Creek located 500 metres east of the New England Highway

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
mpact of construction workforce traffic on Road safety	Medium	Low	• Staggering of shift change for operational workforce at Mount Owen and Glendell • Fatigue management procedure regarding hours of work per day and times between shift • Current workforce profile for operational workforce indicates that the current commute time is short for most employees (over 50% of employees reside within ½ hour of the Mount Owen operations)	• Development of a Traffic Management Plan, in consultation with Singleton Council and RMS, to proactively manage traffic movements during individual construction periods • Construction of a rail overpass at the level crossing at Hebden Road (140 metres east of the New England Highway) • Construction of a new dual lane bridge over Bowmans Creek located 500 metres east of the New England Highway
Environment and Land Management				
Impact on Ecological values	Medium	Low	• Current Offset areas • Environmental Management Plan • On-going support for a local coordinated wild dog baiting program	• Design of Project to minimise disturbance footprint – to reuse existing infrastructure and avoid disturbing waterways and Ravensworth State Forest • Ecological Offset Strategy to protect vegetation and habitat area with direct linkages to existing Glencore offset areas • Explore opportunities for the development of Mount Pleasant school based programs (with focus on environmental and biodiversity activities) – as part of revised Social Involvement Plan
Impact on water (ground and surface)	Medium	Low	• Mount Owen Complex Water Management Plan • Participation in the Hunter River Salinity Trading Scheme	• Integrated water management, in accordance with the Mount Owen Water Management Plan, the Environmental Protection Licence and the Hunter River Salinity Trading Scheme • Explore opportunities for the development of Mount Pleasant school based programs (with focus on waterways) – as part of revised Social Involvement Plan • Consideration given to the development of a Waterways Beautification Project that focuses on areas of community and environmental value • Updated water management plan, as per EIS

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Land management – mine owned land and areas of community and environmental value	Medium	Low	• Proactive management of mine owned agricultural land via Glencore subsidiary Colinta Holdings • Biodiversity offset lands management strategy • Landscape Management Plan which includes control of weeds and feral animals • Support for coordinated Wild Dog baiting program • Bushfire Management Plan • Indigenous Land Management Training Program (trainees placed with Muswellbrook, Cessnock and Singleton Councils, Hunter Land Management, Hunter Wetlands, and the Hunter Catchment Management Authority (CMA) • Individual lease agreements that enable mine owned land to maintain existing land uses	• Consideration of mechanisms to further involve the community in local land management, e.g. working group/CCC involvement etc • Improved maintenance of Mount Owen owned properties • Coordinated weed control strategy • Progressive rehabilitation of disturbed areas - rehabilitated as soon as practicable throughout the life of the Project (EIS) • Integrated rehabilitation strategy across Mount Owen, Glendell and other Glencore mines in the Ravensworth area • Continued implementation of the existing bushfire management controls, including ongoing review of the Bushfire Management Plan in consultation with the RFS • Updated Mine Closure and Rehabilitation Strategy, as per EIS
Greenhouse gases	Medium	Low	• Glencore corporate green gas program	• Ongoing implementation of energy efficiency initiatives on site e.g. utilising alternative fuel sources and optimising productivity

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Community				
Impact on places of community value and heritage	Medium	Low	• Yorks Creek Cultural Landscape Restoration Project (partnership between Mount Owen and the local Aboriginal community associated with the Yorks Creek Voluntary Conservation Area (VCA))	• Design of the Project to minimise disturbance area. • Protocols regarding investigation of any unexpected archaeological find and take actions accordingly, as per the EIS • Establishment of an Aboriginal Cultural Heritage Working Group to include representatives of the Knowledge Holder Groups, the Registered Aboriginal Parties (RAPS), and the Wonnarua Local Aboriginal Land Council (WLALC) • Revision of on-site induction program to include material to raise awareness of Aboriginal cultural values of the Project area and the local area generally • Annual Cultural Heritage Open Day for the RAPs at the York Creek Voluntary Conservation Area (VCA) • Support for the naming of new road infrastructure to reflect the cultural importance of the area • Funding for three trainee scholarships to be undertaken in culture related training areas

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Sense of community	Medium	Low	• On-going support for local community development and involvement initiatives as part of Glencore's Corporate Social Involvement Plan and Mount Owen Social Involvement plan. This includes support for: ▪ Local events (e.g. Mount Pleasant horse sports day, charity rugby day, Mount Pleasant School programs and activities) ▪ Local schools (e.g. Mount Pleasant School, Singleton School outdoor garden, schools mobile tennis program) ▪ Neighbourhood centres (e.g. Singleton, Maitland) ▪ Health and wellbeing programs and initiatives (e.g. Lifeline, Family Action Centre, John Hunter Hospital, Westpac helicopter service, Muswellbrook Women's refuge, Aboriginal health program, Samaritans' Christmas lunch) ▪ Junior sports across the Upper Hunter (Glencore)	• Revised Mount Owen Social Involvement Plan to respond to SIOA impact areas and other findings • Ongoing landholder and community engagement program, including increased distribution of newsletter and regular face to face contact with landholders and stakeholders • Community function/social event/open day to be held within the locality, with frequency to be reviewed subject to attendance levels • Explore opportunity for the development of Mount Pleasant school based programs (with focus on involvement of Mount Owen personnel) • Proactive management of Mount Owen properties, including periodic review of Mount Owen property maintenance • Consideration of a workforce participation program to enhance workforce participation in voluntary local community activities e.g. rural bushfire service
Impact on other land uses and potential for land-use conflict	Medium	Low	• Proactive management of mine owned agricultural land via Glencore subsidiary Colinta Holdings • Biodiversity offset lands management strategy • Landscape Management Plan, which includes control of weeds and feral animals • Support for coordinated Wild Dog baiting program • Mount Owen Complex Bushfire Management Plan (2011) • Individual lease agreements for mine owned land to maintain existing land uses.	• Design of Closure Strategy to afford consideration of sustainable post mining land use options, including contiguous native vegetation areas (facilitation of local and regional linkages) as well as the identification of areas suitable for sustaining potential future agricultural activities such as grazing. • Proactive management of Mount Owen owned properties, including periodic review of Mount Owen property maintenance • Consideration of mechanisms to further involve the community in local land management activities e.g. community working group/CCC involvement, etc • Revision and update of Rehabilitation Strategy as required

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Community Sustainability	Medium	Low	• Iterative modelling and project design change to minimise number of properties that fall within affectation/management zones • Funding as part of Glencore Corporate Social Involvement Plan for enterprise, education and job creation programs, including: ▪ 40 apprenticeship training places at the Hunter Valley Training Centre (HVTC) ▪ Aboriginal Business Development Programs ▪ Indigenous Land Management Training (trainees placed with Muswellbrook, Cessnock and Singleton Councils, Hunter Land Management, Hunter Wetlands, and the Hunter Catchment Management Authority (CMA) ▪ 25 University of Newcastle scholarships (key catchment includes the Upper Hunter) ▪ 40 scholarship places in the Galuwa program (a program that is run through the University of Technology Sydney to train Aboriginal students in Engineering) ▪ Family Action Centre (program working to further develop the capacity of community organisations) • On-going support for local community development and involvement initiatives as part of Glencore's Corporate Social Involvement Plan and the Mount Owen Social Involvement Plan • Support for and use of local community facilities for Mount Owen related events (e.g. use of Hebden Hall for community information days), and involvement of Mount Owen personnel in community capacity building (e.g. mentoring at local high schools as part of the MAX Potential program)	• Working with landholders and tenants to meet their needs and maximise opportunities for continued occupancy, where possible • Continuation of Glencore Corporate Community Involvement Plan and Mount Owen Social Involvement Plan • Continuation of operational economic benefits to local townships and the broader region through employee and supplier expenditure (e.g. estimated current annual employee spend of over $46m within Singleton, Muswellbrook, Maitland and Cessnock LGAs)

Table 8.1 – Summary of Existing and Proposed Mitigation Strategies for the Project (cont.)

Impact(S)	Perceived Stakeholder Risk	Mitigated Technical Risk	Existing Strategies	Proposed Project Strategies
Local and Regional Economic Benefits	*High*	*High*	• Current employment of approximately 660 people at Mount Owen mine and up to 260 at Ravensworth East mine • Existing economic outputs associated with current operations, including royalties • Existing strong socio- economic linkages (employee residence, expenditure, use of services, community participation) within the Upper Hunter region, as identified through the TRC-Analysis • Existing employee spend of $60 million annually (of which over $46m within Singleton, Muswellbrook, Maitland and Cessnock LGAs) • Existing strong links with local and regional suppliers • Approved community spend of over $2.3million across Upper Hunter community services, infrastructure and activities in 2013 (Glencore Corporate Community Involvement Plan)	• Capital investment of approximately $153 million • Commitment to recruit locally, where possible – economic modelling estimates that the Project will create 1200 additional FTE jobs of which 1091 will be employed in the Hunter region • Inclusion of weighted consideration regarding competent and capable local/regional companies in procurement process, including for construction works • Delivery of a net economic benefit of $758 million over the life of the project, including $306 million for Singleton community • Increase to the NSW economy of $1.9 billion of which $1.3 billion will be specifically to the Hunter economy

9.0 Monitoring and Evaluation

A key aspect of any social impact assessment is the development of a framework to monitor a project's impact over time. It is recommended that social data be collected to monitor commitments made in the social impact assessment namely:

- Key areas of predicted Project impact e.g. origin of the proposed construction workforce, intended accommodation of construction workers in the locality/region, use of local services etc.

- Changes in the local social and economic context through the collection of relevant census and social indicator data at appropriate levels of analysis across the study areas.

- Monitoring of the social and economic contributions of the operation in the community through recurring implementation of workforce and supplier surveys (i.e. TRC-Analysis).

- Evaluation of actions and investments arising from any Voluntary Planning Agreement (VPA) for the Project to assess the outcomes of key projects and programs.

Mount Owen has an existing Social Involvement Plan (last updated 2012) and it is suggested that outcomes of the SIOA be integrated into this document to inform future management of social impacts and ongoing operational and community engagement planning for the operation. The company also has a current community support program that provides contributions to local community groups and organisations. This program, at the operational level, is complemented by Glencore's broader Corporate Social Involvement Program which takes a more regional focus to social involvement and investment.

Glencore also currently undertake a community perception survey of households in the areas nearest to their Company operations every three years, to inform engagement and investment activities at the operational and regional level. Consequently, data obtained through this SIOA could be utilised to further inform engagement and investment planning at a regional, state or higher level through greater alignment of investment priorities with community issues, impacts, needs and aspirations.

Where possible, indicators developed to monitor the SIOA should be aligned with broader company business drivers and sustainable development standards.

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APPENDIX A

Town Resource Cluster (TRC) Analysis

Mount Owen Continued Operations Project Social Impact and Opportunities Assessment

Town Resource Cluster Analysis

Prepared for

Mount Owen Pty Limited

November, 2013

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1.0 Introduction

Using a technique known as Town Resource Cluster Analysis (TRC analysis) (Fenton, Coakes, and Marshall, 2003), it is possible to assess the socio-economic linkages that exist between natural resource projects and communities through the direct contributions of the project (e.g. employment) and indirect contributions (e.g. employee household expenditure and use of services).

Often these contributions or impacts are experienced in areas some distance away from a project. For example, communities in capital cities or other states may experience some benefit from a mining project through indirect flow-on effects, such as employee household expenditure (e.g. spending occurring in regional centres) or employment by suppliers to the project (e.g. if a large supplier has its main office and employs many staff in another location).

This report summarises research and analysis (using TRC Analysis) applied to Glencore's Mount Owen Mine operations, consisting of the Mount Owen Mine and Coal Handling and Processing Plant (CHPP), and Ravensworth East Mine. The following direct and indirect socio-economic parameters are considered:

- Number of employees and contractors by town of residence
- Household expenditure undertaken by employees/contractors, by town of residence
- Number of health services identified as being used by employees/contractors and their families/households, by town of residence
- Number of employee/contractor family members attending education facilities, by town
- Location of suppliers' main offices
- Number of suppliers' employees (all), by town
- Business expenditure undertaken by suppliers, by town
- Estimates of suppliers' business reliance on Mount Owen Mine.

2.0 Method

The data for undertaking the analysis described above were obtained via:

- a paper-based survey of employees and contractors distributed via mail, and
- an online survey of suppliers distributed via email.

2.1 Sample size and statistical reliability

In statistics, a "population" refers to an actual group of persons that the survey sample is representing. Therefore in this study there were two "populations" of interest: (a) all of Mount Owen Mine's personnel (employees and contractors), and (b) all of Mount Owen Mine's suppliers.

As shown in Table 2-1 2–1, the survey of employees and contractors achieved a large sample size relative to estimates of population size, producing reliable datasets with low error margins.

Suppliers with the highest spend on Mt Owen operations were targeted for the survey, but only twenty-four suppliers responded to the online survey. The low response rate and high error level for supplier data mean that the data was not considered sufficient to obtain a reliable estimate of the population. Thus, the results of the supplier survey should be interpreted with caution.

Table 2-1: Sample characteristics

	Sample	Population	Representation	Error margin (95% confidence)[1]
Employees & contractors	135	591[2]	22.84%	+/- 7.42%
Suppliers	24	506[3]	4.74%	+/- 19.54%

1:'95% Confidence' is a measure of statistical reliability. Within social analyses, an error margin t less or equal to +/-10% is considered sufficient for reliable representation.

2:Based on information provided by Glencore on 12 April 2013, which indicated that 591 employees and full-time contractors were working for Mount Owen Mine.

3:Based on information provided by Glencore on 10 April 2013, which indicated that 506 suppliers were "active" on its system.

2.1.1 Missing data estimation

In some of the following sections, values for non-respondents (people in the populations who did not respond to the survey) have been estimated by assuming the characteristics of survey respondents are identical to non-respondents. This method of estimation is undertaken whenever survey data is presented as percentages; however, for the purposes of this report, many of the relevant values are absolute numbers (e.g. number of people accessing a service, or number of dollars spent).To estimate the absolute numbers for an entire population, based on sample data, responses were multiplied by an appropriate factor (based on the representation percentages in Table 2-1 2–1).

Specifically, the multiplier for employees and contractors was 4.3782 (100 divided by 22.84). Therefore, if survey sample data showed 100 employee/contractor respondents lived in town X, then it can be assumed if all employees and contractors answered the survey, there are actually 437 employees and contractors living in town X (100 multiplied by 4.3782). Given the small sample of suppliers, survey data for suppliers have not been estimated for the population.

Although the figures for the multipliers are rounded to four decimal places to increase accuracy and reliability, all other numbers are kept at two decimal places. Furthermore, all decimal places in this report have been rounded down to be conservative.

3.0 Results

3.1 Employees & contractors

3.1.1 Profile

Table 3–1 summarises the key characteristics of Mount Owen Mine's employees and contractors, based on survey data. A quarter of respondents were employees (25 per cent), compared to 75 per cent that were contractors. This high proportion of contractors is expected as Mount Owen Mine and associated infrastructure is owned by Glencore , managed by Mount Owen Pty Limited and currently operated under contract by Thiess Pty Limited (Thiess).

A comparison of employee and contractor survey data found that there were no major differences between the two samples; therefore data from employees were combined with the contractor sample for analysis.

Most employees and contractors were employed full time (98 per cent), and the average hours worked per week was estimated at 45.65 hours.

More than half of workers (67 per cent) said they were married, and 17 per cent of workers were single males. Workers' wages and combined household income is discussed in Section 3.1.3.

Further characteristics of the Mount Owen Mine workforce are summarised in Table 3-1.

Table 3-1: Characteristics of employees and contractors (survey data)

Characteristics	Survey percentage (%) or number (#)
Employment type	
Employee	25.20%
Contractor	74.80%
Employment status	
Permanent full-time	97.78%
Permanent part-time	0.74%
Casual	0.74%
Not specified	0.74%
Length of time working for the mining industry	
Mean (years)	10.74
Length of time working for Mount Owen Mine	
Mean (years)	4.82
Hours worked per week	
Mean (hours)	45.65
Employed previously in other industry sectors (not mining)	
Percentage	21.50%
Highest level of school education	
Year 10 or below	49.63%
Year 11	11.11%
Year 12	37.04%
Not specified	2.22%
Additional qualifications	

Characteristics	Survey percentage (%) or number (#)
Trade/TAFE certificate	67.83%
Degree/ Diploma	25.87%
Business/ Management certificate	2.79%
Other	3.49%
Home ownership	
Has a mortgage	63.24%
Renting	19.12%
Owns the property	14.71%
Staying with family	2.94%
Length of time in town or suburb of residence	
Mean (years)	13.64
Median (years)	8.00
Proportion that relocated to the Upper Hunter area for employment	
Percentage	45.90%
Number of people in household	
Mean number of people	3.48
Proportion of single males in sample	
Percentage	17.04%
Family structure	
Married	66.67%
Never married	23.70%
Divorced	6.67%
Separated	2.96%
Aboriginal / Torres Strait Islander status	
Yes (Aboriginal and / or Torres Strait Islander)	4.44%
No	95.56%

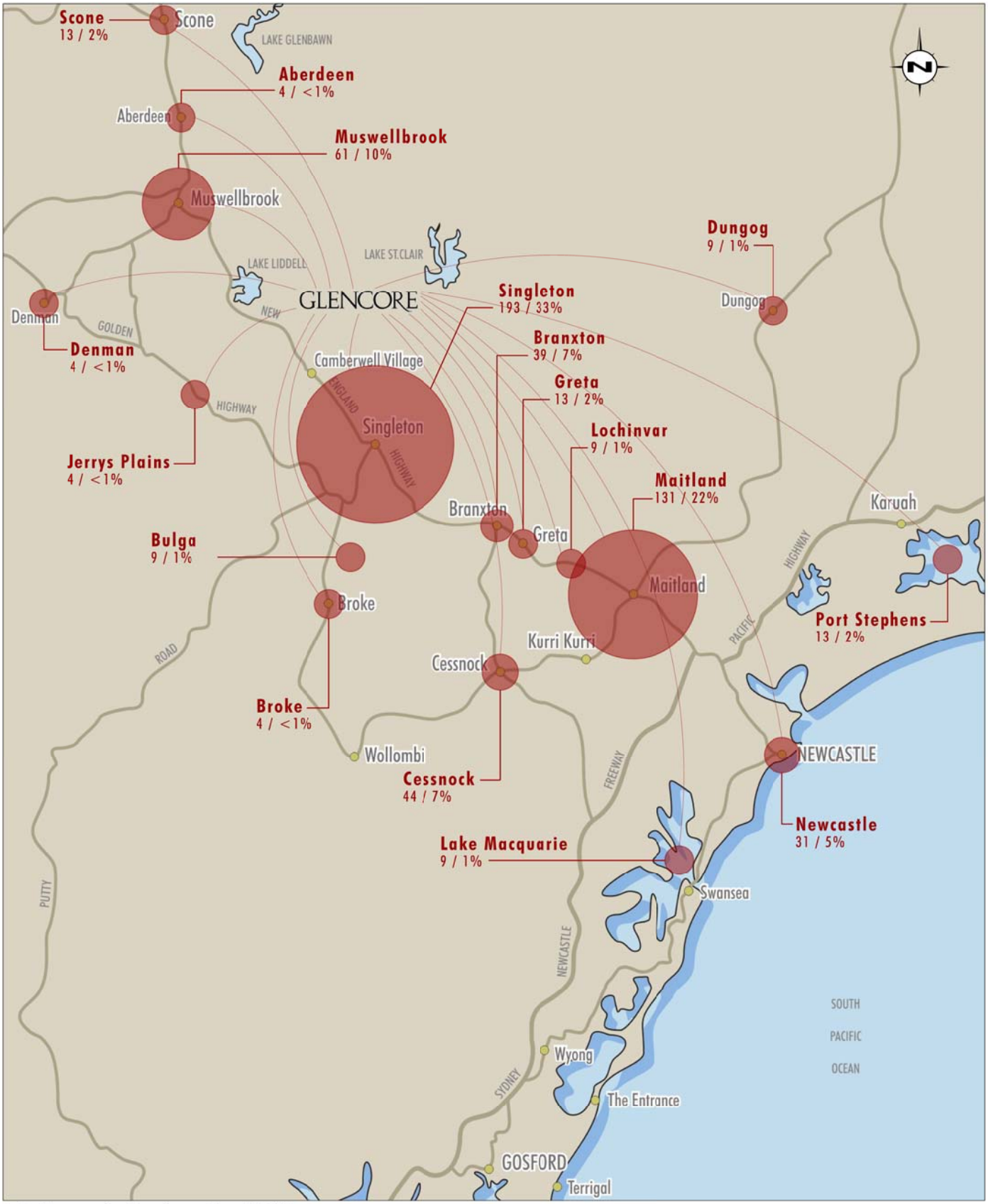
Source: Coakes Consulting (2013)

3.1.2 Town of residence

Mount Owen Mine workers live in a number of communities surrounding the Mount Owen operations (see Table 3–2Table 3-2). The operation is located close to the township of Singleton and in the rural locality of Hebden. As presented in Table 3–2, most workers said they lived in Singleton (33 per cent), followed by Maitland (22 per cent), and Muswellbrook (10 per cent). Worker residence locations are mapped in Figure 3.1 Missing data was estimated as outlined in Section 2.1.1.

Table 3-2: Workers' town of residence (includes contractors) based on survey data (missing data estimated).

	Number of workers (sample)	Percentage of workers (sample)	Number of workers (estimated for population)
Singleton	44	32.59%	193
Maitland	30	22.22%	131
Muswellbrook	14	10.37%	61
Cessnock	10	7.41%	44
Branxton	9	6.67%	39
Newcastle	7	5.19%	31
Port Stephens	3	2.22%	13
Scone	3	2.22%	13



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- Employee/Contractor Town of Residence (number / percent of workforce)

FIGURE 3.1

Employee/Contractor Town of Residence

	Number of workers (sample)	Percentage of workers (sample)	Number of workers (estimated for population)
Greta	3	2.22%	13
Lake Macquarie	2	1.48%	9
Dungog	2	1.48%	9
Lochinvar	2	1.48%	9
Bulga	2	1.48%	9
Jerry's Plains	1	0.74%	4
Denman	1	0.74%	4
Aberdeen	1	0.74%	4
Broke	1	0.74%	4
Total	*135*	*100%*	*591*

Source: Coakes Consulting (2013)

A comparison of survey data to actual Human Resources (HR) data on location of employee residence (supplied by Glencore) provides further evidence of the quality and reliability of the employee survey data obtained (discussed earlier in Section 2.1).

As shown in Table 3–3, the proportions of employees in each location, based on survey sample data, closely matches the proportions expected of the actual population based on HR data. Therefore, the descriptive findings of the survey data discussed in the following sections can be interpreted with a high degree of confidence.

Table 3-3: Workers' town of residence (comparison of survey data to HR data)

	Number of workers (sample)	Percentage of workers (sample)	Percentage of workers (actual population*)
Singleton	44	32.59%	38.50%
Maitland	30	22.22%	23.40%
Muswellbrook	14	10.37%	7.10%
Cessnock	10	7.41%	7.10%
Branxton	9	6.67%	0.00%
Newcastle	7	5.19%	2.10%
Port Stephens	3	2.22%	0.90%
Scone	3	2.22%	0.00%
Greta	3	2.22%	0.00%
Lake Macquarie	2	1.48%	5.90%
Dungog	2	1.48%	1.80%
Lochinvar	2	1.48%	0.00%
Bulga	2	1.48%	0.00%
Jerry's Plains	1	0.74%	0.00%
Denman	1	0.74%	0.00%
Aberdeen	1	0.74%	0.00%
Broke	1	0.74%	0.00%
Central Coast	0	0.00%	3.30%
Maitland-Singleton	0	0.00%	5.60%
Scone-Aberdeen	0	0.00%	3.60%
Other	0	0.00%	0.90%
Total	*135*	*100%*	*100%*

Source: Coakes Consulting (2013)

**HR Data is based on Mount Owen workforce demographics as at October 2012, supplied by Glencore Human Resources Division. The HR data for employees does not include contractors, while sample data does include several contractors. Distribution of contractors is assumed to be similar to the distribution of employees. There are some minor anomalies; for example, survey data suggests there is an employee in Branxton, but the HR does not. This may be explained in that some locations in the HR data were recorded (re-labelled or combined with other towns) to align with survey data.*

3.1.2.1 Relocation for employment

Respondents were asked if they relocated to the Upper Hunter area for employment purposes, however the question did not measure whether such relocation occurred specifically in relation to the respondents' current employment or contract with Glencore.

Forty-six per cent of workers said they did relocate to the Upper Hunter area, compared to 54 per cent that said they did not.

3.1.3 Income and household expenditure

3.1.3.1 Household income per week

Survey respondents were asked to estimate their annual personal income before tax, and their annual total household income before tax. The average personal income per year was $134,345 (median = $130,000). When asked if there was anyone else in their household who earned an income, 56 per cent of workers did have additional household members in the workforce, with an average household income per year of $187,274 (median = $178,000).

The figure of $187,274 has been used for the expenditure analysis in the section to follow. This figure is considered appropriate, as it closely aligns with the actual personal incomes of Mount Owen Mine employees based on HR data (which is not reported, for reasons relating to confidentiality).

3.1.3.2 Household expenditure by location

Survey respondents were asked to identify the locations in which they spend money on household goods and services, and then estimate the proportion of their spending that occurs in each town. Using this information, combined with estimates of household income based on various data sources described above (Section 3.1.3.1), it was possible to estimate the amount of employee household expenditure (in dollar terms) occurring in each location.

To calculate household expenditure per location, the percentage of total household income spent on goods and services first had to be estimated based on secondary data, as survey respondents were not asked to estimate this value themselves. The 2009-10 household expenditure survey released by the Australian Bureau of Statistics (ABS) provides information that can be used to estimate this value.

Based on ABS data, the weekly income for the highest income quintile (highest 20% of the population) in NSW is $4,025, and the weekly spending on household goods and services by this group is $2,196. This suggests that the percentage of income spent on household goods and services is 54.6% (for this particular income category).

The highest income category was used for two reasons. First, this high income bracket was considered appropriate given employees and contractors were assumed to receive an average yearly household income of $187,274 (which is comparable to the $209,300 per annum earned by members of the high income bracket from the household expenditure survey). Second, high income earners spend less money on household goods and services as a proportion of their overall income, relative to those in lower income categories (e.g. when all income categories are considered, the percentage of income spent on household goods and services is 73%). Using a lower figure for this percentage is preferred, as this means estimates made in relation to total spending per town will be more conservative in nature.

Having estimated the proportion of income spent on household goods and services, respondents' estimates of the percentage of spending occurring in each town were then used to estimate total expenditure on household goods and services per town, in dollar terms (see Table 3–4). The first column indicates the amount of expenditure occurring per town based on sample data only, while

the second column provides estimates of total expenditure if employees and contractors that did not respond to the survey are also taken into account.

As presented in Table 3–4 and mapped in Figure 3.2, household expenditure by employees and contractors was highest in Maitland, Singleton, Newcastle and Muswellbrook, which together accounted for slightly more than $11.29 million or 83 per cent of all spending in the sample. Many of these towns are the locations in which employees tend to live, but some are regional centres (e.g. Newcastle) where people are likely to undertake at least some spending, despite the distance from their homes.

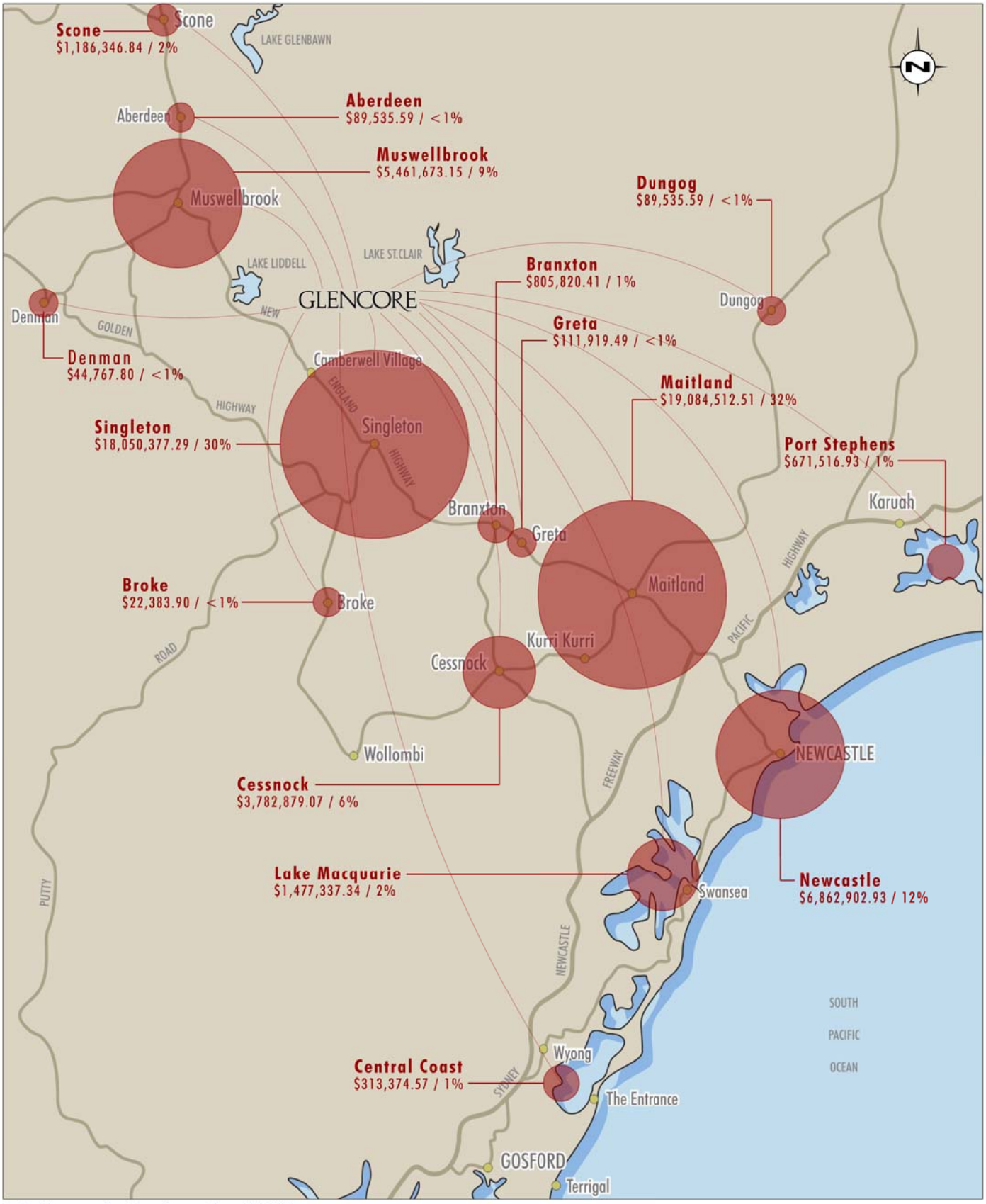
Table 3-4: Household expenditure by location (missing data estimated)

Location	Household expenditure (sample)	Household expenditure (estimated for population)
Maitland	$ 4,358,986.00	$ 19,084,512.51
Singleton	$ 4,122,785.00	$ 18,050,377.29
Newcastle	$ 1,567,517.00	$ 6,862,902.93
Muswellbrook	$ 1,247,470.00	$ 5,461,673.15
Cessnock	$ 864,026.10	$ 3,782,879.07
Lake Macquarie	$ 337,430.30	$ 1,477,337.34
Scone	$ 270,966.80	$ 1,186,346.84
Not specified	$ 189,165.46	$ 828,204.24
Branxton	$ 184,052.90	$ 805,820.41
Port Stephens	$ 153,377.40	$ 671,516.93
Central Coast	$ 71,576.12	$ 313,374.57
Taree	$ 71,576.12	$ 313,374.57
Greta	$ 25,562.90	$ 111,919.49
Dungog	$ 20,450.32	$ 89,535.59
Aberdeen	$ 20,450.32	$ 89,535.59
Denman	$ 10,225.16	$ 44,767.80
Orange	$ 10,225.16	$ 44,767.80
Upper Hunter (Not specified)	$ 5,112.58	$ 22,383.90
Broke	$ 5,112.58	$ 22,383.90
Sydney	$ 2,045.03	$ 8,953.56
Total	*$ 13,538,113.26*	*$ 59,272,567.46*

Source: Coakes Consulting (2013)

3.1.4 Household participation in community groups and activities

Employees and contractors were asked to identify whether anyone in their household participated in any social, sport, hobby, or local community groups and activities. Approximately 58% of respondents indicated that at least one member of their household participated in such activities or groups. These respondents were then asked to identify the nature and location of these activities.



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- Household Expenditure (amount / percent total expenditure)

Other Locations:

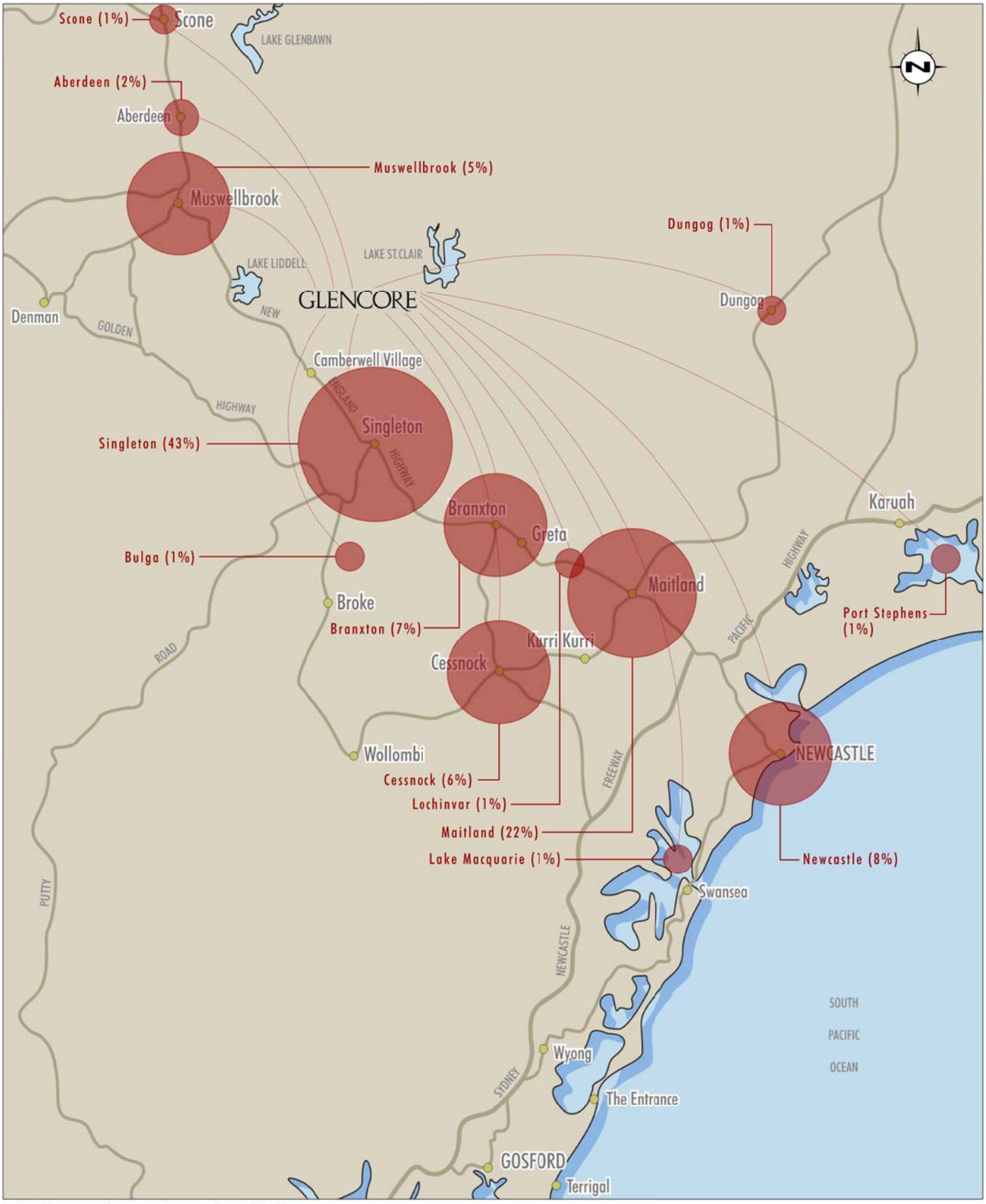
- Not Specified $828,204.24 (1%)
- Sydney $8,953.56 (<1%)
- Orange $44,767.80 (<1%)
- Taree $313,374.57 (1%)
- Not Specified Upper Hunter $22,383.90 (<1%)

FIGURE 3.2

Employee/Contractor Estimated Annual Household Expenditure

Table 3–5 displays the number of respondents and their family members that participate in community activities and groups, by location. In this table, missing data (for employees and contractors that did not respond) has been estimated (as discussed in Section 2.1.1).

As shown in Table 3–5 and mapped in Figure 3.3, the most common activities related to sport and recreation, and in particular sport and recreation activities that occur in a team or club environment. Singleton and Maitland tended to be the most common location of activities, which is expected given these are the locations where employees and their families tend to live.



Data Source: Coakes Consulting (2012)

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1:750 000

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- Respondent Community Participation (percent)

Other Locations:

- Overseas (1%)
- Not specified (1%)

FIGURE 3.3

Community Participation

Table 3-5: Number of respondents and their family members participating in activity / group, by location (missing data estimated)

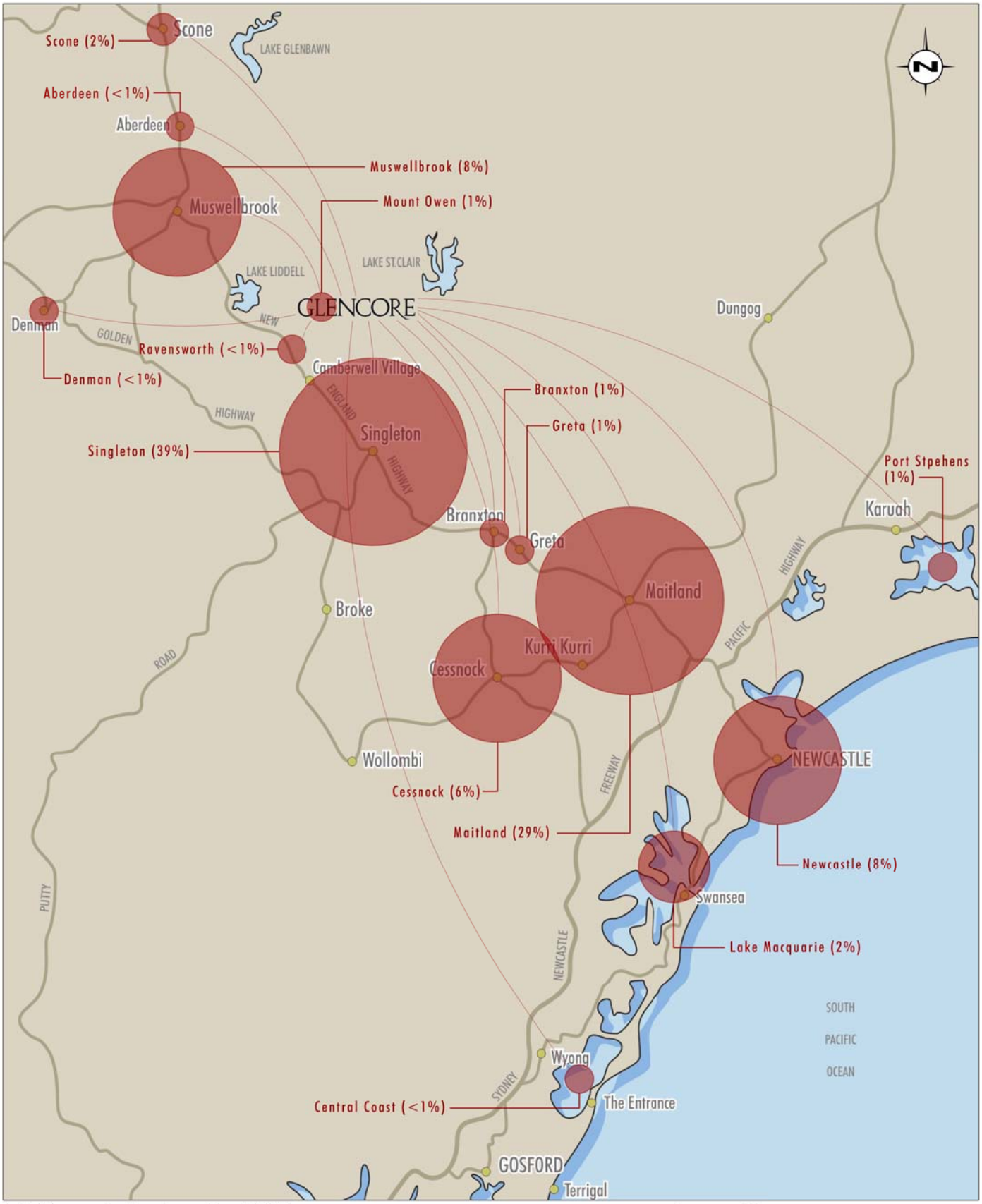
	Sport and recreation (team/club)	Sport and recreation (unspecified)	Community groups	Arts and culture	Volunteer emergency services	Youth/ school groups	School parents' association	Child playgroup	Other
Singleton	188	13	18	22	13	0	4	13	9
Maitland	101	18	13	0	0	4	0	4	0
Newcastle	31	9	4	4	0	0	4	0	0
Branxton	39	0	0	4	0	0	0	0	0
Cessnock	31	0	9	0	0	0	0	0	0
Muswellbrook	22	4	4	0	0	0	0	0	0
Aberdeen	13	0	0	0	0	0	0	0	0
Scone	9	0	0	0	0	0	0	0	0
Dungog	0	0	0	0	9	0	0	0	0
Not specified	0	4	4	0	0	0	0	0	0
Lochinvar	9	0	0	0	0	0	0	0	0
Port Stephens	0	0	0	0	4	0	0	0	0
Lake Macquarie	4	0	0	0	0	0	0	0	0
Bulga	0	0	0	0	4	0	0	0	0
Overseas	0	0	4	0	0	0	0	0	0
Total	*447*	*48*	*57*	*31*	*31*	*4*	*9*	*18*	*9*

Source: Coakes Consulting (2013)

3.1.5 Use of community services

3.1.5.1 Health services

Employees and contractors were asked to identify the types and locations of health services used by themselves and / or their families. As shown in Table 2–1 and mapped in Figure 3.4, health services tended to be accessed in the main locations of employee residence, and the most common services accessed were doctors, dentists, hospitals, and optometrists. Data for employees and contractors that did not complete the survey has been estimated (as discussed in Section 2.1.1).



Data Source: Coakes Consulting (2012)

0 10 20 40km
1:750 000

Legend

- Respondent Family Use of Health Services (percent)

Other Locations:

- Sydney (1%)
- Melbourne (<1%)
- Taree (<1%)
- Not specified(<1%)

FIGURE 3.4

Use of Health Services

Table 3-6: Number of employees' family members using health services, by type and location (missing data estimated)

	Doctor / GP	Dentist	Hospital	Optometrist	Physiotherapist	Chiropractor	Community Health Centre	Specialist (other)
Singleton	215	114	136	101	96	35	4	4
Maitland	123	149	101	61	44	22	13	4
Muswellbrook	35	22	26	39	13	9	4	4
Newcastle	18	35	31	35	4	9	0	4
Cessnock	35	39	13	4	4	9	4	0
Lake Macquarie	18	22	0	0	0	0	0	0
Scone	13	4	13	0	4	0	0	0
Sydney	0	9	4	9	0	0	0	0
Port Stephens	9	4	4	4	0	0	0	0
Greta	13	0	0	0	0	0	0	0
Branxton	9	0	0	0	0	0	0	0
Mount Owen	0	0	0	0	9	0	0	0
Melbourne	0	0	4	0	0	0	0	0
Denman	4	0	0	0	0	0	0	0
Central Coast	0	4	0	0	0	0	0	0
Aberdeen	4	0	0	0	0	0	0	0
Not specified	0	0	0	4	0	0	0	0
Ravensworth	0	0	0	0	4	0	0	0
Taree	4	0	0	0	0	0	0	0

Source: Coakes Consulting (2013)

Note: Conditional formatting has been used in this table; higher values are displayed in darker blue, and lower values are displayed in lighter blue.

Respondents were also asked to estimate the frequency with which they or their family members use health services. As shown in Table 3–7, frequency varied depending on type of service. For instance, doctor visits tended to be more regular than optometrists visits. However it is important to note that frequency estimates are provided by respondents that said they used the service in question. As shown above in Table 3–6, only a handful of respondents reported that they, or their families, visit a chiropractor.

Table 3-7: Frequency of use, by health service category (as indicated by users of the category; missing data estimated)

	Weekly	Monthly	Between monthly and six monthly	Six monthly	Between six monthly and yearly	Yearly	More than yearly	As required
Doctor/ GP	13	66	109	210	9	83	0	48
Dentist	0	13	13	144	4	219	13	22
Hospital	0	13	18	61	0	127	31	92
Optometrist	0	4	0	39	9	166	66	0
Physiotherapist	9	66	26	53	0	26	4	4

	Weekly	Monthly	Between monthly and six monthly	Six monthly	Between six monthly and yearly	Yearly	More than yearly	As required
Chiropractor	9	31	18	26	0	4	0	0
Community Health Centre	0	0	4	9	0	13	0	0
Specialist (other)	0	4	4	0	0	9	0	0

Source: Coakes Consulting (2013)

Note: Conditional formatting has been used in this table; higher values are displayed in darker blue, and lower values are displayed in lighter blue.

3.1.5.2 Schools

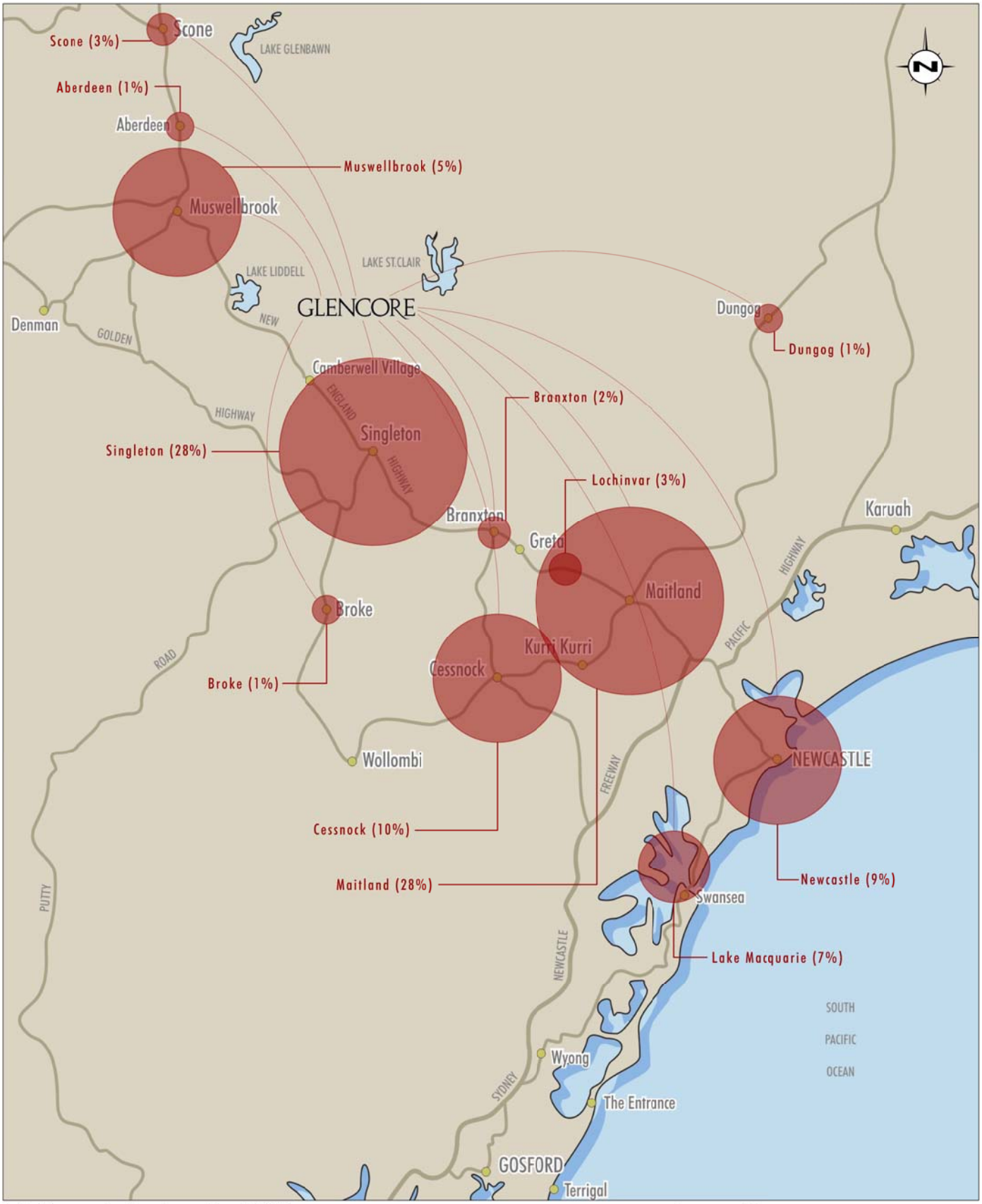
Respondents living with children, other family members or flatmates were asked to indicate the locations where they accessed schools, universities, preschools, and child care services if applicable. Results are presented in Table 3-8 and mapped in Figure 3.5, with missing data estimated. Most people in respondents' households were reported as using educational services in Singleton, Maitland, Cessnock and Newcastle.

Table 3-8: Number of people in respondents' households attending educational institutions/ child care facilities, by town (missing data estimated)

	Number of persons (sample)	Percentage of persons (sample)	Number of persons (estimated for population)
Singleton	41	27.52%	180
Maitland	41	27.52%	180
Cessnock	15	10.07%	66
Newcastle	14	9.40%	61
Lake Macquarie	10	6.71%	44
Muswellbrook	8	5.37%	35
Scone	4	2.68%	18
Lochinvar	4	2.68%	18
Branxton	3	2.01%	13
Sydney	2	1.34%	9
Dungog	2	1.34%	9
Brisbane	1	0.67%	4
Aberdeen	1	0.67%	4
Not specified	1	0.67%	4
Broke	1	0.67%	4
Armidale	1	0.67%	4
Total	*149*	100.00%	652

Source: Coakes Consulting (2013)

As shown in Figure 3–6 below, the majority of people in respondents' households were in schools rather than other education facilities. Thus, for simplicity the data has been left combined (for all types of education facilities) in Table 3–8, above.



Data Source: Coakes Consulting (2012)

0 10 20 40km
1:750 000

Legend

- Respondent Family Use of Education Services (percent)

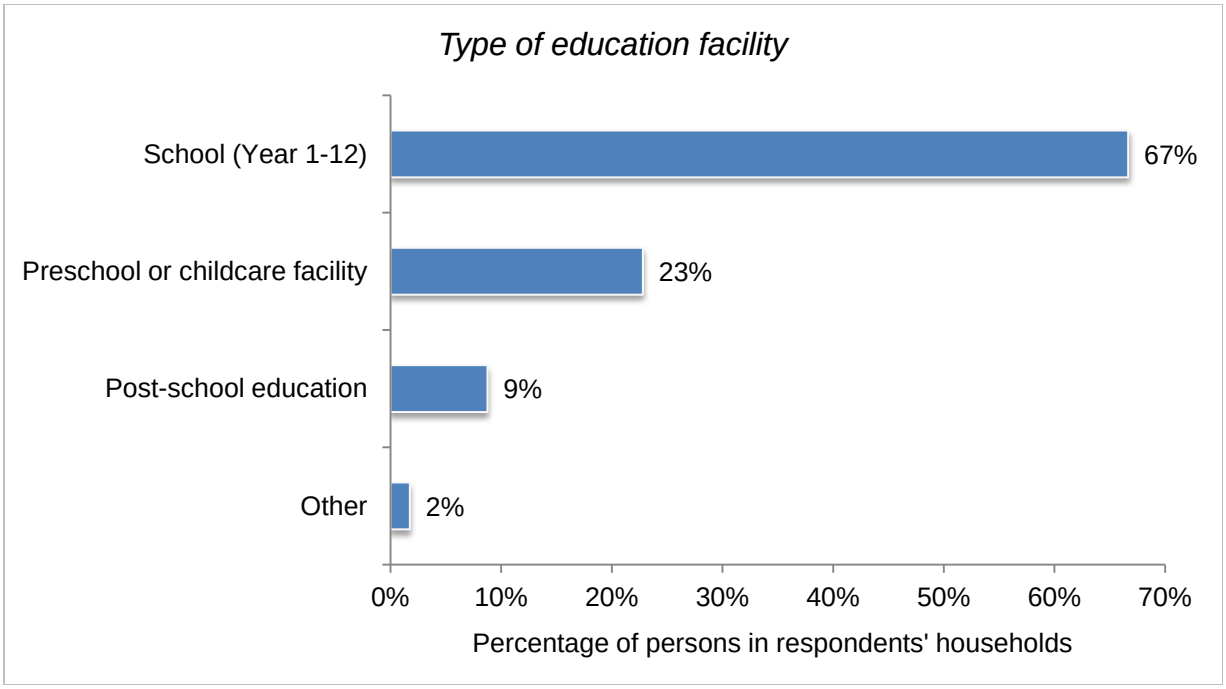
Other Locations:

- Sydney (1%)
- Not specified (1%)
- Brisbane (1%)
- Armidale (1%)

FIGURE 3.5

Use of Education Services

Figure 3-6: Use of education / childcare services, as a percentage of persons using such services



Source: Coakes Consulting (2013)

Table 3-9: Specific education institutions / child care facilities, by number of employees' children (missing data estimated)

Education or childcare institution	Number of children (sample)	Percentage of children (sample)	Number of children (estimated for population)
The University of Newcastle	11	7.38%	48
Singleton Public School	11	7.38%	48
Singleton High School	10	6.71%	44
Not specified	7	4.70%	31
Rutherford Public School	7	4.70%	31
St. Catherine's Catholic College	6	4.03%	26
Hunter Valley Grammar School	5	3.36%	22
Singleton Heights Public School	5	3.36%	22
TAFE	5	3.36%	22
East Maitland Public School	4	2.68%	18
Maitland Grossmann High School	4	2.68%	18
Muswellbrook Public School	4	2.68%	18
Rutherford Technology High School	4	2.68%	18
King Street Public School	3	2.01%	13
Mount View High School	3	2.01%	13
St. Patrick's Primary School	3	2.01%	13
Warners Bay Public School	3	2.01%	13
Cardiff South Public School	2	1.34%	9
Cessnock West Public School	2	1.34%	9

Education or childcare institution	Number of children (sample)	Percentage of children (sample)	Number of children (estimated for population)
Colleen Gale Children's Services	2	1.34%	9
Gillieston Public School	2	1.34%	9
Maitland Christian School	2	1.34%	9
Maitland High School	2	1.34%	9
St. Philip's Christian College	2	1.34%	9
Nulkaba Public School	2	1.34%	9
Our Lady of Victories Primary School	2	1.34%	9
Scone Early Learning Centre	2	1.34%	9
St. Joseph's High School	2	1.34%	9
The University of New England	2	1.34%	9
Vacy Public School	2	1.34%	9
Warners Bay Early Learning and Care Centre	2	1.34%	9
Abbotsleigh School for Girls	1	0.67%	4
Bees Nees Early Learning	1	0.67%	4
Branxton Day Care	1	0.67%	4
Branxton Public School	1	0.67%	4
Broke Public School	1	0.67%	4
Cessnock Occasional Child Care Centre	1	0.67%	4
Glendale Technology High School	1	0.67%	4
Hunter Sports High School	1	0.67%	4
Kookaburra Korner Early Education Centre	1	0.67%	4
Kurri Kurri and District Pre-school Kindergarten	1	0.67%	4
Largs Public School	1	0.67%	4
Little Legends Child Care Centre	1	0.67%	4
Maitland Community Preschool	1	0.67%	4
Mines Rescue Services	1	0.67%	4
Muswellbrook High School	1	0.67%	4
Muswellbrook Pre-School Kindergarten	1	0.67%	4
Muswellbrook South Public School	1	0.67%	4
Maitland Baptist Church Pre School & Long Day Care Centre	1	0.67%	4
Scone High School	1	0.67%	4
Scone Public School	1	0.67%	4
Australian Christian College	1	0.67%	4
Singleton Heights Pre-School	1	0.67%	4
St. John the Baptist	1	0.67%	4
All Saints College, St. Peter's Campus	1	0.67%	4
The University of Sydney	1	0.67%	4
Warners Bay High School	1	0.67%	4
Total	*149*	*100.00%*	652

Source: Coakes Consulting (2013)

3.2 Suppliers

The following sections present the findings from the supplier surveys. While the survey was targeted towards suppliers with the highest spend at Mount Owen as discussed in Section 2.1, it is important to note the low response rate to this survey (*N* = 24) and consequently results should be interpreted with caution.

3.2.1 Office location

Suppliers were asked to indicate the town in which their business' main office was located. As shown in Table 3–10, the most common locations were Singleton, Mount Thorley, Newcastle and Sydney. All suppliers in the sample had an office and/or workshop or desktop in the Upper Hunter area.

Table 3-10: Location of suppliers' main offices

Location	Number of suppliers' offices (sample)	Percentage of suppliers (sample)
Singleton	6	25%
Mt Thorley	5	21%
Newcastle	4	17%
Sydney	4	17%
Melbourne	4	17%
Muswellbrook	3	13%
Maitland	2	8%
Brisbane	2	8%
Gunnedah	2	8%
Perth	1	4%
Adelaide	1	4%
Wollongong	1	4%
Port Stephens	1	4%
Mid-Western Regional Council/ Mudgee	1	4%
Great Lakes	1	4%
Total	*38*	*N/A*

Source: Coakes Consulting (2013)

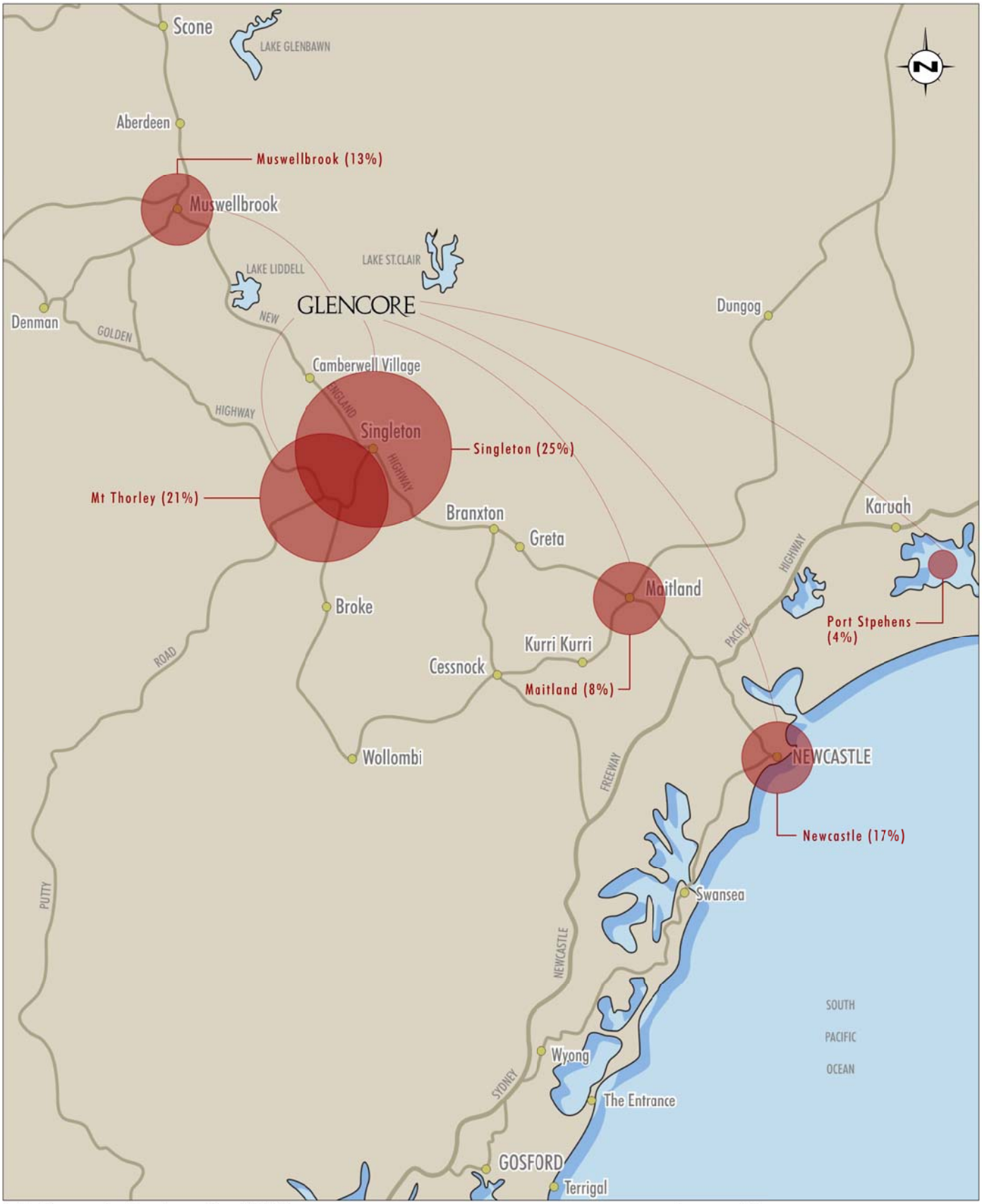
Note: Multiple responses permitted; therefore the sum of percentages exceeds 100 per cent.

3.2.2 Location of employees

The average number of employees per supplier (includes full-time, part-time and casual) was 121 employees, but the median was only 33 employees[1]. The mean is influenced by the fact there were some large employers within the sample. For example, the largest employer had 542 employees. This is because, as mentioned previously in Section 2.1, suppliers with the highest spend on Mount Owen operations were targeted for this survey. The median should therefore be considered more reflective of what is a "typical" number of employees.

Respondents were asked to indicate the towns in which their employees lived, including the number of employees living in each town. These findings are presented in Table 3–11 and mapped in Figure 3.7.

[1] Based on 23 respondents.



Data Source: Coakes Consulting (2012)

0 10 20 40km
1:750 000

Legend

- Supplier Employee Place of Residence (percent)

Other Locations:

- Sydney (17%)
- Melbourne (17%)
- Brisbane (8%)
- Gunnedah (8%)
- Perth (4%)
- Adelaide (4%)
- Wollongong (4%)
- Mid-Western Regional Council/Mudgee (4%)
- Great Lakes (4%)

FIGURE 3.7

Supplier Employee Place of Residence

Table 3-11: Suppliers' employees' town of residence

Town of residence (sample)	Number of employees (sample)	Percentage employees (sample)
Singleton	312	24%
Maitland	305	23%
Cessnock	182	14%
Muswellbrook	161	12%
Newcastle	89	7%
Great Lakes	60	5%
Branxton	56	4%
Not specified	50	4%
Upper Hunter (not specified)	28	2%
Scone	21	2%
Denman	20	2%
Wollongong	10	1%
Mid-Western Regional Council/ Mudgee	8	1%
Dungog	6	0%
Port Stephens	4	0%
Aberdeen	4	0%
Greta	3	0%
Brisbane	2	0%
Melbourne	2	0%
Central Coast	2	0%
Lake Macquarie	1	0%
Hebden	1	0%
Total	*1327*	*100%*

Source: Coakes Consulting (2013)

3.2.3 Business income

Seven respondents reported their total business revenue, including revenue from Mount Owen Mine for the past financial year, with estimates ranging between $3,000,000 and $180,000,000.

3.2.4 Location of business expenditure

Respondents were asked to estimate the proportion of their business revenue that is spent on goods and services relating to their business activities (excluding wages), and then to identify where this money is spent (i.e. the proportion spent in each location). Based on this information, total business spending by town has been estimated for the seven suppliers that provided sufficient responses to the revenue and expenditure parts of the survey (see and Table 3–12), and five respondents who provided breakdowns of locations of expenditure. Note that due to the low numbers of responses (one to two percent of all suppliers to Mount Owen) the actual contribution of suppliers' expenditure to the region and state is likely to be significantly higher.

As shown in Table 3–12, most business spending by suppliers occurs in Singleton, Muswellbrook, Newcastle, and Maitland.

Table 3-12: Location and amount of suppliers' expenditure

Location	Business expenditure (sample) ($)
Singleton	16,450,000
Muswellbrook	9,200000
Newcastle	8,900000
Maitland	4,640,000
Cessnock	2,000,000
Sydney	450,000
Scone	180,000
Tamworth	180,000
Total	42,000,000.00

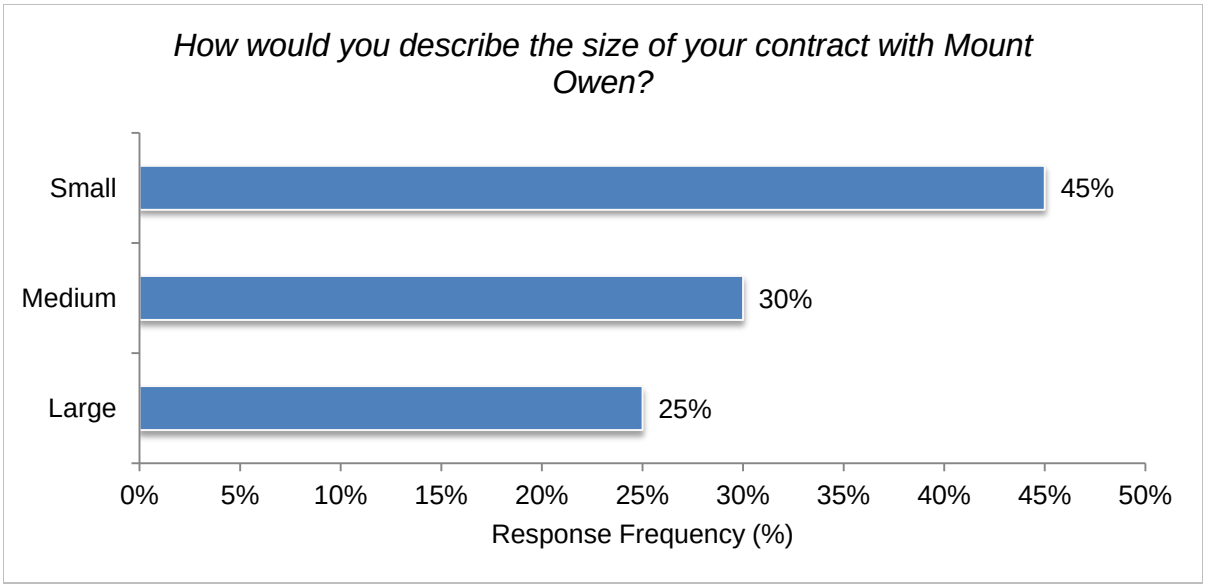
Source: Coakes Consulting (2013)

Note: The analysis above is based on five respondents that provided sufficient information relating to (a) business revenue, (b) percentages of expenditure, by town, and (b) an estimate of goods and services expenditure, as a proportion of overall business income.

3.2.5 Suppliers' business dependency on mining and Mount Owen Mine

Suppliers were asked to describe the size of their contract with Mount Owen Mine as either "small", "medium", or "large" (see Figure 3–8). Most respondents regarded their contract as "small" (*N*=9, 45 per cent).

Figure 3-8: Suppliers' self-assessment of size of contract with Mount Owen Mine



Source: Coakes Consulting (2013)
Note: There were 20 respondents.

Suppliers were also asked to comment on the percentage of their income that is: (a) dependent on the mining industry and (b) dependent on the Mount Owen Mine specifically. On average, suppliers indicated that 88.90 per cent of their income was dependent on the mining industry (median = 97 per cent), and that 17.65 per cent of their income was dependent on the Mount Owen Mine specifically (median = 10 per cent).

3.2.6 Business expenditure with a direct reliance on Mount Owen Mine

Business expenditure that is directly reliant on the Mount Owen Mine for the respondents to the survey was calculated from the data presented in Section 3.2.4, in combination with estimates of business dependence described in Section 3.2.5. The results are presented in Table 3–13.

Table 3-13: Estimates of suppliers' business expenditure that is directly reliant on Mount Owen Mine

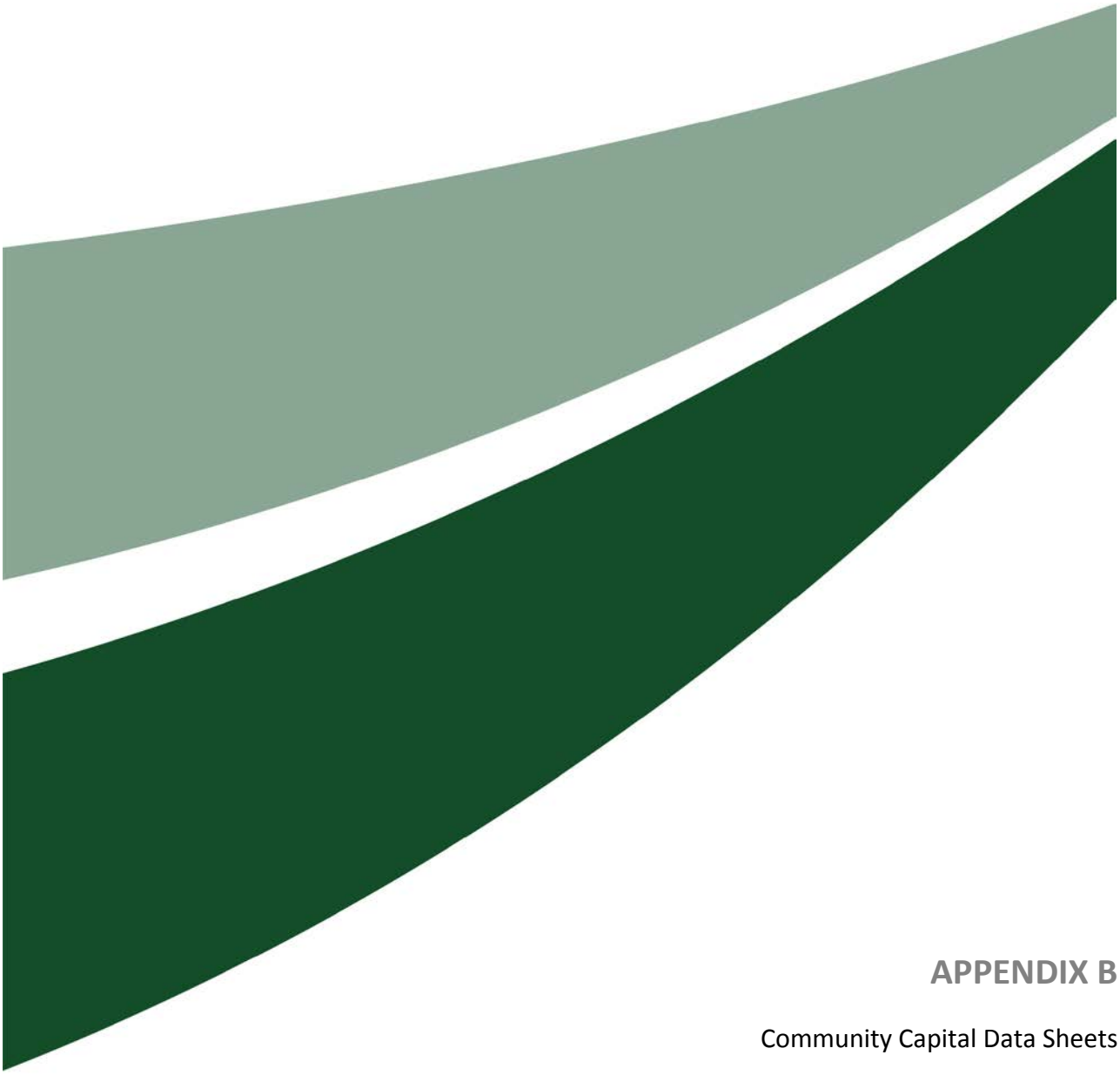
Location	Business expenditure (sample) ($)
Singleton	910,625
Muswellbrook	509,286
Newcastle	492,679
Maitland	256,857
Cessnock	110,714
Sydney	24,911
Scone	9,964
Tamworth	9,964
Total	2,325,000

Source: Coakes Consulting (2013)

4.0 Summary

In summary, it has been found that there are a range of social and economic impacts relating to Mount Owen Mine's mine operations. The findings illustrate that:

- Most employees and contractors of the existing Mount Owen Mine operations live in Singleton, Maitland, Muswellbrook and Cessnock;
- Singleton and Maitland benefit the most from employees' participation in community groups, households accessing health services, and employees' use of educational institutions;
- Suppliers who responded to the survey report contributing almost $42m to various economies;
- Employees report directly contributing almost $60m to the wider economy(63% in Singleton and Maitland);
- Most employees, contractors and supplier staff live in Singleton, Maitland, then Muswellbrook and Cessnock; and
- Singleton and Maitland benefit most from Mount Owen workers' contribution to local communities, through the highest household expenditure and use of local suppliers, highest participation in community groups and highest usage of health services and education institutions, although this may also be considered a burden in other ways.



APPENDIX B

Community Capital Data Sheets

Appendix B Community Capital Data Sheets

Economic Capital

Table 1 Occupation (Employed persons aged 15 years and over) in 2011

	Camberwell	Bridgman	Singleton	Maitland	Muswellbrook	Hunter Region	NSW
Managers	13%	15%	11%	10%	10%	14%	13%
Labourers	18%	12%	10%	10%	13%	13%	9%
Technicians and Trades Workers	21%	17%	19%	18%	20%	18%	13%
Machinery Operators And Drivers	27%	20%	19%	10%	18%	15%	6%
Clerical and Administrative Workers	4%	14%	12%	14%	11%	11%	15%
Professionals	9%	8%	12%	17%	11%	12%	23%
Community and Personal Service Workers	3%	7%	9%	9%	8%	8%	9%
Sales Workers	3%	6%	7%	10%	8%	7%	9%
Inadequately described/not stated	3%	1%	2%	1%	2%	2%	2%
Total	***100%***	***100%***	***100%***	***100%***	***100%***	***100%***	***100%***

Source: ABS 2011

Table 2 Industry of Employment (% Employed persons aged 15 years and over) 2011

	Camberwell	Bridgman	Singleton	Maitland	Muswellbrook	Hunter Region	NSW
Agriculture, forestry & fishing	9%	14%	4%	1%	7%	11%	2%
Mining	19%	25%	25%	6%	21%	16%	1%
Manufacturing	13%	3%	7%	12%	6%	6%	8%
Electricity, gas, water & waste services	0%	3%	2%	2%	4%	3%	1%
Construction	0%	13%	6%	8%	7%	7%	7%
Wholesale trade	0%	3%	3%	3%	3%	3%	4%
Retail trade	6%	6%	8%	11%	9%	9%	10%
Accommodation & food services	3%	2%	7%	7%	7%	6%	7%
Transport, postal & warehousing	10%	6%	3%	5%	3%	4%	5%
Information media & telecommunications	0%	0%	0%	1%	0%	0%	2%
Financial & insurance services	0%	0%	1%	2%	1%	1%	5%
Rental, hiring & real estate services	6%	4%	2%	2%	1%	1%	2%
Professional, scientific & technical services	6%	2%	4%	5%	3%	4%	8%
Administrative & support services	6%	3%	3%	3%	3%	3%	3%
Public administration & safety	3%	3%	5%	6%	4%	5%	6%
Education & training	0%	0%	5%	7%	5%	6%	8%
Health care & social assistance	9%	8%	6%	12%	7%	8%	12%
Arts & recreation services	0%	0%	1%	1%	1%	1%	1%
Other services	9%	5%	5%	5%	5%	4%	4%
Inadequately described/Not stated	3%	2%	2%	2%	2%	3%	2%
Total	***100%***	***100%***	***100%***	***100%***	***100%***	***100%***	***100%***

Source: ABS 2011

Table 3 Economic Capital Summary

	Camberwell			Bridgman			Singleton			Maitland			Muswellbrook			Hunter Region			NSW		
	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓
Median individual income (weekly)	422	677	↑	515	612	↑	487	640	↑	428	562	↑	453	619	↑	394	547	↑	461	561	↑
Median household income ($/week)	$1,153	$1,607	↑	$1,607	$1,402	↓	$1,258	$1,692	↑	$1025	$1292	↑	$1060	$1399	↑	$810	$1,196	↑	$1,036	$1,237	↑
Median mortgage repayment ($/month)	$1,213	$2,400	↑	$1,517	$1,800	↑	$1,408	$2,000	↑	$1300	$1733	↑	$1300	$1733	↑	$1,083	$1,733	↑	$1,517	$1,993	↑
Median rent ($/weekly)	$100	$160	↑	$210	$250	↑	$180	$260	↑	$180	$259	↑	$150	$230	↑	$130	$200	↑	$210	$300	↑
Proportion of the labour force employed full-time	66%	63%	↓	59%	64%	↑	63%	65%	↑	58%	60%	↑	63%	64%	↑	36%	38%	↑	36%	36%	-
Proportion of the labour force employed part-time	26%	19%	↓	34%	27%	↓	27%	25%	↓	29%	29%	-	26%	25%	↓	16%	17%	↑	16%	17%	↑
Proportion of the labour force who are unemployed	5%	0%	↓	3%	3%	-	4%	3%	↓	7%	5%	↓	5%	5%	-	3%	3%	-	3%	4%	↑
Top Industry of Employment over time	26%	19%	↓	19%	25%	↑	20%	25%	↑	13%	12%		16%	21%	↑	18%	16%	↑	11%	12%	↑
	Mining	Mining		Mining	Mining		Mining	Mining		Retail	Manufacturing		Mining	Mining		Agriculture	Mining		Retail	Health care	

Source: ABS 2006, 2011

Human Capital

Table 4 Human Capital

	Camberwell			Bridgman			Singleton			Maitland			Muswellbrook			Hunter Region			NSW		
	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓
Population size (persons)	378	181	↓	477	396	↓	21939	22694	↑	61882	67478	↑	15237	15791	↑	589238	72463	↑	6549178	6917658	↑
Indigenous population (%)	4%	6%	↑	1%	4%	↑	3%	4%	↑	3%	3%	-	5%	5%	-	3%	5%	↑	2%	2%	-
Average household size (persons)	2.8	2.5	↓	3.1	2.7	↓	2.8	2.7	↓	2.7	2.7	-	2.6	2.6	-	2.5	2.5	-	2.6	2.6	-
Lone person household (%)	16%	25%	↑	5%	8%	↑	19%	21%	↑	8%	7%	↓	9%	10%	↑	25%	25%	-	24%	24%	-
Group household (%)	4%	5%	↑	1%	2%	↑	2%	3%	↑	1%	2%	↑	2%	3%	↑	3%	3%	-	4%	4%	-
Fully owned dwellings (%)	29%	24%	↓	42%	39%	↓	34%	31%	↓	32%	31%	↓	31%	27%	↓	39%	36%	↓	36%	34%	↓
Dwellings owned under a mortgage (%)	32%	11%	↓	43%	34%	↓	40%	40%	-	39%	40%	↑	32%	34%	↑	33%	34%	↑	33%	34%	↑
Dwellings being rented (%)	39%	64%	↑	12%	26%	↑	26%	28%	↑	26%	27%	↑	33%	36%	↑	27%	29%	↑	30%	31%	↑
Highest Level of Education																					
Postgraduate Degree	5%	0%	↓	0%	0%	-	2%	2%	-	2%	3%	↑	1%	2%	↑	1%	2%	↑	6%	7%	↑
Graduate Diploma and Graduate Certificate	0%	0%	↓	2%	0%	↓	2%	2%	-	2%	2%	-	1%	2%	↑	2%	2%	-	2%	3%	↑

Bachelor Degree	9%	0%	↓	12%	11%	↓	13%	15%	↑	15%	16%	↑	11%	12%	↑	13%	14%	↑	24%	25%	↑
Advanced Diploma and Diploma	13%	17%	↑	16%	16%	-	12%	12%	-	13%	14%	↑	9%	11%	↑	11%	12%	↑	14%	14%	-
Certificate	48%	57%	↑	55%	58%	↑	49%	51%	↑	45%	47%	↑	47%	48%	↑	44%	48%	↑	31%	31%	-
Highest year of school completed																					
Year 12 or equivalent	21%	21%	-	24%	27%	↑	28%	33%	↑	29%	35%	↑	24%	28%	↑	26%	31%	↑	42%	49%	↑
Year 11 or equivalent	7%	10%	↑	6%	7%	↑	8%	8%	-	6%	6%	-	7%	7%	-	6%	7%	↑	6%	5%	↓
Year 10 or below	60%	62%	↑	65%	63%	↓	56%	52%	↓	56%	52%	↓	57%	53%	↓	57%	54%	↓	40%	36%	↓
Did not go to school	0%	2%	↑	0%	0%	-	0%	0%	-	0%	0%	-	0%	0%	-	0%	0%	-	1%	1%	-

Source: ABS 2006, 2011

Note: combined percentages may not equal 100% as responses 'inadequately described' and/or 'not stated' have been excluded from the analysis

Table 5 Community Health

	Camberwell	Bridgman	Singleton	Maitland	Muswellbrook	Hunter Region	NSW
Fair or poor self-assessed health, persons aged 15 years and over (rate per 100)	-	-	14.1	18.2	17.4	16.5	15.5
Private health care insurance (%)	-	-	53%	48.4%	48.0%	48%	48%
People with at least one of four of the following health risk factors - smoking, harmful use of alcohol, physical inactivity, obesity 18+ (rate per 100)	-	-	55.6	59.6	61.2	60.5	56.6
Males with mental and behavioural problems (rate per 100)	-	-	9.4	10.9	10.2	11.0	10.0
Females with mental and behavioural problems (rate per 100)	-	-	11.9	12.7	12.3	12.6	11.8
Total GP services (MBS and DVA) per 100,000	-	-	487163	483,872	442,980	487,282	578,553
Population in residential aged care (rate per 1000)	-	-	107.4	60.2	69.4	100.7	87.6
Per cent of low birth weight babies (%)	-	-	6%	6.1%	8.2%	7%	6%
Per cent of women smoking during pregnancy (%)	-	-	19%	17.5%	23.7%	22%	13%
Average annual infant death ratio (deaths under 12 months of age per 1,000 live births)	-	-	4.8	4.9	6.0	5.8	4.7

Source: PHIDU 2011

Physical Capital

Table 6 Physical Capital Summary

	Camberwell			Bridgman			Singleton			Maitland			Muswellbrook			Hunter Region			NSW		
	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓
Separate house	99%	100%	↓	100%	100%	-	95%	93%	↓	89%	83%	↓	89%	79%	↓	89%	94%	↑	78%	53%	↓
Semi-detached, row or terrace house, townhouse	0%	0%	-	0%	0%	-	2%	4%	↑	4%	6%	↑	3%	3%	-	6%	2%	↓	9%	19%	↑
Flat, unit or apartment	1%	0%	↓	0%	0%	-	2%	3%	↑	6%	5%	↓	7%	4%	↓	5%	2%	↓	13%	28%	↑
Other dwellings	0%	0%	-	0%	0%	-	1%	1%	-	0%	0%	-	1%	1%	-	1%	1%	-	1%	1%	-
Fully owned	29%	24%	↓	43%	39%	↓	34%	31%	↓	32%	31%	↓	31%	27%	↓	39%	36%	↓	36%	34%	↓
Being purchased/ Owned by a mortgage	32%	11%	↓	45%	35%	↓	40%	40%	-	39%	40%	↑	32%	34%	↑	33%	34%	↑	33%	34%	↑
Rented	39%	64%	↑	12%	26%	↑	26%	28%	↑	26%	27%	↑	33%	36%	↑	27%	29%	↑	30%	31%	↑

Source: ABS 2006, 2011

Social Capital

Table 7 Social Capital Summary

	Camberwell			Bridgman			Singleton			Maitland			Muswellbrook			Hunter Region			NSW		
	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓	2006	2011	↓
One parent family with children (%)	5%	13%	↑	6%	5%	↓	8%	8%	-	10%	10%	-	11%	11%	-	8%	9%	↑	9%	8%	↓
Persons born overseas (%)	7%	7%	-	6%	4%	↓	7%	8%	↑	13%	12%	↓	12%	14%	↑	1%	7%	↑	24%	26%	↑
Volunteers (%)	18%	14%	↓	23%	20%	↓	20%	19%	↓	16%	15%	↓	19%	17%	↓	17%	21%	↑	17%	17%	-
Different address 1 year ago	11%	11%	-	7%	7%	-	16%	16%	-	15%	14%	↓	17%	18%	↑	15%	14%	↓	14%	13%	↓
Different address 5 year ago	40%	37%	↓	29%	32%	↑	43%	39%	↓	41%	37%	↓	41%	40%	↓	38%	35%	↓	38%	33%	↓
Visitor on census night	7%	12%	↑	4%	4%	-	5%	6%	↑	3%	3%	-	6%	6%	-	5%	5%	-	4%	4%	-

Source: ABS 2006, 2011

Table 8 Offences in Singleton

	Rank in 2007	Rank in 2008	Rank in 2009	Rank in 2010	Rank in 2011	Change in rank 2007 - 2011
Domestic Violence	106	92	98	99	93	↑
Assault	118	87	90	80	82	↑
Sexual Offences	74	65	69	86	71	↑
Robbery	103	90	88	77	84	↑
Break and Enter Dwelling	109	99	63	53	59	↑
Break and Enter Offenses	85	66	43	17	38	↑
Motor Vehicle Theft	85	42	14	11	56	↑
Steal from a Motor Vehicle	108	71	49	86	37	↑
Steal from a retail store	71	76	90	96	63	↑
Steal from a dwelling	54	50	52	28	46	↑
Liquor Offenses	50	81	115	96	91	↓

Source: BOCSAR 2013
Note: higher rank is equivalent to lower crime rates compared to NSW. I.e. Rank of 1 is equivalent to the highest crime rate, rank of 160 is the lowest crime rate

APPENDIX C

Community Sensitivity Index (CSI)

Mount Owen Continued Operations Project Social Impact and Opportunity Assessment – Community Sensitivity Index

Community Sensitivity Analysis

Prepared for

Glencore Mt Owen Coal

October, 2013

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Glossary

ABS	Australian Bureau of Statistics
Coakes	Coakes Consulting
CSI	Community Sensitivity Index
NSW	New South Wales
LGA	Local Government Area
SIA	Social Impact Assessment
SS	State suburb
TRC	Town Resource Cluster
UCL	Urban centre locality

1.0 Method

1.1 Background

Community sensitivity, and conversely resilience, can be measured by examining the state of a community's assets. According to the Sustainable Livelihoods Framework (DFID, 1999), a community's adaptive capacity is enhanced by its access to capital assets across five key areas; natural, economic, human, physical, and social (see Figure 1.1).

Source: Coakes Consulting (2013)

Figure 1.1: Community capitals framework

The framework is based on the assumption that key community capitals are fundamental in determining the resilience of a community, and that a community's capacity to adapt to change is dependent on the status of its capitals. Assessing the status of a community's key capital areas should also provide a sound indication of a community's current needs. Such an approach is particularly useful as it not only allows an identification of the strengths and weaknesses of a community's capitals / assets, but it also enables the strategic implementation of policies and

programs to assist a community in managing its weaker capitals and further optimising its stronger capitals, thus enhancing community capacity.

The Community Sensitivity Index (CSI) was originally developed by Coakes and Fenton (1998) to assess the sensitivity of localities to micro-level socio-economic impacts of change in the forestry sector. The index used a suite of socio-economic indicators that measured community dependency on the forestry sector, as well as overall community wellbeing and socio-economic status. The methodology has been further developed by Coakes and Sadler (2011) to reflect the five capitals approach – human, social, natural, physical and economic/financial – drawing on the Sustainable Livelihoods Approach and other sustainable society theorists (e.g. Beckley et al. 2008; DfID 1999; Ellis 2000; Hart 1999).

As Coakes and Sadler (2011) outline, the development of the CSI, utilising the Sustainable Livelihoods Approach, has immediate relevance in the development and implementation of effective SIA programs. A key objective of SIA is the effective management of social change. Consequently, the application of the CSI provides a useful approach at various phases of an SIA program to inform this process. Within the profiling phase of SIA, for example, the application of the CSI may be useful in identifying which communities are likely to be more sensitive to change prior to a proposed project development or policy initiative. Such an analysis may assist in refining the SIA to focus on specific communities that may exhibit greater sensitivity, and consequently less adaptive capacity to manage the proposed change. This was the case in the climate change case study, where communities with less adaptive capacity and higher sensitivity to change as a result of their dependence on the oil and gas sector were identified as requiring further, more focused assessment. Where considerable structural adjustment is anticipated within an industry sector, an improved understanding of the status of a community's key capitals is essential in the effective management of change at the local and regional level.

The application of CSI may also be useful in the strategy phase of an SIA program to identify key capital areas within a community that may require further development, so as to enhance positive project impacts or mitigate negative impacts. Furthermore, it is important to consider the inter-relationships that exist between the capitals in developing appropriate strategies to address impacts at a community level. Where one capital is depleted, other community capitals are also likely to become compromised. For instance, should human capital be depleted, in terms of deterioration in education levels or community health; the subsequent maintenance of physical capital (e.g. economic infrastructure) is also likely to be affected. The analysis of community capitals therefore provides useful information for decision makers by enabling a focus on the strategic implementation of social investment policies or community development/ enhancement programs that may assist in managing the weaker capitals, and further optimising the stronger capitals.

The application of CSI is not limited, however, to assessing adaptive capacity to specific change as part of an SIA program; as it may also add value in relation to broader strategic assessment and decision making. For instance, in undertaking strategic social assessment within a specified region, the CSI and Community Sensitivity Analysis may be useful in identifying communities that are likely to be vulnerable to change and thus where more focused assessment and government/industry funding may be required.

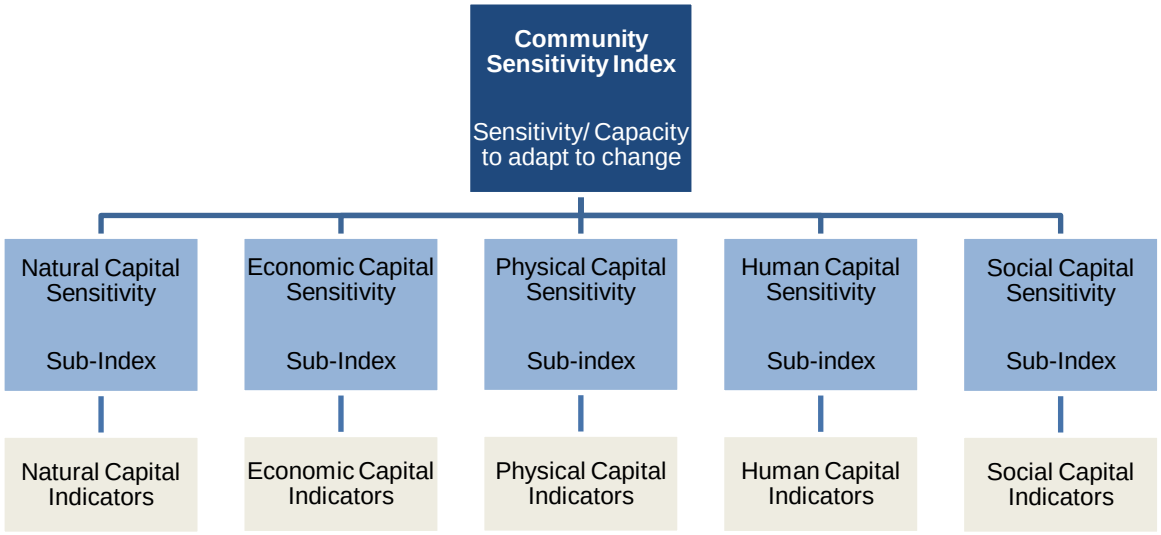
The CSI methodology may also be applied in broader social investment or community enhancement program planning including the provision of government funding. Here, the application of the CSI in conjunction with a more strategic SIA program may assist decision makers (government, industry, community) at local, regional and state levels to prioritise funding across communities and regions based on an assessment of community assets. The methodology may further be applied as a monitoring and evaluation tool to assess change at a community level over time.

In the current context, largely secondary socio-economic data has been used in the development of the index. Analysis was performed at both the Local Government Area (LGA) level, and Urban Centre Locality (UCL) level.

1.2 Approach to Indicator Analysis

Figure 1.2 summarises the methodological approach used to develop an overall index of community sensitivity. The key steps to the approach include:

- Selection of indicators to comprise each capital area and collation of data
- Standardization of variable scores for indicators to enable comparison. Z-score transformations are a suitable comparative measure in this regard as they take into account the spread or dispersion of scores around the mean, and can be used when composite indices have to be derived. The z-score has a mean of zero and a standard deviation of 1.0.
- The standardized scores for indicators specific to each capital area are averaged to produce a sub-index for each capital.
- Sub-indices for all capitals are aggregated to derive a composite community sensitivity index.



Source: Coakes Consulting (2013)

Figure 1.2: Derivation of CSI for a given location

As a measure of *sensitivity* to change, a community with a lower score is *less sensitive*, or *more resilient*, with a stronger capital base. Stronger capitals are considered to relate to greater adaptive capacity. Conversely, communities with a higher score are considered *more sensitive*, or *less resilient*, with lower adaptive capacity.

It is also noted that when collating data for indicators of Natural Capital, there was insufficient data available that:

- Was related to the adaptive capacity of the chosen communities;
- Was valid at the required scale/s of analysis; and
- Was replicable across different communities.

Consequently, it was unfeasible to create a reliable sub-index for natural capital in relation to the Project. Nonetheless, the remaining four sub-indices are considered representative of the sensitivity of the communities in question.

1.3 Selection of Communities

The CSI is a relative measure of community sensitivity. Each community is given a rank in relation to comparison communities, and as such its score changes when compared against different communities. In order to provide a suitable range of communities for comparative assessment, a number of other communities were included in the analysis. In addition to LGAs nearby to Mount Owen or otherwise directly relevant to the assessment, NSW LGAs were selected where:

- a significant proportion of its population is employed in agriculture and/or mining, and/or
- Significant LGAs in NSW which are proximate to LGAs in the Hunter Valley.

In addition to the LGA level of analysis, sensitivity to change at the town level was also undertaken. The twelve localities were selected through the Town Resource Cluster (TRC) analysis undertaken by Coakes Consulting for Mt Owen Coal, on the basis of being identified as key towns of employee residence or otherwise nearby to Mount Owen operations.

1.4 Development of Indicators

The CSI was developed using readily available data from the most recent (2011) census and other data provided by the Australian Bureau of Statistics (ABS) in addition to other relevant social and economic indicators. The CSI comprises a number of specific sub-indices based on community capitals that are weighted to form an additive index that provides a relative measure of the communities' sensitivity or resilience to change. Table 1.1 presents the indicators that were selected for use in the CSI due to their relevance to the Project and the data sources referenced.

Table 1.1: CSI indicators for analysis

	Indicator	Analysis / Measurement Procedure	Data Source
Economic Capital	Industrial Diversity	Herfindahl Index: A commonly used industry concentration / diversity index	ABS ANZSIC Industry of Employment data
		Proportion of employed persons employed in mining	ABS Basic Community Profile
		Proportion of employed persons employed in construction (as closely related industry to Project)	ABS Basic Community Profile
	Housing Stress	Proportion of adult population renting from Government or community organisations	ABS Basic Community Profile
		Proportion of total adult population earning weekly household income of less than $400	ABS Basic Community Profile
		Median household weekly income divided by median rent per week	ABS Basic Community Profile
		Median household weekly income divided by median mortgage repayment per week	ABS Basic Community Profile
	Employment Status	Proportion of total persons in the labour force who are unemployed	ABS Basic Community Profile
	Child Dependency	Number of dependent aged children (15 and under) as a proportion of number of employed persons	ABS Basic Community Profile
		Proportion of families with dependent children with lone parents	ABS Basic Community Profile
Human Capital	Level of Education	Proportion of total adult population with no post-school qualification	ABS Basic Community Profile
		Proportion of total adult population who left school before Year 10	ABS Basic Community Profile
		Proportion of adult population who never attended school	ABS Basic Community Profile
	Low Skilled Occupations	Proportion of employed persons employed as labourers	ABS Basic Community Profile
	Indigenous Persons	Proportion of total population who are Indigenous persons	ABS Basic Community Profile

	Indicator	Analysis / Measurement Procedure	Data Source
Economic Capital	Industrial Diversity	Herfindahl Index: A commonly used industry concentration / diversity index	ABS ANZSIC Industry of Employment data
		Proportion of employed persons employed in mining	ABS Basic Community Profile
		Proportion of employed persons employed in construction (as closely related industry to Project)	ABS Basic Community Profile
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	Employment Status	Proportion of total persons in the labour force who are unemployed	ABS Basic Community Profile
	Child Dependency	Number of dependent aged children (15 and under) as a proportion of number of employed persons	ABS Basic Community Profile
		Proportion of families with dependent children with lone parents	ABS Basic Community Profile
	Indicators for community care requirements	Proportion of total population with core activity need for assistance	ABS Basic Community Profile
		Proportion of total population aged 65 years and over	ABS Basic Community Profile
		Proportion of adult population who provide unpaid assistance to people with disabilities	ABS Basic Community Profile
Physical Capital	Accessibility	Proportion of total population with no accessibility to the internet	ABS Basic Community Profile
		Accessibility/Remoteness Index of Australia (ARIA+): Distance from essential services and facilities, based on road distance	ARIA+ Remoteness Index
	Infrastructure Provision	Public Library Services	National Library of Australia
		Community Health Clinic	Department of Health; Yellow pages
		Aboriginal Health Clinic	Department of Health
		Hospitals	Department of Health
		Police Station	NSW Police Force
		Airport Access	OurAirports.com

	Indicator	Analysis / Measurement Procedure	Data Source
Economic Capital	Industrial Diversity	Herfindahl Index: A commonly used industry concentration / diversity index	ABS ANZSIC Industry of Employment data
		Proportion of employed persons employed in mining	ABS Basic Community Profile
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	Employment Status	Proportion of total persons in the labour force who are unemployed	ABS Basic Community Profile
	Child Dependency	Number of dependent aged children (15 and under) as a proportion of number of employed persons	ABS Basic Community Profile
		Proportion of families with dependent children with lone parents	ABS Basic Community Profile
		Medicare Office	Medicare
Social Capital	Population Flux	Proportion of population with a different address one year ago	ABS Basic Community Profile
		Number of visitors on census night as a proportion of total persons on census night	ABS Basic Community Profile
		Proportion of population born overseas	ABS Basic Community Profile
	Cultural Literacy	Number of people who speak English "not well or not at all" / total persons born overseas	ABS Basic Community Profile
	Participation in voluntary organisations	Proportion of adult population who do not volunteer	ABS Basic Community Profile
	Gender Ratios	Proportion of population who are males	ABS Basic Community Profile

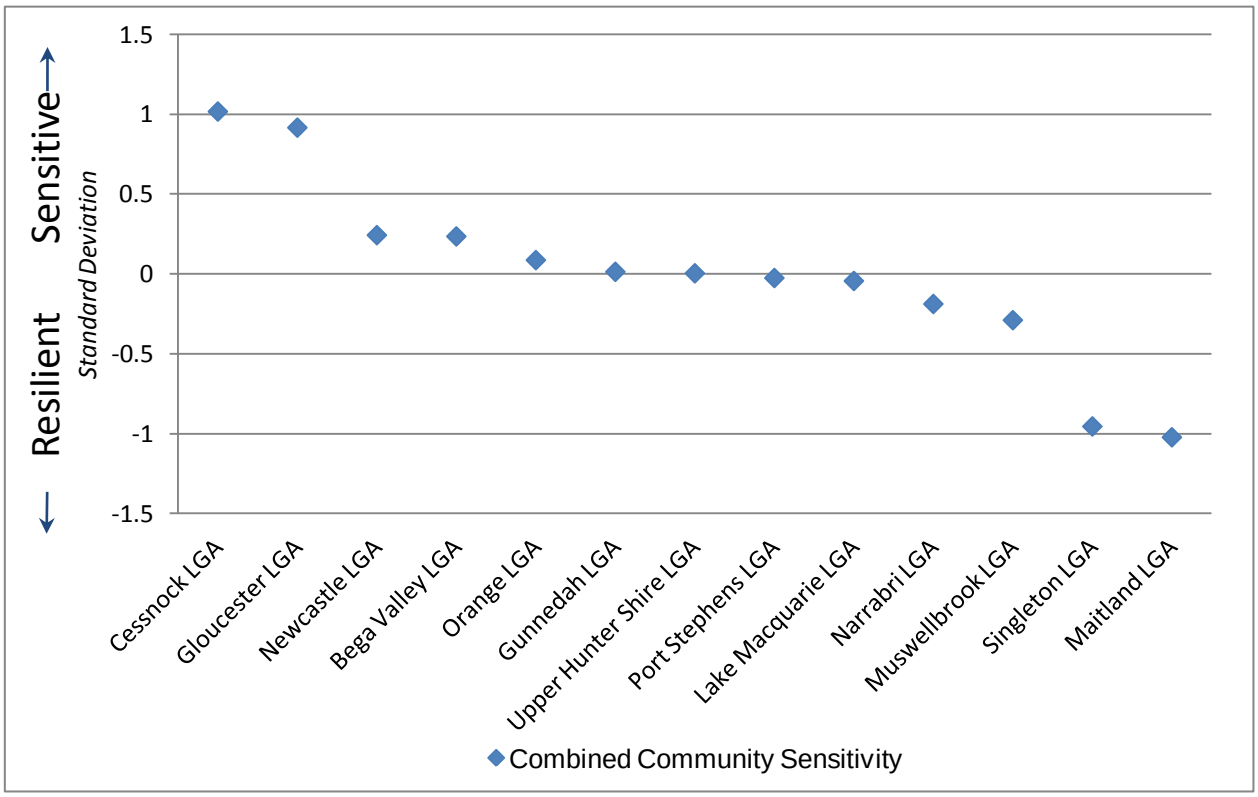
Source: Coakes Consulting (2013)

2.0 Results

The CSI results at the LGA and at the town level are presented in Section 2.1 and Section 2.2 respectively.

2.1 LGA level

Figure 2.1 presents the CSI scores for each LGA in the analysis. Cessnock LGA had the highest overall CSI score, suggesting that it was the most sensitive to change when all sub-indices were combined and consequently is considered to have lower adaptive capacity than the comparison communities. Conversely, Maitland LGA had the lowest CSI score and is therefore is considered more resilient to change, with stronger adaptive capacity.



Source: Coakes Consulting (2013)

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.

Figure 2.1: Community Sensitivity Index

CSI scores can be further explored by studying the capital sensitivity sub-indices that comprise the index. A lower sensitivity index reflects more strength in a community's capitals, whereas a higher sensitivity index reflects less strength and a potential opportunity for policy and decision makers to direct resources toward further enhancing the capital.

The capital sensitivity sub-indices for each LGA are presented in Table 2.1 and Figure 2.2. Outcomes of this analysis indicate that:

- The high CSI scores for Cessnock and Gloucester are considered due to generally high economic, human and physical sensitivities, although Gloucester is considered to have relatively substantial social capital
- Newcastle LGA and Muswellbrook LGA are considered to have high social sensitivity, although Muswellbrook is rated more resilient overall due to its lower human capital sensitivity.

- Singleton LGA and Maitland LGA are considered the most resilient communities out of those compared; Singleton due to its economic and human capital and Maitland due to its economic, human and physical capital.
- While Newcastle, Bega, Orange, Gunnedah, Upper Hunter Shire, Port Stephens, Lake Macquarie, Narrabri and Muswellbrook LGAs have similar CSI scores overall, they exhibit substantial differences between sub-indices.

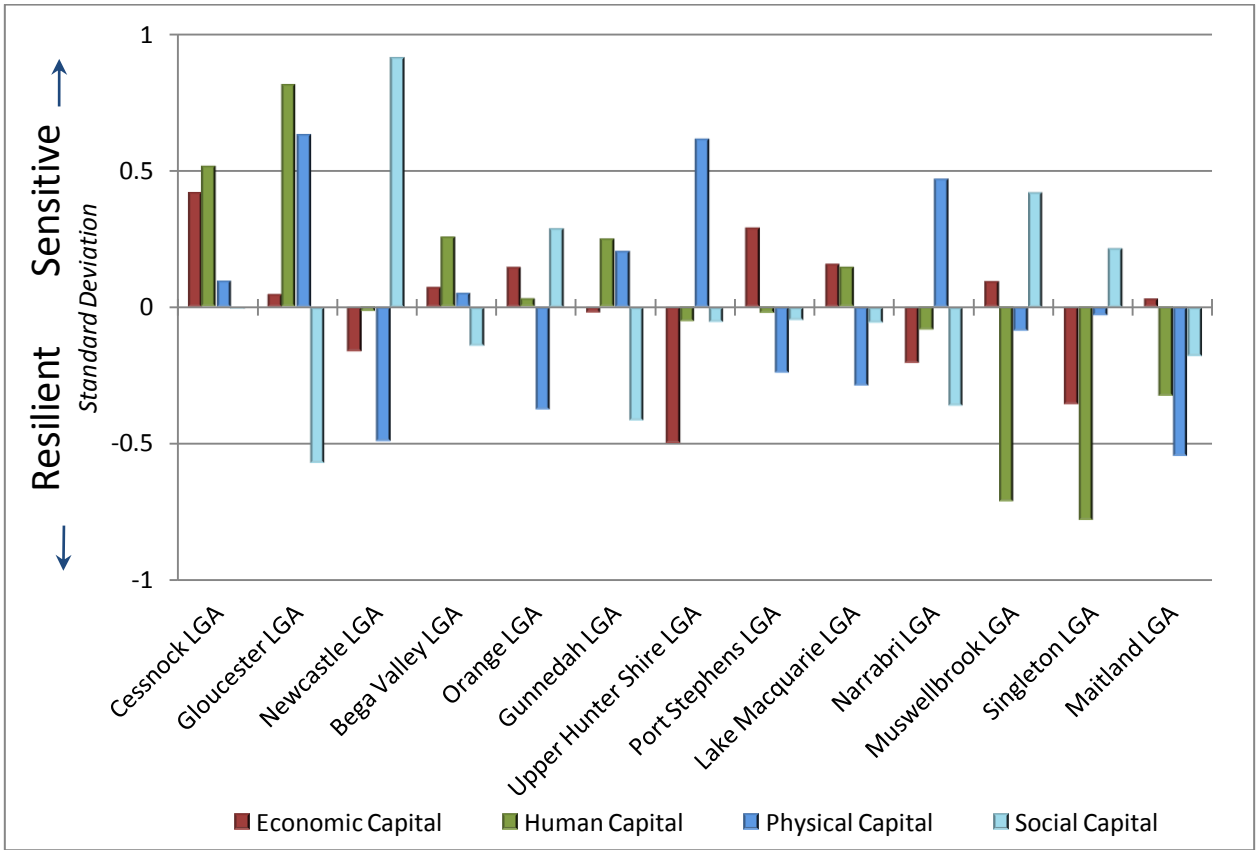
A score falling between 1 and -1 standard deviation from the mean is within 68.2 per cent of all results and is considered within an average range in relation to other communities in the analysis. Accordingly, only Cessnock LGA and Maitland LGA could be called comparatively 'sensitive' or 'resilient' respectively, and then only marginally more so than the other communities in the comparison.

Table 2.1: CSI and LGA sensitivity sub-indices

	Economic Capital	Human Capital	Physical Capital	Social Capital	CSI
Cessnock LGA	0.416038	0.513145	0.095148	-0.00675	1.017585
Gloucester LGA	0.046627	0.812536	0.627696	-0.57023	0.916625
Newcastle LGA	-0.16232	-0.01662	-0.48916	0.91172	0.243619
Bega Valley LGA	0.070657	0.255573	0.051601	-0.14207	0.235759
Orange LGA	0.144791	0.028275	-0.37389	0.287997	0.087171
Gunnedah LGA	-0.02314	0.247031	0.203887	-0.41362	0.014159
Upper Hunter Shire LGA	-0.49713	-0.05458	0.611286	-0.05478	0.004798
Port Stephens LGA	0.286732	-0.02435	-0.23961	-0.04738	-0.02461
Lake Macquarie LGA	0.156084	0.145543	-0.28749	-0.05728	-0.04314
Narrabri LGA	-0.20492	-0.08684	0.465824	-0.36147	-0.18741
Muswellbrook LGA	0.093922	-0.71207	-0.08919	0.418697	-0.28864
Singleton LGA	-0.35597	-0.78066	-0.03152	0.214159	-0.95399
Maitland LGA	0.028628	-0.32698	-0.54459	-0.17899	-1.02193

Source: Coakes Consulting (2013)

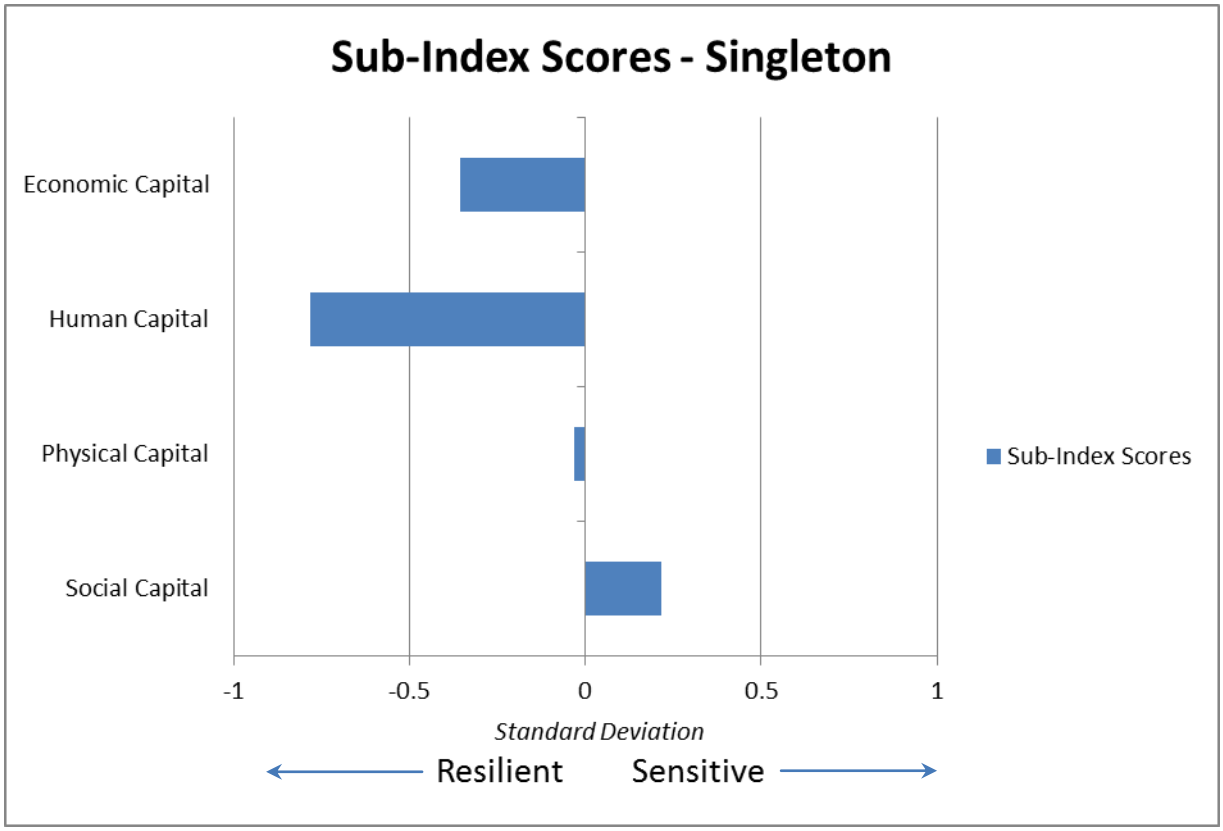
Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.



Source: Coakes Consulting (2013)

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.

Figure 2.2: Capital sensitivity sub-indices



Source: Coakes Consulting (2013)

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.

Figure 2.3: Singleton LGA's capital sensitivity

CSI sub-indices can be broken down further by examining the individual indicators of which they are comprised. Figure 2.3 presents Singleton LGA's scores for each indicator used in the CSI analysis.

The analysis suggests that:

- Singleton LGA's lower economic sensitivity (greater resilience) was related to ;
  - a population with a higher than average overall income, as well as higher levels of disposable income;
  - a lower unemployment rate; and
  - a lower proportion of its population with childhood burden, compared to other LGAs in the analysis.
  - However, the lack of industrial diversity (heavily mining focused) meant that the economic sub index was reduced significantly.
- Singleton LGA's lower human capital sensitivity was related to it having;
  - a smaller proportion of its adult population who left school before Year 10;
  - fewer employed persons employed as labourers, suggesting a smaller proportion of its workforce in low-skilled employment;
  - a smaller proportion of the adult population who with a core need for assistance; and
  - a smaller proportion of its population aged 65 years old and over.

- Singleton LGA's fractionally lower physical capital sensitivity was related to it being less remote than other communities in the analysis, with relatively easy access to goods and services, especially internet, and opportunities for social interaction. Furthermore, the LGA has substantial social infrastructure.
- Singleton LGA's higher than average social capital sensitivity was related to it having;
  - a slightly high population mobility suggesting that a proportion of the population are not permanent residents in the LGA;
  - a smaller proportion of its population who volunteer; and
  - a comparatively high proportion of males.

Table 2.2: CSI indicators for Singleton LGA

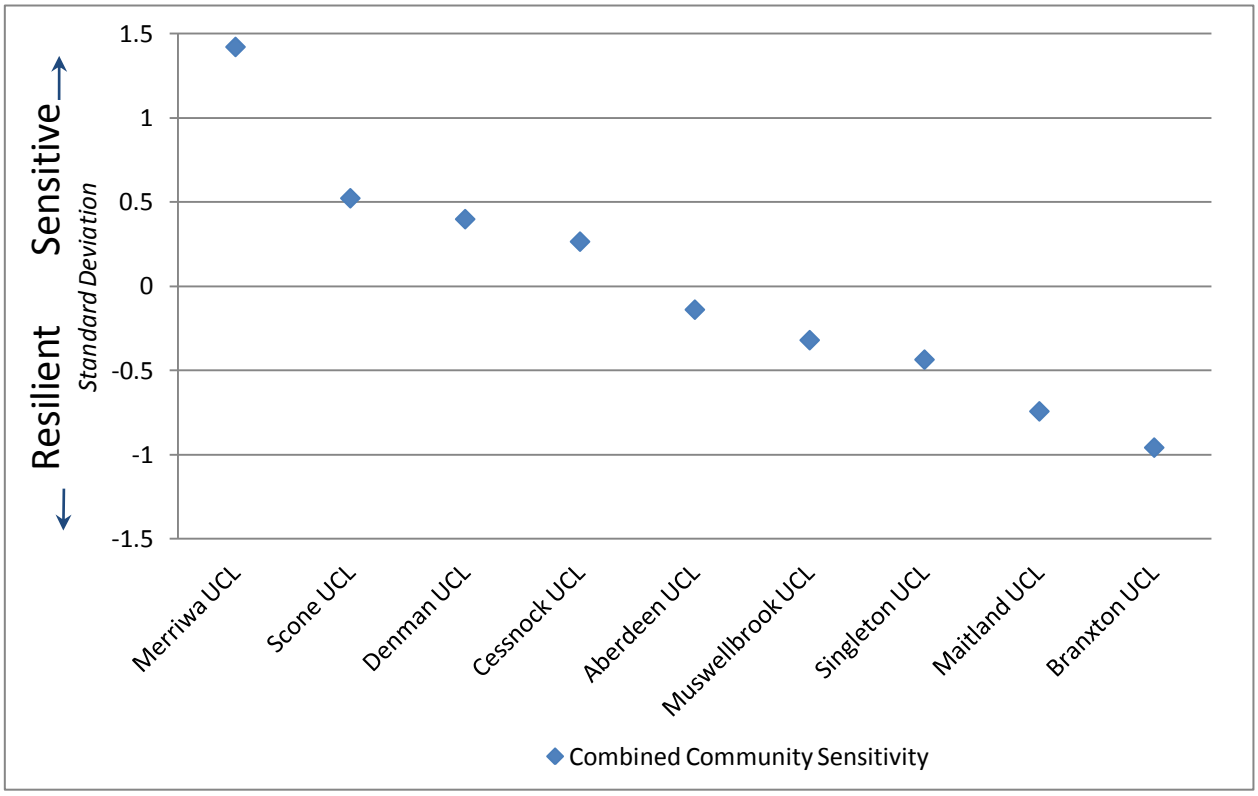
Indicators	Singleton LGA	Average
Economic Capital		
Industrial diversity (Herfindahl Index)	1.39%	0.43%
Proportion of adult renting population renting from Government or community organisations	18.06%	17.56%
Proportion of total adult population earning weekly household income of less than $400	9.45%	13.61%
Unemployment rate	3.34%	5.20%
Childhood burden – Number of dependent aged children (15 and under) divided by number of employed persons	44.14%	45.31%
Number of people in one parent families with dependent aged children, divided by number of people in families	7.72%	9.80%
Proportion of employed persons employed in mining	24.63%	8.00%
Proportion of employed persons employed in construction	3.11%	3.24%
Median household weekly income divided by median rent per week	15.37%	19.97%
Median household weekly income divided by median mortgage repayment per week	27.28%	33.78%
Human Capital		
Proportion of total adult population with no post-school qualification	42.73%	40.50%
Proportion of total adult population who left school before Year 10	14.50%	17.25%
Proportion of adult population who never attended school	0.36%	0.42%
Proportion of employed persons employed as labourers	9.62%	11.90%
Proportion of total population who are Indigenous persons	3.71%	5.03%
Proportion of total population with core activity need for assistance	3.66%	5.20%
Proportion of total population aged 65 years and over	10.37%	16.39%
Proportion of adult population who provide unpaid assistance to people with disabilities	10.74%	11.85%
Physical Capital		
Proportion of total population with no accessibility to the internet	19.90%	25.67%
Remoteness Index (ARIA+)	2.00	2.23
Community health clinic (yes/no)	Yes	N/A
Aboriginal health clinic (yes/no)	No	N/A
Library (yes/no)	Yes	N/A
Hospitals (yes/no)	Yes	N/A
Police stations (yes/no)	Yes	N/A
Airport (yes/no)	No	N/A

Medicare (yes/no)	Yes	N/A
Social Capital		
Population size	22694	51752
Population mobility - proportion of population with a different address one year ago	14.65%	14.32%
Cultural Literacy - number of people who speak English "not well or not at all" / total persons born overseas	2.90%	3.72%
Migration influx - Proportion of population born overseas	8.21%	8.11%
Proportion of adult population who do not volunteer	73.86%	72.24%
Number of visitors on census night as a proportion of total persons on census night	5.74%	5.59%
Proportion of population who are males	51.32%	49.75%

Source: Coakes Consulting (2013)

2.2 Town Level

In order to assess the sensitivity of localities where most Mt Owen employees lived and other localities close to the Mt Owen operations, the CSI analysis was also conducted at a town level. The CSI scores for each community in the analysis are presented in Figure 2.4. Merriwa, followed by Scone had the highest CSI score, while Maitland and Branxton are considered the most resilient to change out of the townships compared.



Source: Coakes Consulting (2013)

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.

Figure 2.4: Community Sensitivity Index

These communities were further examined through their capital sensitivity sub-indices that comprise the CSI. Table 2.3 and Figure 2.5 present the capital sensitivity sub-indices for each community. It was found that:

- Merriwa had a high CSI score due to its high economic, human and physical capital sensitivity. It was also the town with the highest human and economic capital sensitivity.
- Maitland and Branxton are considered the two most resilient communities, albeit for very different reasons: Maitland has strong physical capital due to the level of social infrastructure and proximity to an airport, whilst Branxton exhibits strong human capital, with relatively more highly educated population with a higher proportion of persons of a working age.

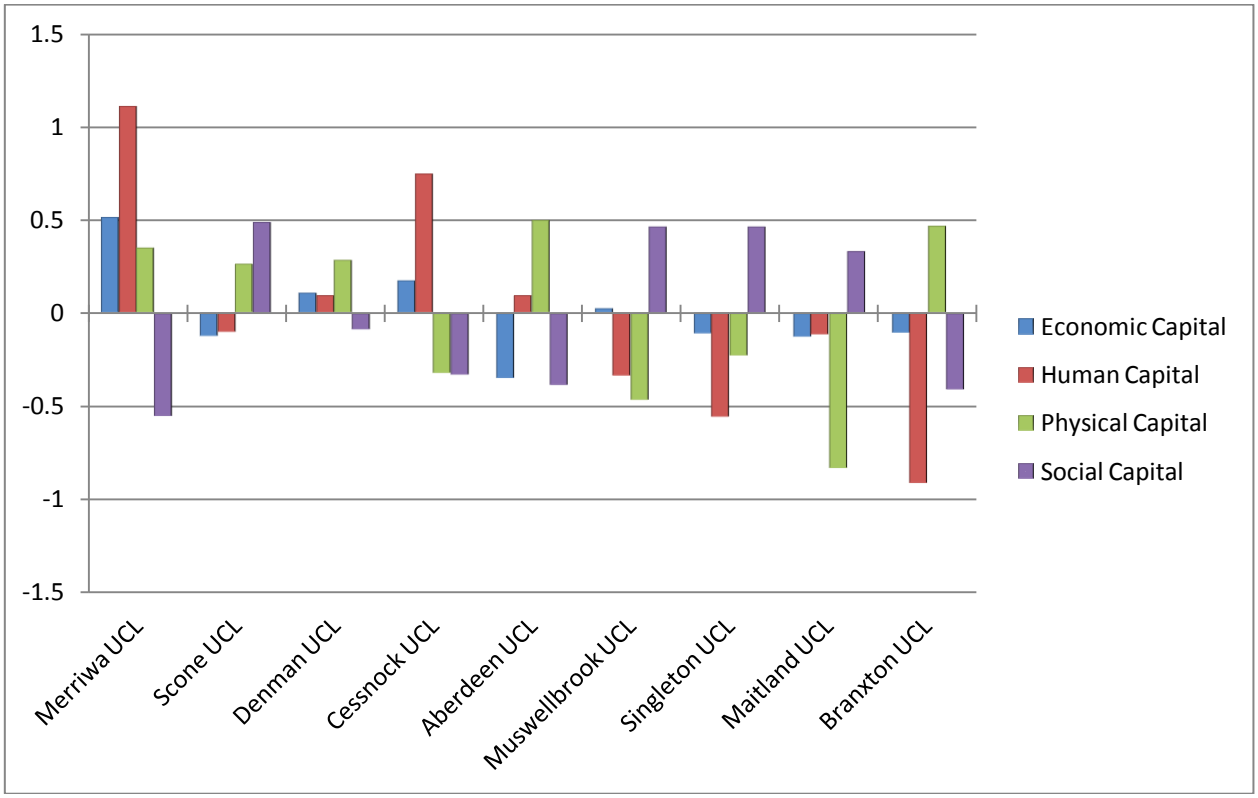
Results of LGAs and the UCLs contained within them (e.g. Singleton LGA and Singleton UCL) are reasonably consistent, noting that values change in relation to the comparison communities as well as with changes to data.

Table 2.3: CSI and community sensitivity sub-indices

	Economic Capital	Human Capital	Physical Capital	Social Capital	CSI
Merriwa UCL	0.510079	1.106548	0.348413	-0.5459	1.419137
Scone UCL	-0.12378	-0.10481	0.263201	0.486414	0.521028
Denman UCL	0.106982	0.093425	0.281856	-0.08516	0.397105
Cessnock UCL	0.170361	0.742015	-0.32254	-0.32617	0.263663
Aberdeen UCL	-0.34708	0.091605	0.495876	-0.3806	-0.1402
Muswellbrook UCL	0.02518	-0.33905	-0.46988	0.462549	-0.3212
Singleton UCL	-0.10951	-0.55928	-0.23065	0.462696	-0.43674
Maitland UCL	-0.12586	-0.11769	-0.83205	0.331751	-0.74384
Branxton UCL	-0.10637	-0.91277	0.465762	-0.40558	-0.95896

Source: Coakes Consulting (2013)

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.



Source: Coakes Consulting (2013)

Note: A community with a lower score indicates stronger capitals, and also is considered to demonstrate greater adaptive capacity. Conversely, a community with higher scores suggests more sensitivity to change.

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Figure 2.5: Community sensitivity sub-indices

3.0 Conclusion

The CSI is a useful tool to provide an indication of capital sensitivity or resilience relative to other towns, as well as providing a source of existing social and economic indicators to monitor over time.

The results of the CSI analysis suggest that, compared to other communities in the analysis, Cessnock LGA was the most sensitive to change, while Maitland LGA was the least sensitive to change. When each community's sensitivity to change was compared, Merriwa was found to be the town most sensitive to change compared to other communities in the analysis, and Branxton was the most comparatively resilient town.

These findings can be used as a means of determining levels of resilience within communities, noting the exclusion of Natural Capitals as described in Section 1.2. The current analysis may assist in prioritising investment in a community to improve its adaptive capacity. Specifically, it could inform the identification and development of appropriate community enhancement initiatives to further develop a community's capitals and assets, and scope areas that might need improvement.

4.0 References

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Hart, M. 1999. Guide to Sustainable Community Indicators. Ipswich, MA: QLF/Atlantic Centre for the Environment.

APPENDIX D

Media Sources and Issues

Appendix D Media Sources and Regional Issue and Opportunity Summaries

Media Sources (April 2011 – June 2014)

Title	Date and Source	Key Themes
Expectant mothers in Singleton	5/04/2011, Singleton Argus	Hospitals
Environment workshop covers health matters	15/05/2011, Singleton Argus	Health
Dust levels at Maison Dieu tip the monitor	17/05/2011, Singleton Argus	Air quality
Coal vs cows: an ungodly row	25/06/2011, Newcastle Herald	Land use
Coal mines to clean up their act	28/06/2011, ABC News	Noise
Singleton mine talks	5/07/2011, Singleton Argus	Coal
Singleton gets nine of the 14 air quality monitor locations	15/07/2011, Singleton Argus	Air Quality
Health study to look at broader impacts	9/08/2011, Singleton Argus	Health
Coal mining dust	12/08/2011, Singleton Argus	Air Quality
Action plans to minimise open cut mining impacts	26/08/2011, Singleton Argus	Land Use Plan
Strategy to tackle two-speed economy	13/09/2011, Singleton Argus	Economy
Open doors at Plashett	20/09/2011, Singleton Argus	Heritage
Noise top of hit list	30/09/2011, Singleton Argus	Noise
Mine wins first step	7/10/2011, Singleton Argus	Expansions
Showdown on farm	14/10/2011, Singleton Argus	Mining Impact
Injunction on coal operations after Plains take legal step	18/10/2011, Singleton Argus	Mining
NSW Farmers in town today to hear of coal seam gas and coal mining impacts	28/10/2011, Singleton Argus	Mining Impact
NSW Farmers representatives shocked at change in Hunter's agricultural landscape	1/11/2011, Singleton Argus	Mining
No royalties for five years	4/11/2011, Singleton Argus	Coal Seam Gas
Push for hospital here	4/11/2011, Singleton Argus	Hospitals
Coal not enough	8/11/2011, Singleton Argus	Employment
Mum finds coaldust scum in baby's bottle	8/11/2011, Singleton Argus	Mining Impact
Dust levels peak again	11/11/2011, Singleton Argus	Dust
Land use focus of workshop	11/11/2011, Singleton Argus	Mining
Upper Hunter Mining Dialogue	15/11/2011, Singleton Argus	Mining Impacts
Industry shares the wealth	18/11/2011, Singleton Argus	Mining Impact
Singleton - Sold out	18/11/2011, Singleton Argus	Housing Market
New study will determine chemical compound	29/11/2011, Singleton Argus	Dust
Government requests Doyles Creek suspension	2/12/2011, Singleton Argus	Mining Impact
Workers protest power sale	6/12/2011, Singleton Argus	Power
Mangoola mine fined over blasting	20/12/2011, ABC News	

No to Ashton coal	23/12/2011, Singleton Argus	Mining Impact
Open to traffic	3/01/2012, Singleton Argus,	Roads & Infrastructure
$4.3m mine deal accepted	6/01/2012, Singleton Argus,	Mine Expansion
Health message from the chief	06-01-12, Singleton Argus	Health Housing
Family's desperate search for a home	10-01-12, Singleton Argus	Housing Market
Mine decision scope for change	18-01-12, Newcastle Herald	Mining Impacts
No new mines	20-01-12, Singleton Argus	Mine approvals
Resident distressed by impacts of mine	24-01-12, ABC News	Dust Noise
Xstrata defends Mangoola mine	01-02-12, ABC News	Wybong Road
Spare bedrooms find a home in housing crisis	10-02-12, Singleton Argus	Housing Market
Hunter GP sounds warning over coal expansion	15-02-12, ABC Newcastle	Health
Singleton coal China link	17-02-12, Singleton Argus	Mining
Singleton home	17-02-12, Singleton Argus	Housing Market
Family grieving on legal road to nowhere	24-02-12, Newcastle Herald	Wybong Road
Hunter air quality monitors in action	25-02-12, Newcastle Herald	Air Quality
Upper Hunter Air Quality Monitoring Network	28-02-12, Singleton Argus	Air Quality
Air quality network makes a difference	08-03-12, Newcastle Herald	Air Quality
Coal land use strategy forum in Singleton	13-03-12, Singleton Argus	Land Use Plan
Ulan mine wins on emissions	15-03-12, Newcastle Herald	Expansions
Get a job in the coal mines	16-03-12, Singleton Argus	Employment
Singleton bottleneck worsens	30-03-12, Singleton Argus	Roads & Infrastructure
140 Mount Arthur jobs go	06-04-12, Newcastle Herald	Employment
Angry response to new mining report	10-04-12, Singleton Argus	Mining Report
Mine boom behind Hunter traffic snarls	10-04-12, Newcastle Herald	Roads & Infrastructure
New hat alerts fatigue	10-04-12, Singleton Argus	Fatigue
Local groups join rally to oppose mining expansion	11-04-12, 1233 ABC Newcastle	Mining
Return more royalties	13-04-12, Singleton Argus	Royalties
Yet another orange plume occurs	13-04-12, Singleton Argus	Mining Impacts
Muswellbrook mine roads need $60m upgrade	16-04-12, Newcastle Herald	Roads & Infrastructure
Ashton second chance	20-04-12, Singleton Argus	Expansions
Health talks gains	21-04-12, Singleton Argus	Health
Muswellbrook student housing tipped for approval	25-04-12, Newcastle Herald	Accommodation
Mental health in mining industry a priority issue	30-04-12, Newcastle Herald	OH&S
New guide aims to make miners safer drivers	30-04-12, Australian Mining	OH&S
Changing times on the land	01-05-12, Singleton Argus	Land Use
Hunter farmers rally in Sydney	01-05-12, Newcastle Herald	Land Use Plan
Rio Tinto accused of Mt Pleasant ploy	04-05-12, 1233 ABC Newcastle	Mine Closure
Mine workings threaten waterway	08-05-12, Singleton Argus	Mining Impacts

Rio tight-lipped on mine's future	11-05-12, Muswellbrook Chronicle	Mine Closure
Hunter experiencing chronic public housing shortage	14-05-12, 1233 ABC Newcastle	Housing Market
Coal boom steadies	15-05-12, Singleton Argus	Mining Impact
Mine applies for 'minor' extension	17-05-12, 1233 ABC Newcastle	Expansions
Bypass is a push on	18-05-12, The Singleton Argus	Roads
Mine site rehabilitation prompts new techniques	22-05-12, Singleton Argus	Coal mining
Call to dig deeper	24-05-12, Muswellbrook Chronicle	Mining Industry
Housing shortage fuels affordability crisis	28-05-12, Newcastle Herald	Housing Market
Done deal on power station sale	31-05-12, Muswellbrook Chronicle	Employment
Blakefield coal mine to re-open	31-05-12, 1233 ABC Newcastle	Mining
Singleton mine fatality inquest	05-06-12, Singleton Argus	Workplace Accident
Welcome boost	07-06-12, Muswellbrook Chronicle	Education
Students to stay over	07-06-12, Muswellbrook Chronicle	Employment / Education
Traffic concerns	08-06-12, Muswellbrook Chronicle	Roads
Action urged on Hunter's chronic housing crisis	08-06-12, 1233 ABC Newcastle	Housing Market
Sign up for air quality alerts	12-06-12, Hunter Valley News	Air quality
Resident speak against proposal	14-06-12, Muswellbrook Chronicle	Ammonium nitrate
Resistance to mine changes	14-06-12, Muswellbrook Chronicle	Expansions
NSW Health warns of mine dust effects	15-06-12, Newcastle Herald	Dust
Help this family find a home	19-06-12, Singleton Argus	Homelessness Housing
Council cash for streets	21-06-12, Muswellbrook Chronicle	Roads improvement
Shire snapshot	28-06-12, Muswellbrook Chronicle	Community
$1m fun upgrade	05-07-12, Muswellbrook Chronicle	Community
Agents confirm market tight	05-07-12, Muswellbrook Chronicle	Housing
Mining impacts are varied and complex	13-07-12, Singleton Argus	Social stresses Coal industry infrastructure
Don't forget about massive job impact	13-07-12, Singleton Argus	Mining impacts Employment
Assurance fails to allay fears	19-07-12, Muswellbrook Chronicle	Employment
Bell Street receives funding boost	19-07-12, Muswellbrook Chronicle	Roads
Rush in race to election	26-07-12, Muswellbrook Chronicle	Council
Upper Hunter housing demand at desperate level	30-07-12, Newcastle Herald	Housing crisis Rentals

Support for covered coal wagons	01-08-12, Newcastle Herald	Coal trains, Dust, Health
China eyes off power stations	02-08-12, Muswellbrook Chronicle	Power Stations
No vacancies across coalfields	11-08-12, Newcastle Herald	Accommodation Housing Market
Doctors highlight health costs to association of mining councils	14-08-12, Singleton Argus	Air pollution
Housing plan faces possible legal challenge	14-08-12, 1233 ABC Newcastle	Housing Local Environment Plan LEP
Mt Pleasant sidelined until next year	15-08-12, 1233 ABC Newcastle	New mine
Mother speaks of hopeless rental search	15-08-12, 1233 ABC Newcastle	Housing Rentals
Hitting the right note	17-08-12, Muswellbrook Chronicle	Community
Nurse walk-outs a real possibility	17-08-12, Muswellbrook Chronicle	Hospital
Is coal making you sick?	21-08-12, Newcastle Herald	Coal Terminals
Singleton summit discusses accommodation needs	22-08-12, Newcastle Herald	Housing crisis Rentals
Speak up on housing now	22-08-12, Singleton Argus	Housing crisis Rentals
Apprentices win top TAFE honours	22-08-12, Singleton Argus	TAFE Apprentices
Coal dust reports blocked	24-08-12, Newcastle Herald	Dust
Sign our petition to cover coal wagons	24-08-12, Newcastle Herald	Coal Wagons Coal trains
Confirmation of housing crisis	05-09-12, 1233 ABC Newcastle	Housing crisis Rentals
Train derailment inquiries begin	06-09-12, Muswellbrook Chronicle	Rail
Coal giant sees bright future for Hunter mining towns	20-09-12, 1233 ABC Newcastle	Coal Mining
Noise row over Xstrata mine	02-10-12, Newcastle Herald	Noise
Ravensworth fined for creek pollution	02-10-12, Newcastle Herald	Pollution
Push for Hunter mining shuttle bus	04-10-12, ABC News	Roads / Infrastructure
Contractors hit by coal cut	09-10-12, Singleton Argus	Employment / Contractors
Keep Denman coal mine-free	12-10-12, Muswellbrook Chronicle	Anti- Mining
Coal hard truth	16-10-12, Singleton Argus	Coal Mining
Mining slow-down frees up homes	16-10-12, ABC News	Weakening mining sector
New England Highway blocked by truck crash halts peak hour coalmine traffic	19-10-12, Singleton Argus	Roads / Infrastructure
Huntlee home sites on market next week	19-10-12, Singleton Argus	Housing
New report highlights health fears for Hunter Valley	29-10-12, ABC News	Health impacts
Dust and health concerns	30-10-12, Singleton Argus	Dust / health impacts
Hunter residents, MPs call for inquiry into coalmining health effects	30-10-12, Newcastle Herald	Health impacts

Mount Arthur mine given dust warning, no fine	31-10-12, Newcastle Herald	Dust/ health impacts
Group's plan to build 500 homes	02-11-12, Singleton Argus	Housing
Christmas coal shutdown	04-11-12, Newcastle Herald	Mining Industry
Frustration vented at lack of action on dust	07-11-12, Singleton Argus	Dust / noise Health impacts
Call for radiation-style alerts for mine neighbours	07-11-12, Newcastle Herald	Air quality Dust
Spotlight on vegetation	07-11-12, Singleton Argus	Coal Industry
EDO under threat	07-11-12, Hunter Valley News	Legal matters
Cattle to graze on mined in new trial	09-11-12, Singleton Argus	Mining
OPINION: Scientists have tools to measure dust	09-11-12, Newcastle Herald	Air quality Dust
5000 women now working in mines	11-11-12, Newcastle Herald	Mining Industry
Heavy traffic may be sent from town	16-11-12, Singleton Argus	Roads/ Traffic
Early warning of tough times	17-11-12, Newcastle Herald	Mining Industry
Financial boost to support children with special needs	20-11-12, Singleton Argus	Donations
Survey reveals mining contribution	20-11-12. ABC News	Economic/ Business
Hunter the big spender on mining	21-11-12, Newcastle Herald	Economic/ Business
Singleton tops Hunter mining spend	22-11-12, ABC News	Economic/ Business
Mining injects $4.632 billion into Hunter economy	23-11-12. Newcastle Herald	Economic/ Business
Healthy mine workers leads to less injuries	30-11-12, ABC News	Health
Mining downturn eases Hunter rental squeeze	4-12-12, ABC News	Housing
New way to record water use	4-12-12, Singleton Argus	Water issues
Christmas lunch donation	7-12-12, Singleton Argus	Donations
Xstrata says Hunter jobs safe despite downturn	10-12-12, ABC News	Employment
Coal exporters future secured	11-12-12, Singleton Argus	Coal exports
Upper Hunter Mining Dialogue	12-12-12	Mining Impact Community
Camp out to help homeless	18-12-12, Newcastle Herald	Homelessness Housing
New Look Singleton	18-12-12, Singleton Argus	Planning/ Infrastructure
Mining destroys Hunter property values	20-12-12, Newcastle Herald	Mining impacts Housing
Mines tasked to comply with regulations	20-12-12, Newcastle Herald	Air quality/ Dust
Plans to expand Upper Hunter mine by a third	24-12-12, ABC News	Mine expansions
Mines urged to do more to control dust	27-12-12, ABC News	Air quality/ Dust
200 air quality breaches in Hunter	04-01-13, Newcastle Herald	Air quality
Upper Hunter miners using vital weather forecasting information to reduce impacts	08-01-13, Singleton Argus	Mining impacts
National call to halt coal expansions	14-01-13, Newcastle Herald	Mining expansions
Air quality exceeds standards	15-01-13, Singleton Argus	Air quality
Mine's dam plan moves forward	16-01-13, ABC News	Mining

Upper Hunter air quality overview 2012	18-01-13, Singleton Argus	Air quality
Fight to stop Ashton open cut coal mine	21-01-13, Singleton Argus	Mining
Improving mine dust and noise	21-01-13, Newcastle Herald	Pollution
Hunter legal action against Ashton Coal mine	21-01-13, Newcastle Herald	Mining
Grant to help sport	22-01-13, Singleton Argus	Donations
Six days of dust	22-01-13, Singleton Argus	Air quality/ Dust
Mining boom boosts land values	25-01-13, ABC News	Housing
Mining areas richer, more popular: report	04-02-13, Newcastle Herald	Mining
Hunter mining communities getting richer	04-02-13, Newcastle Herald	Mining
Ownership up but rent crisis continues	04-02-13, Newcastle Herald	Housing
Mining towns attracting families but losing old folk	04-02-13, Newcastle Herald	Community
Report finds mining good for the Hunter	04-02-13, ABC News	Mining
Time to clear the air	08-02-13, Newcastle Herald	Air quality/ Dust
Help the homeless	12-02-13, Singleton Argus	Homelessness
Hunter missing out on mining royalties	22-02-13, Newcastle Herald	Mining royalties
Hunter's rich in the coal belt	22-02-13, Newcastle Herald	Economics/ Business
Union should fight coal, says Greens	27-02-13, Hunter Valley News	Health Community
Singleton ready for more funding	27-02-13, ABC News	Mining impacts
Project concern	01-03-13, Singleton Argus	Mining impacts
Singleton robbed	01-03-13, Singleton Argus	Mining royalties
Try a skill	05-03-13, Singleton Argus	Education Employment
Please funding now for Singleton CBD	12-03-13, Singleton Argus	Mining royalties
DA in for mining village	14-03-13, Singleton Argus	Housing
Careers in mining breakfast	14-03-13, Singleton Argus	Education Employment
OPINION: Mine slowdown gives chance to take breath	19-03-13, Newcastle Herald	Mining impacts
Rio and Xstrata slash 200 jobs	19-03-13, Australian Mining	Employment
Mine village hits table Friday	19-03-13, Singleton Argus	Housing
Rio cutting 100 jobs at Queensland and NSW Hunter Valley coal mines	19-03-13, CoalGuru	Employment
Coal job cuts	20-03-13, Singleton Argus	Employment
Mines rail load revealed	05-06-13, Newcastle Herald	Coal trains
Duelling dust studies confuse community	06-06-13. Newcastle Herald	Air-quality
A will to learn brings success	07-06-13, Singleton Argus	Education
Apprentice Talks	07-06-13, Singleton Argus	Education
Services receive financial boost	07-06-13, Muswellbrook Chronicle	Donation
Open and Shut case of streamline trains	08-06-13, Newcastle Herald	Coal Trains
Coal rail study ends in dust-up	08-06-13, Newcastle Herald	Air quality

Partnerships for new projects	14-06-13, Singleton Argus	Community
Cakes for Coalminers	14-06-13, Singleton Argus	Charity
Petition is more than just miners	14-06-13, Singleton Argus	Mine extension
Prices down but not jobs	24-06-13, Newcastle Herald	Economic/Business
No Coal means no Newcastle	29-06-13, Newcastle Herald	Economic/Business
Extra delays on the shelf for now	02-07-13, Newcastle Herald	Coal Trains
Greens in chase for dust data	25-07-13, Newcastle Herald	Coal trains/Air quality
Seeking a diverse economy	26-07-13, Newcastle Herald	Economic/Business
Downturn undermines coal exports	28-07-13, Newcastle Herald	Economic/Business
Council set to back planning report that gives support to Bulga optimisation project	02-07-13, Singleton Argus	Mine extension
New scrutiny for coal train dust	15-07-13, Newcastle Herald	Coal trains/Air quality
Wambo hall of fame expands categories to wines and mines	16-07-13, Singleton Argus	Community
Grant gives kids freedom to move	30-07-13, Singleton Argus	Donation
Dates set for WUPA	30-07-13, Singleton Argus	Community
Bulga fury as economics trumps environment	30-07-13, Newcastle Herald	Economic/Business
Coal exports hit fresh high in industry spike	03-08-13, Newcastle Herald	Economic/Business
It's make or break	06-08-13, Newcastle Herald	Economic/Business
Trees make a difference to park	06-08-13, Singleton Argus	Community
NuCoal calls for shareholder support	09-08-13, Singleton Argus	Mining
Dollar fall helps coal as 'take-or-pay' adds to pain	12-08-13, Newcastle Herald	Economic/Business
Taking sides on coal case	15-08-13, Newcastle Herald	Mine expansion
Projects on funds shortlist	16-08-13, Newcastle Herald	Community
Crowd cheers coal	19-08-13, Newcastle Herald	Community
Coal and Allied offers helping hand for UNI	20-08-13, Singleton Argus	Education
Newcastle is back on track	20-08-13, Newcastle Herald	Coal Trains
Hauling boosts Asciano	22-08-13, Newcastle Herald	Economic/Business
Dust Spike	23-08-13, Newcastle Herald	Air Quality
Give your health a kick start at free lifestyle expo next month	27-08-13, Singleton Argus	Community
Doyles Creek report today	30-08-13, Singleton Argus	Mining
Nominate Right now	30-08-13, Singleton Argus	Community
Miner Told to act now	30-08-13, Newcastle Herald	Mining Impacts
Survey Backs Coal Covers	30-08-13, Newcastle Herald	Air Quality
Farmyard fighters see justice	31-08-13, Newcastle Herald	Agriculture
Advice on damage risk ignored	31-08-13,Newcastle Herald	Mining Impact
Ashton Mine Next in Court	03-09-13, Singleton Argus	Mining
Residents vindicated by ICAC report	03-09-11, Singleton Argus	Mining/Community
A Common Goal and a Victory to Savour	03-09-13, Newcastle Herald	Community

Coal Mine Towns 'Paying the Cost'	04-09-13, Newcastle Herald	Community
Accused of mining outside the ground rules	06-09-13, Newcastle Herald	Mining Impacts
Potential to create jobs	06-09-13, Muswellbrook Chronicle	Economic/Business
All eyes on Ashton	06-09-13, Singleton Argus	Mining
Mining damage inquiry queried	07-09-13, Newcastle Herald	Mining Impacts
Those Blaming Wagons are on the wrong Train	13-09-13, Newcastle Herald	Coal Trains
Cliff fall sparks mine ban call	13-09-13, Newcastle Herald	Mining Impacts
Soil, water filling with mines' bile	18-09-13, Newcastle Herald	Mining Impacts
Backlash builds on spill	23-09-13, Newcastle Herald	Mining Impacts
No easy questions, let alone answers	27-09-13, Muswellbrook Chronicle	Air Quality
Global audience for local forum	04-10-13, Singleton Argus	Coal Mining/Agriculture
Roads to success	11-10-13, Muswellbrook Chronicle	Community
Horses take on coal	15-10-13, Singleton Argus	Coal Mining/Agriculture
Call for Certainty on NSW land use	18-10-13, Singleton Argus	Coal Mining/Agriculture
NuCoal wants mine decision and compensation	22-10-13, Singleton Argus	Mining
Stop whining over mining	25-10-13, Newcastle Herald	Mining/Community
Mining corruption inevitable	31-11-13, Newcastle Herald	Political
Mining employment to get back on its feet	29-10-13, Newcastle Herald	Employment
Accommodation Pressure eased	29-10-13, Newcastle Herald	Education
Sweeping changes to stop corruption	01-11-13, Singleton Argus	Political
Tidy town win is a real joint effort by community	05-11-13, Singleton Argus	Community
Time to act on coal pollution right now	05-11-13, Newcastle Herald	Air Quality
Residents slam 'farcical' mine consultation	06-11-13, ABC radio and web	Consultation
Extension of Mt Owen sought	07-11-13, Newcastle Herald	Mining
Mining at 'risk' in horse stud country	18-01-2014, The Australian	Land use
Mining recovery will be a slow hard slog	23-01-2014, The Australian	Mining
Rates of Illness stabilise	24-01-2017, Newcastle Herald	Health
Coal mine consent breaks new ground	07-02-2014, Singleton Argus	Mining
Glencre looks for value in big two's unloved assets	06-03-2014, The Australian	Mining
Sick to the back teeth	24-03-2014, Newcastle Herald	Health
Hunter mine to close	28-03-2014, Sydney Morning Herald	Employment
Layoffs loom as mine shuts down	28-03-2014, Newcastle Herald	Employment
Time to get serious	28-03-2014, Singleton Argus	Mining
Breeders to do their bit for campaign	09-04-2014, Newcastle Herald	Land use
More coal jobs slashed	10-04-2014, Sydney Morning Herald	Employment

Farmers investment designed for the long-haul	15-04-2014, Northern Daily Leader	Land use
Mining leaves giant imprint on the life of communities	04-05-2014, Newcastle Herald	Community
Planned Resource projects still power economic growth but slowdown inevitable	05-05-2014, The Australian	Economy/ Business
Hunter left short-changed	06-05-2014, Newcastle Herald	Economy/Politics
Coal Shines	07-05-2014, West Australian	Glencore
Ex-BP chief named Glencore chairman	09-05-2014, The Australian	Glencore
Glencore chokes on coking coal	08-05-2014, Australian Financial Review	Glencore
The busts follow the booms	17-05-2014, Newcastle Herald	Mining
Decline in coal severe	11-06-2014, Newcastle Herald	Economy/Business
A word from Australia's biggest coal producer	20-06-2014, Singleton Argus	Mining

Regional Issues and Opportunities Summaries

Sourced from:

- Sustainable Communities Project: Summary of project findings and opportunities to address cumulative impacts through collaboration. BHP Billiton, 2011.
- Upper Hunter Strategic Regional Land Use Plan. Department of Planning and Infrastructure, 2012.
- Upper Hunter Mining Dialogue. Evaluation report completed by by Australian Centre for Corporate Social Responsibility, 2011
- Upper Hunter Mining Dialogue, NSW Minerals Council Ltd., 2013.URL http://www.nswmin.com.au/Policy-and-Advocacy/People-and-Communities/Upper-Hunter-Mining-Dialogue/Upper-Hunter-Mining-Dialogue/default.aspx (accessed 7.11.13)
- Our Place Blueprint 2023: Singleton Community Strategic Plan. Singleton Council 2013.

Natural Capital

Source	Key issues and opportunities
NSW Strategic Regional Land Use Plan	Balancing conflicting land uses – Coal Seam Gas, mining, agricultural, viticulture, tourism Maintaining and enhancing opportunities for the future of environmentally responsible mining and agriculture Protecting strategic agricultural land, conservation lands, and lands of high biodiversity value including ecological corridors Developing and applying appropriate management measures to control and mitigate impacts on the environment Developing renewable energy opportunities Ensuring high value rehabilitation
Upper Hunter Mining Dialogue	Balancing conflicting land uses and protecting strategic areas – e.g. viticulture, farming Addressing key impact areas of mining: environment, air, health, noise, cumulative water impacts, rehabilitation (integrated), coal trains (covered), blasting Addressing negative perceptions of the mining industry as a whole Enhancing relationships with individual companies Linking Strategic Regional Land Use Plan (SRLUP) with local and other state government plans
Singleton Council Strategic Plan	Balancing between mining, agriculture and environment Protecting and enhancing the environment in a sustainable manner Developing alternate energy options Improving air quality and protecting waterways Improving waste management for the community through enhanced resource recovery, recycling, improved collection and the minimisation of waste generation Creating more green spaces, e.g. botanical and sensory gardens. Controlling burn off and fire management
Sustainable Communities Project	Improving coordination and leadership in regional planning to address regional issues Local planning and environmental initiatives to address land use certainty, settlement planning and rural landscape rehabilitation and management
Select Media	*Land use issues and conflicts*: There is increasing community concern (including from farmers, vignerons, and environmentalists), particularly in relation to coal mining and coal seam gas exploration.

Source: (Australian Centre for Corporate Social Responsibility, 2011; BHP Billiton, 2011; Department of Planning and Infrastructure, 2012; NSW Minerals Council Ltd., 2013; Singleton Council, 2013)

Economic Capital

	Key Issues and Opportunities
NSW Strategic Regional Land Use Plan	Addressing land use conflicts Balancing supply and demand for labour and employment land / areas Developing economic diversification and resilience
Upper Hunter Mining Dialogue	Enhancing employment and training opportunities Ensuring employment and training opportunities for local people
Singleton Council Strategic Plan	Encouraging community and business leadership Creating an economic diversification strategy for life after mining Supporting a sustainable and diversified local economy Providing strong educational options and supporting a learning community
Sustainable Communities Project	Supporting business diversity and labour force retention Development of small businesses and social enterprises Increasing local procurement by mining sector Increasing training and employment opportunities for young people and Aboriginal people in mining/ other industries Initiatives to increase capacity for vulnerable groups to participate in skills training and employment Opportunities for Aboriginal small business development
Select Media	Royalties for regions: There is increasing pressure on the NSW government from groups such as the Association of Mining Related Councils, to return mining royalties to the local mining areas as communities feel that they are not benefiting from the mines, but have to live with their impacts. Coal price downturn and employment markets across the Hunter Region: The recent economic impact of the coal industry downturn is evident in the media. Reports include cost-cutting measures that are being undertaken, with several mines in the area implementing Christmas closures as an attempt to save money. Companies are also decreasing the number of contractors and staff.

Source: (Australian Centre for Corporate Social Responsibility, 2011; BHP Billiton, 2011; Department of Planning and Infrastructure, 2012; NSW Minerals Council Ltd., 2013; Singleton Council, 2013)

Human Capital

	Key Issues and Opportunities
NSW Strategic Regional Land Use Plan	Land use conflicts and impacts on community Visual amenity impacts Ongoing, relevant and appropriate community consultation Impacts of air and noise pollution on community and ensuring relevant / stringent conditions
Upper Hunter Mining Dialogue	Cumulative impacts on air quality and associated health risks Exploring opportunities for health risk assessments Protecting European and Aboriginal heritage Addressing impacts of shift work on families Ensuring industry and community work together
Singleton Council Strategic Plan	Expanding cultural activities and improve visual and performing arts Providing and promoting services and facilities that meet the needs of various age groups Creating spaces and tools to keep the community connected Keeping the community informed and involved in decision making Leading, governing and regulating transparently, equitably and ethically Ensuring roads and transport are safe Reducing congestion and traffic Providing a range of activities and events to encourage community participation
Sustainable Communities Project	Develop community programs that build community pride and belonging Strengthen community participation and ability to influence local outcomes Continuation of the Upper Hunter Air Quality Monitoring Network Improved health monitoring and meaningful dialogue with the community about potential health impacts Increased access to health services (including mental health) for community and Aboriginal community Promotion of healthy worker practices addressing stress and driver fatigue Build community capacity by creating projects that promote town pride
Select Media	*Air quality (dust) and health related issues*: The introduction of the Upper Hunter Air Quality Monitoring Network has improved awareness of air pollution in the region since its commencement in 2010, and air quality and dust related health issues have been of increasing concern to the community. There is a push from the local community to have more action taken for dust, noise and blasting violation and monitoring, with research suggesting that mining communities have elevated rates of cancer, birth defects and death rates from illnesses such as heart, lung and kidney disease.

Source: (Australian Centre for Corporate Social Responsibility, 2011; BHP Billiton, 2011; Department of Planning and Infrastructure, 2012; NSW Minerals Council Ltd., 2013; Singleton Council, 2013)

Physical Capital

	Key Issues and Opportunities
NSW Strategic Regional Land Use Plan	Addressing land use conflicts Balancing supply and demand for labour and employment land / areas Developing economic diversification and resilience Ensuring adequate land supply for housing Addressing housing mix and affordability Promoting liveable communities HVCCC and rail network capacity issues Regional and cumulative impacts on existing infrastructure Impacts on local community from mining infrastructure Provision and funding for infrastructure to support new housing and development
Upper Hunter Mining Dialogue	Enhancing employment and training opportunities Ensuring employment and training opportunities for local people Addressing cumulative impacts of mining on the affordability and accessibility of housing in the region Cumulative impacts on existing services and infrastructure Supporting regionally significant infrastructure – both industry and government
Singleton Council Strategic Plan	Encouraging community and business leadership Creating an economic diversification strategy for life after mining Supporting a sustainable and diversified local economy Providing strong educational options and supporting a learning community Initiatives to increase housing availability Promoting village living and lifestyle Improving road and infrastructure systems Improving transport options within the community and region to ensure safety, reliability and affordability Redeveloping the Singleton CBD Developing café precincts
Sustainable Communities Project	Supporting business diversity and labour force retention Development of small businesses and social enterprises Increasing local procurement by mining sector Increasing training and employment opportunities for young people and Aboriginal people in mining/ other industries Initiatives to increase capacity for vulnerable groups to participate in skills training and employment Opportunities for Aboriginal small business development Support services to address access to affordable housing Increase access to emergency housing and homelessness support services Monitoring industry impacts on hotel, motel and caravan park accommodation to help inform future housing and accommodation planning in the housing, homelessness and support services Increasing opportunities for pre-school and child-care services, community facilities, cultural spaces and activities Increase low cost activities for young people
Select Media	*Traffic*: There is increasing concern regarding the increase in traffic on local roads, the impact on the condition of the roads, fatigue and "rat-running" of DIDO workers risking the safety of other road users. The community are actioning a campaign to get the region's mining workforce out of their cars and into buses or a transport shuttle system.

Source: (Australian Centre for Corporate Social Responsibility, 2011; BHP Billiton, 2011; Department of Planning and Infrastructure, 2012; NSW Minerals Council Ltd., 2013; Singleton Council, 2013)

Social Capital

	Key Issues and Opportunities
NSW Strategic Regional Land Use Plan	Addressing land use conflicts Balancing supply and demand for labour and employment land / areas Developing economic diversification and resilience Ensuring adequate land supply for housing Addressing housing mix and affordability Promoting liveable communities
Upper Hunter Mining Dialogue	Enhancing employment and training opportunities Ensuring employment and training opportunities for local people Addressing cumulative impacts of mining on the affordability and accessibility of housing in the region
Singleton Council Strategic Plan	Encouraging community and business leadership Creating an economic diversification strategy for life after mining Supporting a sustainable and diversified local economy Providing strong educational options and supporting a learning community Initiatives to increase housing availability Promoting village living and lifestyle
Sustainable Communities Project	Supporting business diversity and labour force retention Development of small businesses and social enterprises Increasing local procurement by mining sector Increasing training and employment opportunities for young people and Aboriginal people in mining/ other industries Initiatives to increase capacity for vulnerable groups to participate in skills training and employment Opportunities for Aboriginal small business development Support services to address access to affordable housing Increase access to emergency housing and homelessness support services Monitoring industry impacts on hotel, motel and caravan park accommodation to help inform future housing and accommodation planning in the housing, homelessness and support services

Source: (Australian Centre for Corporate Social Responsibility, 2011; BHP Billiton, 2011; Department of Planning and Infrastructure, 2012; NSW Minerals Council Ltd., 2013; Singleton Council, 2013)

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Department of Planning and Infrastructure, 2012. Upper Hunter Strategic Regional Land Use Plan.

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Singleton Council, 2013. Our Place, a Blueprint 2023: Singleton community strategic plan.

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