Mid-Western Regional Council - Local Services Assessment

Final Report
August 2012
Quality control

Our reference: 11045
Version number: 5.0
Date: 23 August 2012
## Contents

**Executive summary** 1  
1 Background 6  
1.1 Overview 6  
1.2 Context 7  
1.3 Purpose and context of this report 9  
1.4 Key findings of baseline report 11  
2 Methodology 16  
2.1 Overview of our approach 16  
2.2 Methodology for gathering evidence 17  
2.3 Detailed methodology 17  
2.4 Structure of this report 20  
3 Mining projects 21  
3.1 Economic significance of coal in NSW 21  
3.2 Mining within the study area 21  
3.3 Other economic activities 26  
4 Population 28  
4.1 Population 28  
4.2 Current population estimate 29  
4.3 Future population estimate 31  
5 Housing and employment land 36  
5.1 Introduction 36  
5.2 Housing demand and supply 37  
5.3 Employment and land availability 42  
6 Transport 45  
6.1 Introduction 45  
6.2 Roads 46  
6.3 Airport 52  
6.4 Rail 56  
7 Water, sewerage, stormwater and waste 58  
7.1 Introduction 58  
7.2 Water supply 59  
7.3 Sewerage infrastructure 64  
7.4 Stormwater infrastructure 67  
7.5 Waste disposal and recycling 68
<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A</td>
<td>Baseline report</td>
<td>103</td>
</tr>
<tr>
<td>Appendix B</td>
<td>Consultation database</td>
<td>105</td>
</tr>
<tr>
<td>Appendix C</td>
<td>Future population estimate</td>
<td>107</td>
</tr>
</tbody>
</table>
Executive summary

Overview
Mining activity in the Mid-Western Regional Council (MWRC) area ('the region') is growing rapidly. This report presents the findings of an assessment of the current level of infrastructure and service provision in the region, including an assessment against acceptable standards of provision. The assessment is based primarily on published sources and consultation with relevant stakeholders. The latter source of information is both quantitative and qualitative in nature.

The objective of this report is to provide both a baseline local service assessment as well as an assessment of local services impacts into the future (2020 and 2030), against which future mining activity and associated impacts on infrastructure and services can be assessed and projected into the future. It does not present an assessment of the impacts of mining in the region beyond local service impacts nor does it present strategies or solutions for addressing the impacts of mining in the region. A set of future considerations, largely areas requiring further analysis and detailed investigation are presented at the end of the report that have compiled from stakeholder input.

Population scenario
The population scenario used in this assessment to project impacts upon local services into the future represents a 'mid-range' estimate (that is population growth to 2030 assuming a 65 per cent workforce migration rate). The population scenario used also assumes an annual population growth rate of approximately 1.75 per cent, a shift to a younger age profile in the region and a shift in occupation towards skilled trades and related industries.

Table 1 Population sensitivity analysis

<table>
<thead>
<tr>
<th>Migration factor</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>30% Migration</td>
<td>27,687</td>
<td>29,972</td>
</tr>
<tr>
<td>65% Migration</td>
<td>30,875</td>
<td>33,160</td>
</tr>
<tr>
<td>80% Migration</td>
<td>32,241</td>
<td>34,526</td>
</tr>
</tbody>
</table>

The predicted increase in population also has an associated increase in employment opportunities and type of employment in the region. The region is predicted to have growth in skilled trades workers and may experience an overall skills shortage in some trades due to a parallel predicted increase in demand.

Mining projects
There are currently five active coal mines in the region (Ulan, Moolarben, Wilpinjong, Charbon and Airly). There have been a number of expansion activities as well as new mines developed since 2006. Further, growth in mining activity has been intensifying in the last 12 to 18 months including with Moolarben mine commencing operations in 2010. This equates to 48.3 Mtpa of coal currently being extracted in the region.

---

1 See Appendix B for a list of organisations consulted for the purposes of this report.
Key future impacts
Population increase due to mining in the region will have an impact on certain local services and infrastructure. Whilst population growth of this scale will likely impact all infrastructure services to some degree, this report notes that, based on data, consultation and case studies, the key areas predicted to be impacted most significantly are:

- Planning controls and funding arrangements for local infrastructure, including Section 94 planning and land rezoning.
- Road infrastructure.
- Stormwater and water cycle management.

The impacts on each local service are:

Housing demand and supply
Using the accepted population:lot ratios and based on the revised population growth predictions a lot requirement of 5,096 by 2021 and a lot deficiency of 3,896 is predicted.

A shortage in short-term accommodation is predicted. This shortfall also has a knock-on effect on welfare accommodation needs of certain disadvantaged groups in the community.

Employment and land availability
There is likely to be a shift in employment towards trade related professions. As such, the employment land provision will need to shift to cater for this shift in profession. Given the relatively low level of unemployment, it is likely that these workers will be found outside the area. As the area nears full employment, there will likely be a sharp increase in demand for workers, particularly tradespeople, in the local area to undertake building and maintenance work.

Mining will drive an increase in the number of tradespersons and related workers and machinery operators and drivers within the region and as a percentage of the workforce, these additional people and trades will need to be catered for. This could potentially lead to an industrial land shortage and a resulting shortage of businesses that support the mining industry.

Roads
The increase in mining activity is likely to put increased pressure on key roads within the Council area. Principally these are Ulan Road and Bylong Valley Way. As such, it is predicted that upgrades of these roads may be required. However, the level of upgrade and the funding arrangements for these upgrades and ongoing maintenance is the subject of ongoing negotiation between Council and the mining companies. Furthermore, the additional population and changes in vehicle usage may present Council with additional traffic management issues within townships.

Airport
With the potential uncertainty of service combined with an increase in the number of people on fly in/fly out arrangements for work, there are predicted to be impacts on the Mudgee airport. The population modelling suggests that up to 640 workers per week (depending on mine shift system) could be on fly in/fly out arrangements for work. This significantly exceeds the 176 weekly seats currently available at the airport.
Rail
Given that the rail in the region is used for the transport of goods and not for passenger services, the impacts will be limited to those relating to rail expansion for the purposes of increased production. This may include the reopening of services through Mudgee, although this is not currently proposed.

Water
There are no absolute capacity constraints for provision of water supply that would limit development options for Mudgee. However, some areas will be more costly and difficult to service than others and the efficiency of utilisation of existing infrastructure investment is likely to become an increasingly important issue in assessing subdivision proposals within the existing urban release areas.

Also, given the extent of mining and the intensity of water usage involved in mining there is likely to be impacts on the groundwater system, for example at peak demand Wilpinjong mine alone will use 6.2ML\(^2\) alone. A 25 per cent increase in population in the region by 2030 would require new water supply infrastructure.

Sewerage
The key issue with sewer infrastructure is capacity constraints, both within the reticulation system and at the treatment plants. Without upgrades the infrastructure will likely come under increasing pressure and result in increased maintenance requirements due to cracking and increased overflow events. If upgrades are insufficient, it is likely the system’s capacity, which is estimated to be 23,600 Equivalent Population (EP), will be exceeded by approximately 2016, based on the population predictions.

Stormwater
Some existing lots, as well as some of the recently rezoned areas, are subject to local stormwater inundation. To minimise the potential flood risk, investment in catchment wide stormwater management is required. The flood risk is important, as it not only impacts existing housing, but also potential developable areas. A full, recent assessment for the region has not been made by Council so accurate projections of impact could not be made.

Waste
The existing landfill cell at the Mudgee Waste Depot will reach capacity within 2–3 years. Current Council waste services, such as kerb side pick up are currently at capacity and would require further investment if the population was to increase significantly.

Open space and recreation
There is potentially a shortfall in the provision of open space, given the likely increase in population. Even if the open space could be provided, there is also an associated increase in the cost of maintenance that needs to be considered. Furthermore, Council have identified a need to increase the amount of youth facilities in the area.

Rural fire service
Existing mining projects are already having an impact on the availability of volunteers. An increasing number of volunteers are employed in the mining industry and at times their ability to respond to an

\(^2\) Wilpinjong Coal Project, Environmental Impact Statement, Executive Summary
emergency incident is restricted by the shifts they work, as well as the remote locations of the mines in which they work. This is impacting on the availability of volunteers. Also, land bought as part of a mining lease need to have better fire management practices applied to ensure bushfire risk is minimised.

**Community health and hospitals**

The increase in population is likely to increase the use of health facilities. NSW Health modelling suggests that there would be adequate capacity in the existing system. However, Council disagree and consider upgrades to health facilities as necessary.

**Schools, preschools and early childhood centres**

The key issue facing educational and day care facilities is capacity constraints. With the increase in population, there will likely be an associated increase in day-care, primary and high school enrolments. Some early signs of this increase are already being seen. NSW Department of Education and Communities state that there is a level of flexibility within the existing facilities to cater for additional students. Based on the estimated population scenario, there would be enough new lots to warrant the construction of a new primary school. It is estimated that there may be as many as 1,200 additional high school students within the region by 2030.

**TAFE and universities**

Since 2005, Western Institute has seen enrolments increase by 6,373 from 34,177 to 40,544 in 2010. That represents growth of approximately 18.5 per cent. Currently, TAFE cannot meet the expressed training demand and, as a result, a large amount of training is happening on-line or on the job. Increases in training requirements associated with the mining industry will put this system under further pressure.

**Police**

The key impacts facing the Police Force are the recruitment and retention of staff for the region. With an increase in population, the need for police services will likely increase and, as such, recruitment of additional officers will become increasingly important.

**Potential options to address key direct and indirect impacts**

It was noted that whilst hard infrastructure to address current shortfalls may be necessary, it would not address the underlying issues facing regional areas that may face significant population growth. In order to address these underlying problems, a number of changes to policy and planning shifts will need to be made to cater for the unique requirements of mining communities.

Based on the impacts summarised above, key elements for consideration to address the ‘hard infrastructure’ needs are:

- Road infrastructure – key roads within the regional network are currently under stress, including Ulan Road. Upgrades for these deteriorating regional roads is likely to be needed soon.

- Stormwater and Water Cycle Management – effective management of stormwater and flood risk is required. Currently key areas of developable land are subject to flooding risk. To increase developable yield, effective stormwater and water cycle management controls would likely need to be implemented.

---

3 TAFE Western Institute 2005 Annual Report.
4 TAFE Western Institute 2010 Annual Report
Furthermore, priority elements for consideration to address the longer term needs are:

- Planning controls and funding arrangements for local infrastructure – guidance may be required to help councils manage and assess unique mining developments, such as temporary workers accommodations. Further to this, a review of the Section 94 plan and Voluntary Planning Agreements would be beneficial to ensure equitable and adequate investment in regional infrastructure. Additional land rezonings for both residential and commercial and/or industrial uses may also be necessary within the Mid-Western regional Council area as part of this process.

- Schools, in particular early childhood care services – the current early childhood care system is under stress. Whilst it is noted that additional classrooms may be required, it considered timely to investigate partnership possibilities with long-day care service providers to help cater for the additional children. Furthermore, there is the potential to generate strong partnership between health and education service providers to assist in implementing early intervention services such as speech pathology.
1 Background

1.1 Overview

Mining activity in the Mid-Western Regional Council (MWRC) area ('the region') is growing rapidly. The Director General of the Department of Planning and representatives of the Mid-Western Regional Council jointly requested a study of the impacts of mining proposals on infrastructure and services in the region, with a view to benchmark the impacts and identify the level of services appropriate for future population needs. Mid-Western Regional Council local government area is the primary study area.

It is the intent that the framework and principles of the study should be replicable to other locations in NSW and the outcomes from this pilot project should both inform and be informed by the NSW Government’s Strategic Regional Land Use Plans, where relevant.

This report presents the findings of a four-stage analysis:

• An assessment of the current level of infrastructure and service provision in the region.
• An assessment against acceptable standards of provision, using established standards and current level of demand.
• An assessment of the future impacts of mining on local services and infrastructure, through analysis of the following: proposed mining activity, direct and indirect job generation, mining induced population growth, future demand for land and housing and future impacts on utility services and facilities (water, sewerage etc), along with an assessment of broad costs and obstacles to addressing the impacts.
• Identification of additional facilities and services required as a result of mining growth.

The assessment is based primarily on published sources and consultation with relevant stakeholders\(^5\). The latter source of information is both quantitative and qualitative in nature.

The objective of this report is to provide both a baseline local service assessment as well as an assessment of local services impacts into the future (2020 and 2030). It does not present an assessment of the impacts of mining in the region beyond local infrastructure and service impacts, nor does it present strategies or solutions for addressing the impacts of mining in the region. Detailed modelling of infrastructure or service capacity and cost/benefit assessment was not within the scope of this assessment. An example of an area where detailed modelling is needed in order to make any accurate assessment of both current and future potential infrastructure demands is roads and traffic.

The assessment covers coal mining activity only; copper, silver and gold mines operating and planned in the area are not fully considered. In terms of infrastructure and services, energy and telecommunications are also excluded from consideration. The assessment is based on an agreed population scenario and, as such, should the population change the impact on services may vary. All costings provided are high level and are based on agency estimates and/or work undertaken on similar projects. These would require further detailed analysis to ensure accuracy.

\(^5\) See Appendix B for a list of organisations consulted for the purposes of this report.
A set of future considerations associated with the delivery of the required services and facilities, largely areas requiring further analysis and detailed investigation, are presented at the end of the report that were compiled largely from key stakeholder input.

1.2 Context

MWRC is located in the Central West region of New South Wales (NSW) being approximately 250km or 3–4 hours by road from the heart of Sydney. The whole of the former Mudgee and the majority of the former Rylstone (70 per cent) and part of the former Merriwa Councils (10 per cent) were amalgamated into the Mid-Western Regional local government area in August 2004. The Mid-Western Regional Council is centrally located, with a growing population and a strong and diverse economy based on agriculture, viticulture, mining, tourism and related industries.

Mudgee township is an important sub regional service, commercial and tourism centre for the Central Tablelands of NSW, complemented by the smaller towns of Rylstone, Kandos and Gulgong, fourteen Villages and other rural localities. Key drivers of employment growth in the region are agriculture (in livestock grazing, fine wool production, horticulture, cropping), the local wine industry, mining, tourism and retail services. Tourism is a significant and growing component of the local economy, focused around food and wine from an established viticulture industry, historic sites and the natural beauty of the area.

Agriculture is one of the largest employers and in 2001 contributed some $54 million to the Mudgee local economy (Parsons Brinckerhoff. July 2010. Mid-Western Regional Comprehensive Land Use Strategy: Part C – Draft Strategy.) Viticulture is a major industry with over 4500 ha of planted vineyards and valued at almost $10 million in 2001 that also support cellar doors, related support industries as well as being a tourist attractor (Parsons Brinckerhoff. July 2010. Mid-Western Regional Comprehensive Land Use Strategy: Part C – Draft Strategy.) Mining is a major employer and contributor to the local, regional and State economy. There are also established opportunities for emerging rural industries such as olives, horticulture and alpacas. In addition the natural beauty and heritage features (Gulgong) of the region are attractive for living and tourism opportunities. Tourism is also a major industry that is valued at over $60 million annually that thrives off the natural features, agriculture, viticulture and the close proximity of MWRC to Sydney (Parsons Brinckerhoff. July 2010. Mid-Western Regional Comprehensive Land Use Strategy: Part C – Draft Strategy). Tourism is an important and growing industry within the area. The majority of the tourist facilities are associated with the wine industry. Recently, demand has been strong for rural living lots within close proximity to Mudgee, as a picturesque and desirable location for those seeking a ‘tree-change’.
Figure 1  Study area
1.3 Purpose and context of this report

Purpose of this report
The purpose of this report is to document the work undertaken to assess the impacts of mining proposals on infrastructure and services in the region, with a view to benchmark the impacts and identify the level of services appropriate for future population needs. In conducting this assessment we built a network of interested parties that collaborated in identifying issues, challenges, opportunities, and possible solutions to manage the impact of potentially rapid growth in economic activity, population and demand for infrastructure and services in the Mid-Western region.

It delivers to the Department of Planning and Infrastructure, Mid-Western Regional Council and key service and infrastructure providers, robust information to inform and influence decision-making on future service and facilities provision in the region.

A draft Baseline Report has been produced and submitted to DoPI in February 2012. This report presented the results of the assessment of the current level of infrastructure and service provision in the region set against established standards and current level of demand. Mid-Western Regional Council (MWRC) as the key provider of many of the local infrastructure under investigation participated and contributed fully to this assessment. The Baseline Report results are incorporated within this Draft Final Report and a summary of the analysis is included in Appendix B.

Context of this report

Impacts of mining on local infrastructure services
The impacts of mining on local communities and on regions are well documented in the academic and industry literature in Australia.

Positive impacts are reported to include:
• Economic activity and growth including through the direct creation of jobs (Rolfe et al, 2007).
• Spending of mining industry income in other industries such as retail (ACIL Consulting, 2002).
• Availability of resources for social services including education and health.

Negative impacts are reported to include:
• Rapid growth in a single industry can drive up the cost of labour (often referred to as the ‘Dutch Disease’) and result in skills transfer across to the mining industry (Rolfe et al, 2007).
• Increases in housing shortages and a decrease in housing affordability.
• Bottlenecks in, or a lack of provision of, infrastructure to acceptable standards.
• Health and safety implications of fly in/fly out operations, whereby mining companies no longer build mining towns or take full responsibility of employees outside of working hours (Rolfe et al, 2007).

Mining booms can therefore generate both winners and losers in terms of economic and social consequences. It can impact upon a region’s viability and sustainability.

Such issues and impacts are relevant to the Mid-Western Regional Council (MWRC) local government area (LGA) that is experiencing increasing mining activity (Section 3); and have been reported within
academic research, such as ‘Lessons from the social and Economic Impacts of the Mining Boom in the Bowen Basin’ and local media, such as the Mudgee Guardian.

Policy context

- The NSW Government has released draft strategic regional land use plans for the Upper Hunter and New England North West regions of the state for public comment. The plans, which form part of the government’s overall Strategic Regional Land Use Policy, protect high-quality agricultural land and its water sources from inappropriate mining and coal seam gas proposals. Draft plans will also be produced for the Central West, Southern Highlands, Murrumbidgee, Alpine and Western regions.

- At the beginning of 2011, preparation of the (former) NSW Coal and Gas Strategy commenced including public exhibition of a scoping paper and terms of reference document that attracted more than 1,000 submissions. All the input received will be fully considered in the preparation of strategic regional land use plans.

- The NSW 2021 Plan, was released in 2011 and sets immediate priorities for action and guides NSW Government resource allocation in conjunction with the NSW Budget. The plan identifies key goals for the plan. Goals of particular relevance are:
  - Rebuild the economy: Drive economic growth in regional NSW; Strengthen the NSW skill base.
  - Return Quality Services, Transport: Improve road safety.
  - Return Quality Services, Family and community services: Better protect the most vulnerable members of our community and break the cycle of disadvantage; Increase opportunities for people with a disability by providing supports that meet their individual needs and realise their potential.
  - Renovate infrastructure: Invest in critical infrastructure; Build Liveable centres; Secure potable water supplies.

- These priorities are supported by the Restart NSW Fund Bill, which passed through Legislative Assembly and the Legislative Council in August 2011. Projects to be funded by the Restart NSW Fund will be recommended by Infrastructure NSW and assessed in the budget process against the five-year Infrastructure Plan and the 20-year State Infrastructure Strategy. The government is committed to a whole-of-State development and will address critical infrastructure needs outside the metropolitan areas of Sydney, Newcastle and Wollongong. To this end, 30 per cent of funding will be reserved for non-metropolitan areas, including mining-affected communities.

- The NSW State Government introduced a four year $280m Regional Relocation Grant Scheme on 1 July 2011. The scheme makes available an individual grant of $7,000 to individuals/families when they sell a house within a metropolitan area and purchase a house in a regional area (valued up to $600,000) and relocate there.

---


7 The potential influence of this scheme on housing demand is not yet known but may add further pressure on already constrained Upper Hunter housing markets, as this area may cater for people moving into the region who could not be accommodated within MWRC area.
1.4 Key findings of baseline report

As mentioned above a draft Baseline Report has been produced and submitted to DoPI in February 2012. This report presented the results of the assessment of the current level of infrastructure and service provision in the region set against established standards and current level of demand. The following presents from this Baseline Report a snap shot of current services and facilities provision and issues in MWRC area. (For further Baseline Report data see Appendix A).

Mining projects

There are currently four active coal mines in the region (Ulan, Moolarben, Wilpinjong and Charbon). Also, Airly operates just outside the region near the LGA border with Lithgow. There have been a number of expansion activities as well as new mines developed since 2006. Further, growth in mining activity has been intensifying in the last 12 to 18 months including with Moolarben mine commencing operations in 2010.

Evidence collected from key agencies and stakeholders as part of this work suggests that this mining expansion and growth over the past 5 years has already impacted (directly and indirectly) on the provision of infrastructure and services in the region, putting the region under increasing strain. However, there is a lack of published data and commissioned detailed research in the region upon which a high level of confidence can be attached to establishing the exact nature of these impacts and the linkages to mining activity.

Notwithstanding this, there are some signs that current stresses on infrastructure and services in the region can be directly and/or largely attributed to mining. These pointers are outlined in Table 2. Correlations have been drawn between mining activity (using employment and annual production as proxies for growth and expansion), regional population growth, and impacts on infrastructure and services, from 2005/6 until 2010/11 in the Mid-Western Regional Council area. These impacts are discussed in greater detail in the following sections, and are summarised below.

The analysis in Table 2 suggests that any further significant increase in population caused by mining and other activities is likely to put the region, at least in certain areas, under significant strain in providing adequate infrastructure and service provision. The key issue to determine is how much of this growth is above and beyond the typical stresses upon regional infrastructure. It is widely accepted that regional council’s throughout NSW face funding challenges with respect to adequate infrastructure provision. This was noted in the NSW Local Government and Shires Association submission on the State Budget, that “Local Government’s financial capacity to maintain existing services and infrastructure is already stretched. In many instances councils are already being forced to cut services and defer critical infrastructure expenditure.”

---

8 NSW Local Government and Shires Association submission on the State Budget, 2006/07
### Table 2  Stresses on infrastructure and services from 2005–06 and 2010–11

<table>
<thead>
<tr>
<th>Statistic</th>
<th>2005–06</th>
<th>2010–11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td>22,074</td>
<td>23,123</td>
</tr>
<tr>
<td><strong>Mining activity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mine employment</td>
<td>615&lt;sup&gt;9&lt;/sup&gt;</td>
<td>1282&lt;sup&gt;2&lt;/sup&gt; - 1,399&lt;sup&gt;10&lt;/sup&gt;</td>
</tr>
<tr>
<td>Annual production</td>
<td>12 Mtpa</td>
<td>19&lt;sup&gt;11&lt;/sup&gt; - 48 Mtpa</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Annual capital investment ($ million)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roads</td>
<td>$5.5&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$5.1&lt;sup&gt;13&lt;/sup&gt;</td>
</tr>
<tr>
<td>Water supply</td>
<td>$1.1&lt;sup&gt;14&lt;/sup&gt;</td>
<td>$3.6&lt;sup&gt;14&lt;/sup&gt;</td>
</tr>
<tr>
<td>Sewerage</td>
<td>$0.35&lt;sup&gt;15&lt;/sup&gt;</td>
<td>$6.5&lt;sup&gt;15&lt;/sup&gt;</td>
</tr>
<tr>
<td>Waste</td>
<td>$0.29&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$1.05&lt;sup&gt;16&lt;/sup&gt;</td>
</tr>
<tr>
<td>Stormwater and drainage</td>
<td>$0.30&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$0.38&lt;sup&gt;16&lt;/sup&gt;</td>
</tr>
<tr>
<td>Parks and reserves</td>
<td>$0.05&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$8.01&lt;sup&gt;16&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Annual maintenance requirements ($ million)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roads</td>
<td>$2.79&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$3.01&lt;sup&gt;13&lt;/sup&gt;</td>
</tr>
<tr>
<td>Water supply</td>
<td>$1.28&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$3.24&lt;sup&gt;14&lt;/sup&gt;</td>
</tr>
<tr>
<td>Sewerage</td>
<td>$1.09&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$2.20&lt;sup&gt;15&lt;/sup&gt;</td>
</tr>
<tr>
<td>Waste</td>
<td>$2.38&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$4.02</td>
</tr>
<tr>
<td>Stormwater and drainage</td>
<td>$0.22&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$0.46</td>
</tr>
<tr>
<td>Parks and reserves</td>
<td>$1.35&lt;sup&gt;12&lt;/sup&gt;</td>
<td>$1.69</td>
</tr>
<tr>
<td><strong>Social services (education example)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mudgee High School Mild Intellectual Disability Class waiting list</td>
<td>0 students</td>
<td>12 students</td>
</tr>
<tr>
<td>Mudgee Public School number of special needs classes</td>
<td>2 classes</td>
<td>5 classes</td>
</tr>
</tbody>
</table>

---

<sup>9</sup> Annual Environmental Management Report, Moolarben Coal, 2010-2011; Wilpinjong Coal Project Environmental Impact Statement, Executive summary, May 2005; Nicholls, Brian (Mine Manager Centennial Coal) pers. comm. 6 December 2011; 2010 NSW Coal Industry Profile, Statistical supplement, NSW Trade and Investment; JORC Code is part of the Australian Stock Exchange listing rules. It is used to ensure that investors are provided with sufficient and reliable information to assess the quality of resource and reserve estimates reported to the public.

<sup>10</sup> Coal Services Pty Ltd, figures provided by Mid-Western Regional Council.

<sup>11</sup> Coal Services Pty Ltd, figures provided by Mid-Western Regional Council.

<sup>12</sup> Mid-Western Regional Council – Strategic Asset Management Strategy and Asset Management Policy V1.2 (figures for 2004-05)

<sup>13</sup> Mid-Western Regional Council – Road Assessment Management Plan 2010, Volume 2 (figures are allocation for 2011/2012

<sup>14</sup> Mid-Western Regional Council – Strategic Business plan for Water Supply Services, June 2008

<sup>15</sup> Mid-Western Regional Council – Strategic Business plan for Sewerage Services, June 2008

<sup>16</sup> Mid-Western Regional Council – Management Plan, 2009/10-2013/14
Voluntary Planning Agreements

Currently there is great disparity in what each mine is required to pay as part of the Voluntary Planning Agreements (VPA) (see Figure 3, Section 3). A review of the Section 94 plan and VPA arrangements may need to be undertaken to ensure that there is equitable and adequate investment in local infrastructure to maintain local infrastructure and services. It is noted that both the Draft New England North West Strategic Regional Land Use Plan and the Upper Hunter Strategic Regional Land Use Plan suggest that this should be a consideration as part of the State Government policy response. Action 4.2 in each of these plans outlines the delivery date for the consistent VPA methodology.

Population

The estimated current population of the region is approximately 23,123. This is based on calculating the average growth each year within the National Regional Profile and extrapolating this to the end of June 2011.

Housing

Current housing supply in the area is low, as is rental supply. This has led to an increase in property and rental prices, making housing less affordable for those not directly benefiting from the increase in mining activity. From 2006 to 2009, the region has experienced a general decline in building approvals (although it is noted that Council figures show an increase in 2011); evidence gathered through consultation suggests this may be caused by factors such as a shortage of skilled labour as tradesmen accept jobs at the mines, high development costs, owners not wanting to develop and lack of incentives to develop. Given the long lead time required to deliver a large number of houses to the market, it appears that there is unlikely to be a significant increase in housing stock in the near-term without significant efforts.

Employment

The increase in mining activity has resulted in a greater amount of pressure placed on the labour force within the area. The current unemployment rate in the region is relatively low at 6.0 per cent\(^\text{17}\) (an unemployment rate of 5.0 per cent is considered ‘full employment’). The population scenario modelling undertaken indicates that the mines could provide as many as 3,200 new direct and indirect jobs as a result of new mining in the region. This has seen a number of professionals and skilled tradespeople leave their traditional employment to begin working in the mines. This has meant a significant increase in demand for workers, particularly tradespeople, in the local area to undertake building and maintenance work. The population scenario we have used predicts that up to 2,500 people or 17.7 per cent of the population will be working in the skilled trades by 2030\(^\text{18}\). MWRC’s Comprehensive Land Use Strategy states that it will cater for some of this additional growth.

Planning

The Council’s Comprehensive Land Use Strategy was completed in 2011 and a new Local Environmental Plan (LEP) has been exhibited and is proposed to be in place by mid-2012. The LEP provides the framework to rezone additional land in the region. The land use strategy prepared in 2008 is unlikely to adequately cater for the likely growth arising from the increase in mining activity. The current estimated additional lot need is 407 and is predicted to extend to 3,896 by 2021. This is

---

\(^{17}\) National Regional Profile, Mid-Western Regional Council LGA, Australian Bureau of Statistics used ‘as supplied’

\(^{18}\) Based on population model and comparison with Muswellbrook LGA, Australian Bureau of Statistics.
discussed further in Section 5.2. With a highly dynamic population and industrial activity it will be a continual challenge to prepare an appropriate LEP for the region. Following the exhibition period, the LEP has undergone minor changes in response to some submissions and is ready to be adopted. For the purpose of this report, relevant submissions on the draft LEP were reviewed.

Roads
At present, there is a backlog of road sealing works estimated, by Council, to be $21 million. Around 28 per cent of sub-arterial roads have a seal width less than 7m, resulting in increased edge wear and reduced levels of safety. Ulan Road between Mudgee and Gulgong in particular is experiencing very rapid growth in traffic (12.6 per cent p.a. between 2002 and 2011) and Council consider there to be an urgent call to upgrade this road. However, MWRC has a funding shortfall of at least $585,000 p.a. to maintain their sub-arterial roads to a minimum acceptable level of service.

Airport
Mudgee’s air travel provider (Aeropelican since 2009, prior to this it was Rex) has expanded its available seating by 13 per cent p.a. between 2004 and 2011 on its eleven daily return trips to Sydney. Additional aircraft hangars are planned at Mudgee Airport and an expanded passenger terminal will be required in the near future (not yet planned).

Rail
A dedicated freight line between Gulgong and Newcastle is used predominantly by the coal industry with the Gulgong-Muswellbrook section having a recent upgrade to increase its capacity through improved speeds and passing opportunities. The Gulgong-Kandos section of rail has been closed since 2005 and is in a poor condition. There are no current plans to re-open this line.

Water supply
Drinking water quality and water availability is generally of an acceptable standard for current demand. There are some capacity constraints in the distribution systems, for example pumping stations and trunk mains. There are also some problems being encountered with population growth exceeding capacity of staged Water Treatment Plant upgrades. Council’s thirty year long term financial plan for water and possible future upgrades are planned and funded, though it may be necessary to bring some of the upgrades forward dependent on the rate of growth. This is discussed further in later sections.

Sewerage
The frequency of overflows, main blockages/collapses and pumping station failures requires some minor improvement. The effluent discharge quality requires significant improvement to fall to within licence limits. A new Mudgee Sewage Treatment Plant (STP) is under construction and due for completion in January 2013, however based on current population and industry activity increases, the capacity of this treatment plant (~16,000 EP) could be exceeded by 2017 or 2018. The Gulgong STP, was completed in 1997 and designed as a one-stage plant only, however the capacity of this plant would be exceeded with the introduction of a large mining camp in the area.
Stormwater
Significant upgrades to stormwater infrastructure in the region are required to avoid flooding within two catchments in the region amounting to around $1.0 million ($250,000 p.a. in 2013 to 2016). $250,000 p.a. is allocated for drainage maintenance across the entire region.\(^{19}\)

Waste
A new cell is required for the Mudgee landfill site, as the capacity of the existing cells will be reached by 2013. There are some capacity constraints for kerbside waste and recycling collection, with the need for additional collection trucks. There is a backlog of decommissioned landfill rehabilitation works required across the region.

Open space and recreation
MWRC’s playing fields are of a high standard, however associated facilities are at a lesser standard (particularly amenities and change sheds). There is a general lack of shade as well as few walking/running/cycling tracks. Much of the playground equipment across the entire region requires upgrade to meet Australian Standards. A new $14 million Glen Willow Regional Sporting Complex opens in Mudgee in February 2012.\(^{20}\)

Rural fire service
The region is part of the Cudgegong Rural Fire District NSW Rural Fire Service. Volunteer availability is becoming constrained due to both the nature of the shift work and the remote locations of the mines in which an increasing number of volunteers work.

Social infrastructure and services
Social infrastructure and services in the region assessed in this study include those relating to the rural fire service, community health, education and police. With regards to community health and education in particular there are significant issues for the region. In terms of private health care, there are difficulties in attracting and retaining General Practitioners (GPs) in the region, as with other rural areas. Further, the number of GPs in the region nearing retirement age confounds this issue. Our consultation highlighted reports from health stakeholders of long waiting periods to see health professionals, as well as concerns over the capacity of Mudgee hospital and the Health One Facility in Gulgong.

In terms of community services, there are pressures on the provision of services in the region. Such pressures include waiting lists for accommodation, case management and therapy services. Housing affordability has become an issue for vulnerable persons including those with disability or from a lower socio-economic background as well as those requiring emergency relief accommodation.

Further, the one government high school in Mudgee has reached capacity in terms of student and staff numbers, and the school is concerned about the ability to cater for students with disabilities. Generally, the public schools have capacity to take on more students provided adequate funding is available for suitable infrastructure and human resources. Preschools are under stress with in excess of 100 children on waiting lists particularly for the three to four year old age group. Long day care centres are generally able to meet current demand, however family day care centres are also largely at capacity.

---

\(^{19}\) Mid-Western Regional Council – Management Plan, 2009/10-2013/14

\(^{20}\) Mid-Western Regional Council Recreational and Open Space Plan, 2007

\(^{21}\) Correspondence, Julie Robertson, MWRC, 21 February 2012
2 Methodology

2.1 Overview of our approach

This section describes the methodology adopted to compile this report. It is acknowledged that the range of issues to be addressed is considerable and covers the full spectrum of settlement infrastructure planning issues. As such, it is critical that the approach is able to manage complexity and is also replicable such that it assists in undertaking further analysis. To ensure this happens, a strategic inquiry approach was adopted. This requires a consultative process (workshops/facilitated meetings, one-one-one interviews/discussions and meetings) that enables invaluable local knowledge and skills from key stakeholders, including government agencies, to be brought into the project. Local knowledge and skills were complemented by expert assessment in the different infrastructure types within the project team. This consultative approach will ensure that any impacts and potential opportunities are based on best available knowledge, and are relevant and meaningful for those that will rely on outputs of the project.

The methodology delivers the Department of Planning and Infrastructure, Mid-Western Regional Council and key service and infrastructure providers with robust information to inform and influence decision-making about future local services and facilities provision. The methodology has been developed with reference to commitments in key government documents, including the Strategic Regional Land Use plans, NSW 2021 Plan and associated goals and the Council’s stated priorities in relation to coal expansion in the region include\(^{22}\):

- Maximising benefits for the area of rapid expansion in coal mining.
- Ensuring the availability of appropriate infrastructure and services to support the continued growth of a sustainable community.
- Retaining and promoting diversification in the economy including the decentralisation of economic activity to the area in addition to mining.
- Encouraging new employees and their families live locally and become part of the community.
- Addressing the affordability of housing and labour to support local people and businesses.
- Consideration of a post mining economy and environment.
- The need to identify and develop an innovative approach to securing upfront funding for the provision of infrastructure.

\(^{22}\) NSW Coal and Gas Strategy, Submission by Mid-Western Regional Council
2.2 Methodology for gathering evidence

Figure 2 details the methodological approach to gathering evidence to inform and support the findings in each step of the overall project methodology. Three sources of information were pursued, namely:

- Published data. This includes desktop reviews of all relevant strategic and asset management plans, Australian Bureau of Statistics data and other official documents received from stakeholders as part of the consultation process.
- Consultation. This included phone and in person interviews, as well as facilitated meetings and workshops.
- Case studies. This was based on research undertaken into areas experiencing an increase in mining activity, as well as any relevant sources or contacts provided during the consultation process.

These three sources were analysed and compared to establish findings for each of the sections and to ensure that conclusions are based on the best available information.

Figure 2 Methodology for gathering evidence

<table>
<thead>
<tr>
<th>FINDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Published data for example:</td>
</tr>
<tr>
<td>- Australian Bureau of Statistics data</td>
</tr>
<tr>
<td>- Asset management plans</td>
</tr>
<tr>
<td>- Annual reports</td>
</tr>
<tr>
<td>Consultation for example:</td>
</tr>
<tr>
<td>- With agencies</td>
</tr>
<tr>
<td>- With Council</td>
</tr>
<tr>
<td>- With local businesses/groups</td>
</tr>
<tr>
<td>Relevant case studies that investigate matters such as:</td>
</tr>
<tr>
<td>- Impacts of mining on services</td>
</tr>
<tr>
<td>- Demographic changes</td>
</tr>
<tr>
<td>- Infrastructure and social issues</td>
</tr>
</tbody>
</table>

2.3 Detailed methodology

Step 1 – Background research and key agency consultation

Firstly, a key agency meeting was undertaken with the Department of Planning and Infrastructure and Mid-Western Regional Council, and other agencies. The aims of the key agency meeting were to:

- Confirm project objectives.
- Confirm consultation requirements.
- Understand issues and perceptions of the relevant agencies, and gather relevant ideas, data and information.
- Confirm relevant standards for provision of services and infrastructure to be measured against.

Step 2 – Establishing the baseline

This involved data gathering and consolidation of that data into a spatial database as the first action in establishing the baseline of existing services and facilities. The following steps were then undertaken:

- Source relevant data from various suppliers.
- Consult with key agencies as required to collect data relating to:
  - Population, housing and employment.
• Roads and other transport.
• Rural fire service, and community and open space/recreation.
• Social infrastructure and services.
• Water, sewerage, stormwater and solid waste.

Relevant agencies and other stakeholders were also consulted to identify the current roles and functions, asset condition, planned maintenance and improvement programs, and development aspirations for:
• Roads and other transport.
• Rural fire service, and community and open space/recreation.
• Social infrastructure and services.
• Water, sewerage, stormwater and solid waste.
• Land and housing supply – existing, approved and pipeline supply and identification of affordability issues.

The findings of this assessment are represented in the draft Baseline Report.

**Step 3 – Determining the ‘standard’ of current services and facilities**

The next step was to assess whether existing services and facilities meet established and accepted standards of provision given the current demand levels. These findings were accompanied by commentary on the ‘standard’ or level of current services and facilities in the draft Baseline Report.

**Step 4 – Mapping proposed mining projects**

This step provided practical understanding of plans for growth and how existing and futures mines will operate and impact on the local area. It was informed by current operation in the area, as well as mining projects operating in other locations (or ‘reference’ mining projects such as in the Gunnedah Basin) and an understanding of future trends in the industry. It was informed by both quantitative and qualitative data and insights.

This step also identified the location, timing of development and projected annual output of the proposed mining projects in the study area.

**Step 5 – Data gathering and synthesis**

Step 5 involved data and information collection on the projected or potential impacts of the proposed mining projects, which assisted in assessing the impacts on existing services and infrastructure facilities in the study area.

Primary sources of this data include:
• Proposed mines in Mid-Western Regional Council area:
  • Environmental impact assessment reports and information from proposed mining projects.
  • Social labour plans produced for proposed mining projects.
  • Transport assessments submitted to Mid-Western Regional Council for the proposed (or any existing) mines, and any relevant traffic modelling data held by the RTA.
• Reference mining projects:
  • Comparable mining projects (nature/scale).
  • Relevant Australian Mining Council and Australian Coal Association reports.
  • Published socio-economic research carried out on coal industry impacts on the Newcastle and Hunter region.

Key data was also collected regarding:

• **Workforce characteristics** – direct long term operational and short-term construction jobs, shift and commuting patterns, profile of workforce, direct long and short-term employment. These characteristics were developed using comparative employment multipliers developed from a comparable mining region using information from coal projects in the Upper Hunter.\(^{23}\) Data from these sources was interrogated to ensure the workforce characteristics used in this assessment are appropriate for a mining community like the Mid-Western Regional Council area.

• **Population growth** – Mid-Western Regional Council area population growth as a result of the proposed mines. This includes growth as a result of both direct and indirect employment. Assumptions were agreed with NSW Department of Planning and Infrastructure’s Demography Unit on the percentage of employees sourced from the existing regional population, those commuting into the area on a daily basis from outside the Council area, and those relocating to the area permanently. Issues considered include existing and proposed commuting time as a result of new infrastructure, availability of skills locally, existing employment levels and pressure for labour in other industries. Timing and phasing of construction and mine operation were also considered to better understand the peaks in population growth and consequent increase in demand on local services.

The use of proxy data from comparable mining projects assisted in addressing any data ‘gaps’ where data on proposed mines in the study area was insufficient to inform the detailed assessment.

**Step 6 – Local services assessment of proposed mining projects**

Step 6 involved undertaking a local sustainability assessment of the impacts of the proposed mines on the range of infrastructure services and facilities in the study area, as informed by the preceding steps. The assessment was separated into:

• Demand and supply for housing as a result of increase employment and population:
  • Impacts on roads and other transport.
  • Impacts on rural fire service, and community and open space.
  • Impacts on social infrastructure and services.
  • Impacts on water, sewerage, stormwater, and solid waste.

**Step 7 – Infrastructure opportunities and constraints workshop**

A workshop was then held with key stakeholders. The aims of this workshop included to:

• Use local knowledge and skills to inform assessment of impacts of proposed mining projects on the range of infrastructure services and facilities included in the scope of the project.
• ‘Ground truth’ the information used and research findings to date.
• Identify synergies and tensions between different types of infrastructure provision.

\(^{23}\) Mining projects reviewed include Bengalla, Glennies Creek, Bloomfield, Anvil Hill and Mt Arthur.
• Identify where growth in employment, economic activity and housing can help deliver Council and others vision/aspirations for the area.

• Identify where growth will create challenges and how these can be addressed.

• Identify if there are any investment or financing constraints impacting on the delivery of potential sustainable infrastructure solutions.

Step 8 – Sustainable infrastructure solutions development
Some preliminary potential opportunities for each infrastructure type were then developed. These solutions covered:

• Population, housing and employment.

• Roads and other transport.

• Rural fire service, and community and open space/recreation.

• Social infrastructure and services.

• Water, sewerage, stormwater and waste.

Step 9 – Broad order of cost estimates
Then, based on the best available information, a broad order of cost estimates for the services and infrastructure improvements and solutions identified was prepared. These estimates are based on consultation with the relevant agencies, such as the RTA and Mid-Western Regional Council and supplemented by professional judgement and experience in similar infrastructure projects in NSW. Detailed modelling of impacts and cost/benefit assessment was not within the scope of this assessment. An example of an area where detailed modelling is needed in order to make any accurate assessment of both current and future potential infrastructure stresses is roads and traffic.

2.4 Structure of this report
This report is separated into the following sections:

• Section 3: Mining projects.

• Section 4: Population.

• Section 5: Housing and employment land.

• Section 6: Transport.

• Section 7: Water, sewerage, stormwater and waste.

• Section 8: Open space and recreation.

• Section 9: Social infrastructure and services.

• Section 10: Potential opportunities.

• Section 11: Bibliography.
3 Mining projects

There are currently five active coal mines in the region (Ulan, Moolarben, Wilpinjong, Charbon and Airly). There have been a number of expansion activities as well as new mines developed since 2006. Further, growth in mining activity has been intensifying in the last 12 to 18 months including with Moolarben mine commencing operations in 2010. This equates to 48.3 Mtpa of coal currently being extracted in the region.

3.1 Economic significance of coal in NSW

Coal mining is a significant contributor to the NSW economy, with total production worth $13.3 billion in 2009/10. Coal is the single largest export in revenue terms from the State. The value of NSW coal exports has more than tripled in the last decade. In 2009-10, NSW produced 145.4 million tonnes of saleable coal, of which 75 per cent was exported. NSW coal exports in 2009/10 were worth an estimated $11.2 billion. This will continue to grow, particularly with the increasing capacity in port facilities at Newcastle.

The future of the NSW coal industry is tied to global energy demand, which is predicted to increase by up to 60 per cent over the next 25 years. Two thirds of this demand is expected to come from developing countries. Export coal demand is rapidly increasing in China, and India has emerged as a major importer of export thermal and coking coal to fuel rising energy and steelmaking demands. Demand for imported thermal coal in 2010 has risen by 51 per cent and 25 per cent year-on-year in China and India respectively to meet the rising energy demand from coal-fired generation.

3.2 Mining within the study area

The mining projects present in the region are summarised in Table 3 with locations of coal mines illustrated in Figure 3. In addition to existing mines there are five proposed mines. These projects are also summarised in Table 3.

---

Table 3  Existing and proposed coal and other mining projects

<table>
<thead>
<tr>
<th>Mine operation</th>
<th>Ownership</th>
<th>Description</th>
<th>Total recovery</th>
<th>Annual production</th>
<th>Commencing</th>
<th>Approx. employee no. 2005/6</th>
<th>Approx. employee no. 2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing coal mines</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulan</td>
<td>Xstrata Coal Aust. Pty Ltd (90%) Mitsubishi Development (10%)</td>
<td>1 x open cut mine (surface) 2 x underground mine (Ulan West and Ulan no. 3)</td>
<td>287 Mt ROM Coal</td>
<td>20 Mtpa (usable)</td>
<td>1982</td>
<td>295</td>
<td>459</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moolarben</td>
<td>Yancoal Australia Ltd</td>
<td>3 x open cut mine 1 x underground mine</td>
<td>373.8 Mt ROM Coal</td>
<td>13 Mtpa (usable) 17 Mtpa (ROM)</td>
<td>2010</td>
<td>N/A</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wilpinjong</td>
<td>Peabody Energy Aus. Pty Ltd</td>
<td>3 x open cut mine</td>
<td>223.7 Mt ROM Coal</td>
<td>12 Mtpa (usable) 15 Mtpa (ROM)</td>
<td>2006</td>
<td>200</td>
<td>348</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charbon</td>
<td>Centennial Coal Company Ltd</td>
<td>1 x open cut mine 1 x underground mine</td>
<td>5.2 Mt ROM Coal</td>
<td>1.5 Mtpa (usable)</td>
<td>1990</td>
<td>120</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airly</td>
<td>Centennial Coal Company Ltd</td>
<td>1 x open cut mine</td>
<td>117 Mt ROM Coal</td>
<td>1.6–1.8 Mtpa (usable)</td>
<td>2009</td>
<td>N/A</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed coal mines</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cobbora</td>
<td>Cobbora Holding Company Pty Ltd</td>
<td>1 x open cut mine</td>
<td>400 Mt ROM Coal</td>
<td>20 Mtpa (usable) 30 Mtpa (ROM)</td>
<td>2014</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

27 The information provided in this table is sourced from annual environmental and other reports of existing mines, and environmental assessment reports of proposed mines. These documents are listed in the reference list below. In some instances, representatives of the mining companies have confirmed annual production and employment numbers.

28 This is the annual production at full mine operating capacity.

29 Employment numbers are constantly changing with rapid expansion activities.

30 Annual Environmental Management Report, Ulan Mine, 2006

31 2010 NSW Coal Industry Profile, Statistical supplement, NSW Trade and Investment

32 Annual Environmental Management Report, Moolarben Coal, 2010-2011


34 2010 NSW Coal Industry Profile, Statistical supplement, NSW Trade and Investment

35 Nicholls, Brian (Mine Manager Centennial Coal) pers. comm. 6 December 2011.

36 Email communication from Brian Nicholls, Mine Manager Centennial Coal, 6 December 2011.

37 2010 NSW Coal Industry Profile, Statistical supplement, NSW Trade and Investment.
<table>
<thead>
<tr>
<th>Mine operation</th>
<th>Ownership</th>
<th>Description</th>
<th>Total recovery</th>
<th>Annual production</th>
<th>Commencing</th>
<th>Approx. employee no. 2005/6</th>
<th>Approx. employee no. 2010/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mt Penny</td>
<td>Cascade Coal Pty Ltd</td>
<td>1 x open cut mine</td>
<td>101 Mt ROM Coal</td>
<td>3.5–4 Mtpa (usable)</td>
<td>2013</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Bylong</td>
<td>Korean Electric Power Corp. Cockatoo Coal Ltd</td>
<td>TBA</td>
<td>TBA</td>
<td>7.5 Mtpa (ROM)</td>
<td>2016</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Inglenook</td>
<td>Centennial Coal Company Ltd</td>
<td>TBA</td>
<td>256 Mt (JORC compliant)</td>
<td>TBA</td>
<td>2016</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>757Mt</td>
<td>31.5Mtpa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other proposed mines</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowdens Silver Mine</td>
<td>Silver Standard Australia Pty Ltd</td>
<td>TBA</td>
<td>47.6 Mt @ 51.93 g/t Ag, 0.41% Zn and 0.3% Pb</td>
<td>TBA</td>
<td>2014</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

38 JORC Code is part of the Australian Stock Exchange listing rules. It is used to ensure that investors are provided with sufficient and reliable information to assess the quality of resource and reserve estimates reported to the public.
Figure 3  Existing and proposed mining projects in the region
The Australian Bureau of Agriculture and Resource Economics and Sciences (ABARE) publish a list of major minerals and energy projects every six months. The above information comes predominantly from publicly available sources but, in some cases, is supplemented by information obtained directly from companies. The list is fully updated to reflect developments in the previous six months. The projects list is released around May and November each year.

The predicted coal production for the region in 2017 will be over 80 Mtpa (total is dependant on annual extraction at Inglenook). Over the past 5 years the region has grown and is now producing between 19\(^{39}\) and 48.3 Mtpa of coal.

**Charbon**\(^{40}\)

Charbon mine is located at Kandos in the Western Coalfield of New South Wales. It is an underground continuous mine and open-cut operation. It is predominantly for export, however there are some domestic sales.

It has a production capacity of approximately 1.5 million tonnes per annum. The surface facilities comprise a modern rail loading facility and a coal preparation plant. The coal is transported by rail to the Port Kembla coal-loader for export and by road to local industry. The mine employs approximately 149 workers and is operated by Centennial Coal.

**Airly**\(^{41}\)

Airly mine is located north of Lithgow in the western coalfield of New South Wales. There is currently board approval for a 1.6 – 1.8 million tonne per annum export mine. This was granted on 20 August 2008, at an expected start-up capital cost of $104 million. Development approvals have been granted and production commenced in December 2010.

It is anticipated that the reserves will be sufficient to support mining for more than 20 years, with resources of approximately 120 million tonnes. The mining methods used at this site include a combination of place changing, super panel, super place changing and partial extraction continuous miner techniques. The material from site will be exported via the rail system to the Port Kembla coal-loader. The mine employs approximately 130 people and is operated by Centennial Coal.

**Moolarben Coal Pty Ltd**

Moolarben Coal is currently operating its Open Cut 1 (OC1) mining operation in accordance with the Stage 1 Project Approval (05_0117) granted by the Minister for Planning on 6 September 2007. Coal mining in OC1 commenced in May 2010, following a successful construction and commissioning phase in 2009.

The Stage 1 Project Approval allows for three open cut mines (OC1, OC2 and OC3), one underground mine (UG4), a coal handling and preparation plant (CHPP), raw and product coal stockpiles, a rail loop and rail loader and office and workshop support facilities.

A Major Project Application for Stage 2 of the Moolarben Coal Project was lodged with the NSW Minister for Planning on 1 May 2008. Moolarben Coal is currently preparing a Preferred Project Report (PPR) for the Stage 2 project at the request of the Minister.

---

\(^{39}\) Coal Services Pty Ltd, figures provided by Mid-Western Regional Council.


The Stage 2 Project Application comprises one open cut (OC4), two underground coal mines (UG1 and UG2), and some additional infrastructure that would operate in conjunction with, and utilise, the approved Stage 1 infrastructure.

At full production, the Moolarben Coal Complex will have the capacity to produce 17 million tonnes per annum (Mtpa) of ROM coal and employ approximately 450 personnel. Moolarben currently employs approximately 196 people and is owned by Yancoal Australia.

Ulan Coal Mines

Ulan Coal Mines Limited (UCML) is one of the most established coal mining operations in the western coal fields of NSW. It consists of two underground mining operations (Ulan No. 3 which is existing and Ulan West which has just commenced construction), and an Open Cut coal reserve. To assist in maintaining coal production across the group, UCML is proposing to recommence and extend the open cut, as well as concurrently mining the approved Ulan No. 3 underground and the approved Ulan West area.

The 21 year conceptual mine plan involves open cut and longwall mining in the Ulan Seam. All associated underground, open cut mining and land management activities within UCML land holdings, as a collective, are referred to as the Ulan Mine Complex. A combined production rate of up to 20 million tonnes per annum (Mtpa) product coal is proposed for the 21 year mine plan.

The mine is operated by Xstrata Coal and employs approximately 459 people.

Wilpinjong Coal Project

Wilpinjong mine is located 40 kilometres north-east of Mudgee. Approval for Wilpinjong open cut and selective high wall mining was granted in February 2006 and first coal was railed from the site in October the same year. Peabody Energy Pty Ltd purchased the mine in late 2006.

Mined under contract by Thiess, Wilpinjong produces a high quality thermal coal for both domestic and export markets. Its principal domestic market is a long-term contract with Macquarie Generation. Export coal is shipped to customers in the Asia Pacific area through Newcastle Coal Infrastructure Group (NCIG) and Port Waratah Coal Services (PWCS) in Newcastle.

Approval was granted in September 2010 to increase production to 15 Mtpa ROM, along with expansion of the coal handling and preparation plant and construction of additional conveyors and transfer stations.

Wilpinjong employs approximately 348 people and is operated by Peabody Energy.

3.3 Other economic activities

The NSW coal seam gas industry is presently small, producing only 6 per cent of the State’s gas supply. However coal seam gas exploration has increased recently in the coal producing regions close to the existing regional pipeline network (Southern, Gloucester and Hunter) as well as Gunnedah and the Clarence-Moreton region. This exploration could result in a substantial increase in coal seam gas production over the next 25 years.

---

43 Oil and gas extraction employment in the mining sector increased by 417% 1996-2006 in the Lower Hunter to 0.7% sector employment and remained stable at 0.2% sector employment in the Upper Hunter. HVRF Newcastle and Upper Hunter Region 2008-2009.
In the study area Macquarie Energy Pty Ltd currently holds exploration leases over the majority of the study area\textsuperscript{44}. It should be noted that only coal mines were fully assessed as part of this proposal. Other industry was outside the scope of this report.

\textsuperscript{44} Information courtesy of the NSW Department of Primary Industries.
4 Population

Summary of baseline
The current population of the MWRC region is estimated at 23,123 people in 2011. This represents an increase on earlier population predictions for 2011 of 559 (earlier population prediction was 22,570). This growth can (at least in part) be attributed to the intensification of mining activity in the last 12 to 18 months (see Section 3). The population is estimated to grow to approximately 33,100 people by 2030. This represents a growth in the population of 43 per cent and an increase in average annual growth rate from 0.88 per cent to 1.75 per cent.

4.1 Population

Population projections
Ratio Consultants (now Collie Pty Ltd) provided MWRC with a housing and population forecasting review in 2007 as an update of the population projections that Ratio Consultants undertook in 2005. The review provides population projections having regard to the 2006 census and recent dwelling approvals. The projections have regard to a number of approved major development projects that were to take place. Namely:

- Wilpinjong mine.
- Moolarben mine.
- Re-opening of the Mudgee Regional Abattoir (did not proceed).
- Mudgee-Gulgong Vineyard Resort (did not proceed).

Parsons Brinckerhoff (PB) state in the Comprehensive Land Use Strategy that the preliminary estimated resident population for the local government area in June 2006 was approximately 21,980 persons. This was projected to rise to 22,570 persons by 2011, to approximately 24,130 persons by 2021 and to 26,220 persons by 2031. Overall, the resident population was projected to increase by 19.3 per cent over the 25 year period 2006–2031 (Ratio Consultants 2007, p.10). According to the strategy, Mudgee township is likely to see the majority of this growth (approximately 87 per cent) with Gulgong to see a 3 per cent increase in growth over the same period to 2031. Rylstone and Kandos will see a marginal fall in growth.

In addition to the population projections undertaken specifically for the region, the NSW Department of Planning and Infrastructure (DoPI) monitor population growth and have a parallel set of projections. The latter take a more conservative approach of 24,890 persons by 2031.

---

45 National Regional Profile, Mid-Western Regional Council LGA, Australian Bureau of Statistics used ‘as supplied’.
47 Australian Bureau of Statistics, National Regional Profile (average annual increase)
48 The next census results are due to be released in mid 2012.
However, the actual population increase has been greater than that predicted. According to the Australian Bureau of Statistics’ National Regional Profile the population in 2010 was 22,860\(^{50}\). This represents close to a 50 per cent increase on the five year prediction, achieved within 4 years, and has led to an increase in pressure on infrastructure and services beyond what would be expected from standard population growth (as discussed below). To estimate the current (2011) population the methodology below (Section 4.2) has been used. This is based on statistics taken from the National Regional Profile for the area.

### 4.2 Current population estimate

To estimate the likely population within the Mid-Western Regional Council (MWRC) area, the following methodology was used. Mining induced population growth needs to be predicted as a key part of this assessment. From this many other resulting impacts can be assessed such as land and housing supply and demand and from this utility and other service demand.

#### Methodology

The data available through the national regional profile for 2010 (released on 4 November 2011) was taken. It estimated the population as at 30 June 2010 within the MWRC region to be 22,860 people.

This population is calculated using a mathematical model, where a relationship is established between changes in population and changes in other indicators between the two most recent censuses. The choice of variables differs varies across the states and territories, and includes dwelling approvals, Medicare enrolments and Australian electoral roll counts. Changes in these indicators are then used to estimate changes in the population of each area since the last census.\(^ {51}\)

Given that this model relies on historical data collection and can therefore only estimate population for a previous year, it is unlikely that it is able to account for rapid change within a current population. However, it can offer a potential average percentage growth, year on year, within the region. This can be used as our ‘system growth’ or growth that would have occurred had there been no increase in mining activity. This would leave an average annual growth rate of 0.88 per cent or a population of 23,061 as at June 30, 2011.

To extend that population to the end of October 2011, it is assumed that the growth would continue on trend and that the population would have grown by one third (ie 4 months out of 12) of it predicted annual increase. This would result in an additional 51 people living in the area.

Based on the National Regional Profile Data and the average growth rate, the system growth would mean that the population as of the 30 October 2011 could be estimated to be 23,112. However, this represents system growth and does not account for large levels of increase in new mining activity, which occurred over that period.

\(^{50}\) National Regional Profile, Mid-Western Regional Council LGA, Australian Bureau of Statistics used ‘as supplied’

Table 4  Current (2011) population estimation

<table>
<thead>
<tr>
<th>Population estimation methodology</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>This is ABS Data from the National Regional Profile</td>
<td>This is the average annual increase show in the NRP from 2006 to 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NRP June 30 2010 population</th>
<th>System growth multiplier p/a</th>
<th>Total Average annual increase p/a</th>
<th>Population at June 30 2011</th>
<th>Additional population to October 31 2011</th>
<th>Total Population at October 31 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>22,86052</td>
<td>0.008853</td>
<td>201</td>
<td>23,061</td>
<td>68</td>
<td>23,129</td>
</tr>
</tbody>
</table>

The population estimate above is likely to be conservative as the total would be even greater if other indicators, such as building approvals and occupancy rates were used.

This growth has meant that many of the strategies need to be updated to reflect both the growth experienced and the potential increase in future growth. This potential increase in growth is illustrated in Table 9.

Age profile

Parsons Brinckerhoff (PB) state in the 2009 Land Use Strategy that the two largest population groups in the region in 2001 were the 5–9 and the 10–14 year age groups indicating a relatively young demographic. This illustrates the dominance of school age population group in the area, however it is estimated to continually decrease until 2031. Age groups less than 30 years accounted for 36.9 per cent of the total population, while those over 65 years accounted for 13.7 per cent of the region’s population.

DoPI estimates from 2005 indicate that by 2031 the population under 30 years of age will be less than 30 per cent while over 65 years of age will increase to over 25 per cent. These estimates also indicate a median age in 2001 was 37 years of age, while in 2031 it will be 47 years of age – showing a continuing aging of the population.

The 2005 estimates illustrate a population bulge around the late 40’s to 50’s age groups reflecting the ‘baby boomers’ cohort. Many of the baby boomers are now approaching retirement ages. It is also noted that there is a significant drop in population for people aged in their early 20s. This is possibly attributed to a large amount of people leaving the region after completing high school for educational or employment reasons. This trend is evident in many regional areas in NSW.

The 2010 Regional Profile data shown in Table 5 broadly illustrates that by and large these population trends are continuing. However, it is worth noting the increase in 15 to 24 year olds, as well as the 25 to 34 year olds. This may be an early indication of a shift in age demographics in the region as a result of influx of mining industry employees in this age bracket.

52 Data from the Australian Bureau of Statistics 2010 National Regional Profile.
53 Average of annual growth rates from 2006 to 2010 based on data from the Australian Bureau of Statistics 2010 National Regional Profile.
4.3 Future population estimate

To estimate the likely future population and demographic profile within the Mid-Western Regional Council (MWRC) area, a staged methodology was used. As population growth and any resulting demographic changes are the key drivers for local service demand, it has been important to critically examine methodologies for this and present an updated methodology which best accounts for the change lead by mining activity.

The approach, calculations and assumptions have been agreed with NSW Department of Planning and Infrastructure’s Demography Unit to ensure the methodology is robust and the assumptions are reasonable.

As part of this study, details of predicted demographics, household types and characteristics all need to be calculated to assess both direct and indirect impacts on local services. For further detail on the population methodology, please see Appendix C.

---

Table 5  National Regional Profile[^54]

<table>
<thead>
<tr>
<th>Age</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 14 years</td>
<td>20.9</td>
<td>20.5</td>
<td>19.9</td>
<td>19.6</td>
<td>19.2</td>
</tr>
<tr>
<td>15 to 24 years</td>
<td>11.1</td>
<td>11.2</td>
<td>11.7</td>
<td>11.8</td>
<td>11.8</td>
</tr>
<tr>
<td>25 to 34 years</td>
<td>10.0</td>
<td>9.8</td>
<td>9.9</td>
<td>10.0</td>
<td>10.2</td>
</tr>
<tr>
<td>35 to 44 years</td>
<td>14.2</td>
<td>14.0</td>
<td>13.7</td>
<td>13.5</td>
<td>13.2</td>
</tr>
<tr>
<td>45 to 54 years</td>
<td>13.8</td>
<td>14.1</td>
<td>14.1</td>
<td>14.0</td>
<td>14.1</td>
</tr>
<tr>
<td>55 to 64 years</td>
<td>14.0</td>
<td>13.8</td>
<td>13.9</td>
<td>13.8</td>
<td>13.7</td>
</tr>
<tr>
<td>65 to 74 years</td>
<td>9.0</td>
<td>9.4</td>
<td>9.6</td>
<td>10.0</td>
<td>10.5</td>
</tr>
<tr>
<td>75 to 84 years</td>
<td>5.2</td>
<td>5.3</td>
<td>5.4</td>
<td>5.4</td>
<td>5.4</td>
</tr>
<tr>
<td>85 years and over</td>
<td>1.8</td>
<td>1.7</td>
<td>1.8</td>
<td>1.9</td>
<td>2.0</td>
</tr>
</tbody>
</table>

[^54]: National Regional Profile, Mid-Western Regional Council LGA, Australian Bureau of Statistics used 'as supplied'
Methodology

Stage 1 – National Regional Profile
The average growth rate identified in the National regional profile between 2006 and 2010 was used as a ‘system growth’. This growth rate was 0.88 per cent per annum. This growth rate was extrapolated to predict the population year on year to 2030, being compounded annually.

Stage 2 – Mining growth
The number of new jobs as a result of the mining industry was calculated, both for construction and operation. Multipliers for families were then applied to all operational jobs to estimate the number of families associated with the mining jobs. A migration factor of 65 per cent was then applied to estimate the number of people that would move into the area. This migration factor was selected, as it represented a mid range estimate on likely migration to the region. The remaining 35 per cent of mining families are considered to either already live in the area or the mining worker has chosen not to move their family into the area.

Stage 3 – Indirect growth
To support the new population a number of indirect jobs will be created. A consistent indirect jobs multiplier of 1.5 was applied to all mining jobs. The same family and migration factors were applied. A correction factor of 50 per cent was then applied to this calculation. This accounts for jobs taken by family members of mine workers who move into the area and are, therefore, already counted in Stage 2.

Stage 4 – Sensitivity analysis
The migration rate was then varied to test the sensitivity of the estimates. The final 2030 population estimates ranged from 29,972 (at a 30 per cent migration rate) to 34,526 (at an 80 per cent migration rate). For more detail please see Appendix C.

Growth attributable to mining
The overall population is expected to grow by 10,037 people (from 23,063 to 33,160) by 2030. Of this growth, 5,920 people are attributed to mining expansion. This is approximately 59 per cent of the total growth in the region. This growth is principally expected to occur between 2012 and 2018.

Age profile
If the population predictions for 2030 are divided to replicate those of a similar local government area with an established mining sector, as in this case the Orange LGA, then a significant shift in age profile is likely. Overall, using this assessment, the population becomes much younger, with age brackets up to 44 years all seeing an increase in its percentage of the total population. Conversely, all age brackets over 44 years of age experience a decrease. This is illustrated in Table 6.

---

55 Construction jobs had no multipliers applied to them as these jobs are considered temporary and, as such, the likelihood of a construction worker moving their family into the area is considered to be limited.

56 This could be due to the worker being employed under a fly-in/fly-out (FIFO) or drive-in/drive-out (DIDO) arrangement.
Table 6  Preliminary assessment of population in the Mid-Western Regional Council area

<table>
<thead>
<tr>
<th>Statistic</th>
<th>2010/11</th>
<th>% of total population</th>
<th>Projected (2030)</th>
<th>% of total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>~23,000</td>
<td>~33,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 14 age group</td>
<td>~4416</td>
<td>19.2</td>
<td>~7295</td>
<td>22</td>
</tr>
<tr>
<td>15 – 24 age group</td>
<td>~2714</td>
<td>11.8</td>
<td>~4775</td>
<td>14.4</td>
</tr>
<tr>
<td>25 – 34 age group</td>
<td>~2346</td>
<td>10.2</td>
<td>~4244</td>
<td>12.8</td>
</tr>
<tr>
<td>35 – 44 age group</td>
<td>~3036</td>
<td>13.2</td>
<td>~4443</td>
<td>13.4</td>
</tr>
<tr>
<td>45 – 54 age group</td>
<td>~3243</td>
<td>14.1</td>
<td>~4311</td>
<td>13</td>
</tr>
<tr>
<td>55 – 64 age group</td>
<td>~3154</td>
<td>13.7</td>
<td>~3482</td>
<td>10.5</td>
</tr>
<tr>
<td>65 – 74 age group</td>
<td>~2415</td>
<td>10.5</td>
<td>~2354</td>
<td>7.1</td>
</tr>
<tr>
<td>75 – 84 age group</td>
<td>~1242</td>
<td>5.4</td>
<td>~1658</td>
<td>5</td>
</tr>
<tr>
<td>85 and over</td>
<td>~460</td>
<td>2.0</td>
<td>~597</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Household types

In 2006, separate detached dwellings accounted for 90.1 per cent of dwellings in the region with only 3.4 per cent either semi-detached, row, terrace house or townhouses, and 3.6 per cent flats, units or apartments (refer Table 7). This dwelling composition is likely to continue within the region given the demand for single detached dwellings, which reflects the strong demand for low density living in a non-metropolitan community. This will continue to be an important factor for any future land releases, which are more likely to be lower density development comprising separate dwellings.

Table 7  Mid-Western Regional Council housing types

<table>
<thead>
<tr>
<th>Dwelling types</th>
<th>Mid-Western Regional local government area (ABS 2001)</th>
<th>Mid-Western Regional local government area (ABS 2006)</th>
<th>NSW (ABS 2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate detached dwellings</td>
<td>93.7%</td>
<td>90.1%</td>
<td>77.4%</td>
</tr>
<tr>
<td>Semi-detached, row, terrace houses or townhouses</td>
<td>1.5%</td>
<td>3.4%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Flats, units or apartments</td>
<td>2.1%</td>
<td>3.6%</td>
<td>12.8%</td>
</tr>
</tbody>
</table>

Household characteristics

The characteristics of each household are illustrated in Table 8.

---

57 Demographic estimates for 2010 based on National Regional Profile, Mid-Western Regional Council LGA, Australian Bureau of Statistics used ‘as supplied’.

58 Demographic estimates for 2030 based on Manidis Roberts’ population methodology – Orange 2006 census demographics.
This shows a large number of ‘couple families’, both with and without children (4,834 families). Based on the population data, it is likely that the families ‘without children’ are parents whose children have moved out. As mining activity increases, there may potentially be a shift in demographics to fewer families living in the area and an increase in single people or people living away from their families.

Key issues
During consultation a number of key issues were raised regarding the methodology. These are outlined below.

Methodology
The key issue associated with the population predictions raised during consultations is the lack of consistency in methodology applied to population estimates. It was also suggested that the methodology should be tested for accuracy.

Additional considerations
The population estimate may not consider a number of factors, including:

- **Hidden population** – A large number of people visit the region each year as tourists mainly to visit wineries and attend many events. This is a large number of people that rely on the infrastructure, services and facilities in the Region. Whilst they do not use services such as schools, they do use hospitals, roads, water and accommodation.

- **FIFO/DIDO arrangements** – The mines are isolated from other major centres and therefore, driving would not likely satisfy the OH&S requirements of mines. Secondly, there are only a limited number of commercial flights per week which means there are significant barriers to maintaining up to 35 per cent of the total mining workforce on fly in/fly out arrangements for work. This could potentially result in an increase in the “migration rate” and result in more people moving into the area.

- **The size of the mining projects in the region** – The mines are bigger individually and even larger when the cumulative impact of nine large mines operating in the same region is considered. The only comparative areas in NSW (based on coal production) would be Muswellbrook and Singleton.

---

Table 8: Family type

<table>
<thead>
<tr>
<th>Family type</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Couple families with children under 15 and/or dependent students</td>
<td>1,962</td>
</tr>
<tr>
<td>Couple families with non-dependent children only</td>
<td>395</td>
</tr>
<tr>
<td>Couple families without children</td>
<td>2,477</td>
</tr>
<tr>
<td>One parent families with children under 15 and/or dependent students</td>
<td>601</td>
</tr>
<tr>
<td>One parent families with non-dependent children only</td>
<td>237</td>
</tr>
<tr>
<td>Other families</td>
<td>77</td>
</tr>
<tr>
<td><strong>Total families</strong></td>
<td><strong>5,750</strong></td>
</tr>
</tbody>
</table>

---

59 Australian Bureau of Statistics 2006 Census used ‘as supplied’.
Assumptions

The key limitations on the model are:

- Will there be adequate housing stock for people to move into? A housing shortage in the region would likely reduce the overall population estimate.

- Will there be an adequate number of skilled available workers? Traditionally mining companies take up skilled workers first then look outside to the long term unemployed, overseas and indigenous population. A skills shortage in the region would likely reduce the overall population estimate.

Population scenario used

The population scenario represented a ‘mid-range’ estimate for population growth (using a 65 per cent workforce migration rate). Other migration factors used for sensitivity analysis can be seen in Table 9. The population scenario used also assumes an annual growth rate of approximately 1.75 per cent, a younger age profile and a shift in occupation towards skilled trades and related industries.

Table 9  Population sensitivity analysis

<table>
<thead>
<tr>
<th>Migration factor</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>30% Migration</td>
<td>27,687</td>
<td>29,972</td>
</tr>
<tr>
<td>65% Migration (Mid range)</td>
<td>30,875</td>
<td>33,160</td>
</tr>
<tr>
<td>80% Migration</td>
<td>32,241</td>
<td>34,526</td>
</tr>
</tbody>
</table>

It is noted that Mid-Western Regional Council consider this to be an overly conservative estimate.
5 Housing and employment land

Summary of baseline
The Baseline Report revealed that whilst employment land was currently adequate, there was an emerging shortage in housing and rental supply. This has led to an increase in property and rental prices, making housing less affordable for those not directly benefiting from the increase in mining activity. Up until 2010 the region had experienced a drop in building approvals, dropping from 160 to 46.61. Potential reasons for this drop may be factors such as a shortage of skilled labour as tradesmen accept jobs at the mines and a lack of developable land available. Given the long lead time required to deliver a large number of houses to the market, (for example the rezoning process took over three years) it appears that there is unlikely to be a significant increase in housing stock in the near-term to meet the current demand without significant efforts.

5.1 Introduction

Approach
This section examines the historical data for land supply for both residential and employment land and employment types in the region. It analyses the emerging trends arising from the increase in mining activity and provides possible explanations for these trends. It then discusses the issues the region is currently, or likely to, face.

The methodology for data collection is explained in Section 2. This section has been principally based on three forms of evidence, namely:

Published data
This section has used published data from many sources, in particular statistics provided by the National Regional Profile prepared by the Australian Bureau of Statistics. This has been supplemented with reports undertaken by Council, usually as part of the rezoning process. This has included the Comprehensive Land Use Strategy and supplementary population and land availability studies.

Case studies
Where there was a data gap or where existing data was insufficient, case studies of similar areas where used. These included Orange City Council62, Muswellbrook LGA63 and the Bowen Basin64 in Queensland. Based on what has been experienced in these regions, potential population and demographic changes could be extrapolated.

61 National Regional Profile, Mid-Western Regional (A), 2005-2010, Australian Bureau of Statistics
62 Pers comms with Orange City Council, Garry Styles
63 Australian Bureau of Statistics, Muswellbrook LGA data
Consultation findings
Once the information collected through published data had been analysed and initial conclusions on potential impacts could be drawn, it was then ‘ground-truthed’ with relevant stakeholders, government agencies and experts including Mid-Western Regional Council, local industry (such as hoteliers and real estate agents), Mudgee Tourism and Housing Plus. This ensured we established a reasonable baseline and impact assessment.

5.2 Housing demand and supply

Summary of projected impacts
Using the accepted population:lot ratios and based on the revised population growth predictions a lot requirement of 5,096 by 2021 and a lot deficiency of 3,896 is predicted.

A shortage in short-term accommodation is predicted. This shortfall also has a knock-on effect on welfare accommodation needs of certain disadvantaged groups in the community.

Current situation

Housing development and growth trend
The Mudgee Shire Council Rural Residential, Industrial & Residential Strategy 2001 identifies that for the five years 1996–2001, an average of 117 new dwelling approvals were issued per annum (including replacement dwellings). The 1996 Census showed a high level of unoccupied dwellings at 14.7 per cent of all dwellings in the region. This was still a decrease on the levels from 1991 (16.0 per cent) and 1986 (15.2 per cent). Significantly, only 6.7 per cent of dwellings in Mudgee township were unoccupied compared to 21.1 per cent in the remainder of the region.

Based on the Australian Bureau of Statistics estimated population of 18,181 in 2001 population was projected to increase to 19,689 in 2011 and 21,322 in 2021. These projections indicate an increase of up to 1,508 persons over the following ten years requiring an additional 1,169 dwellings, assuming the level of unoccupied dwellings remains unchanged. Up to 50 per cent of these new dwellings were expected to occur in Mudgee township. This need would be met if the level of dwelling approvals experienced from 1996 – 2001 was to continue for the next decade.

What has occurred in the time since these predictions were made is an increase in population to over 23,000 in 2011, accompanied with a gradual decrease, until 2010, in the number of building approvals granted, dropping from 160 approvals in 2005 to 46 approvals in 2009. This is shown in Table 10.

Table 10 Building approvals – National Regional Profile, Mid-Western Regional (A), 2005-2010

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Sector Houses</td>
<td>140</td>
<td>110</td>
<td>115</td>
<td>68</td>
<td>26</td>
<td>39</td>
</tr>
<tr>
<td>Total Dwelling Units</td>
<td>160</td>
<td>135</td>
<td>154</td>
<td>82</td>
<td>46</td>
<td>66</td>
</tr>
</tbody>
</table>

Similar numbers are reflected in Council’s records of construction certificates and approvals issued over a similar timeframe. These show a drop from 179 additional dwellings provided in 2006 to 107 additional dwellings in 2008. However, it is important to note council’s records of construction certificates and approvals indicate a significant increase in dwelling approvals in 2011. This is illustrated in Table 11.
Table 11  Dwellings approved – Mid-Western Regional Council figures

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of dwellings</td>
<td>179</td>
<td>174</td>
<td>107</td>
<td>136</td>
<td>121</td>
<td>176</td>
</tr>
</tbody>
</table>

Availability and price of land
Landcom undertook a review of the local market. It showed that the provision of rental accommodation and a lack of housing diversity are the major issues. The key housing issues we identified were:

- Local housing market is characterized by a predominance of larger housing stock.
- Tight rental market, particularly for one and two bedroom dwellings.
- Mismatch between high rentals and sales pricing too low to support redevelopment.
- While land is available for development (1,400 lots), it is currently not being brought to market.
- The private sector is providing housing, but haphazardly.
- It is unlikely that a standard large Greenfields project would be viable in the current market.

It was noted that whilst Mudgee has a sufficient critical mass and economic base, the higher rental yields are reflective of increased capital risk. Mining is currently the major driver of shortfalls in rental accommodation. However, some of this growth will be reliant on commodity prices and demand for worker housing which may be met by other means (eg temporary villages and "FIFO"). This risk means investors and developers will likely continue to seek higher than average returns.

Ratio Consultants predicted that there would be an allotment deficiency of 1,720 allotments between 2006/07 to 2016/17, when existing, approved and likely to be approved supply is taken into consideration. Evidence collected for this report indicates that the early signs of this shortage are currently being experienced, with a significant increase in housing demand and rental prices in the last 12 months.

However, this seems contrary to data gathered from the Australian Property Monitors indicates a reduction in the annual median growth for house prices to close to 0 per cent. This may be accounted for by a shift from selling houses to selling vacant lots. This may explain the relatively low growth figures as the term ‘house’ may include vacant land being sold. Furthermore, the new lots may be smaller than the traditional lot size. These factors combined would mean that while the selling price may remain stable, there is the requirement for further investment after purchase to construct a house and/or less land being purchased in each transaction.

Availability and price of residential rental stock
It was noted in the 2005 report prepared by Ratio Consultants that there is no detailed inventory of occupied and vacant rental stock. However, it was estimated by MWRC that the vacancy rate was approximately 2 per cent. Further, in a recent article in the Mudgee Guardian, the director of a local real

---

65 Data supplied by Julie Robertson of Mid-Western Regional Council on 8 February 2012. This data counts dual occupancy dwellings as two dwellings.


state agent The Professionals was quoted as saying 'in over 25 years of operating our business, I have not ever seen such rapid growth in rent...’.

When consulting with local real estate agents, it was stated that there has been a significant increase in price expectations in the region, particularly in areas that are close to both the mine sites and amenities, such as the northern reaches of Mudgee. These areas have had a number of new property releases over recent years. These new lots have allowed for the growth in the region. It is also noted that in April the first stage of a new 1,400 lot property development was announced by Council. These 1400 lots have been identified in two Planning Proposals for land adjacent to the residential area of Mudgee. The Planning Proposals have been through an initial review and are anticipated to be on public exhibition soon. It is expected that stage 1 would deliver approximately 100 houses in the second quarter of 2013.

**Availability and price of hotels/motels**

There are 16 hotels/motels (with more than 5 rooms) operating in the MWRC, with an average nightly accommodation rate of approximately $160 per night. This would appear broadly consistent with other regional areas of New South Wales.

Whilst there is no definitive number on occupancy rates within local hotels and motels, it would appear that the majority of hotels/motels have rooms available. The mining employees appear to use select hotels in the area and, as such, there is accommodation available for non-mining visitors. This would suggest that the majority of the housing needs of the current mine staff have been met by the previous land releases and the majority of short term accommodation needs for mining staff are met by a small number of hotels within the region. Therefore, there is little indication that the cost and of short-term accommodation has been significantly inflated or the availability constrained.

**Future direct and indirect impacts**

**Housing shortage**

Ratio Consultants predicted that there would be an allotment deficiency of 1,720 allotments between 2006/07 to 2016/17, when existing, approved and likely to be approved supply is taken into consideration. Council have moved to remedy this by undertaking a Comprehensive Land Use Strategy.

The Comprehensive Land Use Strategy was prepared by Parsons Brinckerhoff and it estimated the number of lots required in the short (0-5 years), medium (5-15 years) and long (15-25 years) term, based on the population prediction of 26,220 by 2030. Table 12 identifies these lot requirements and, using the same population:lot ratios, extrapolates the lot requirements based on the revised population growth predictions presented in Section 4. It shows a lot requirement of 5,096 by 2021 and a lot deficiency of 3,896.

---

70 Australian Bureau of Statistics 2006 Census used 'as supplied'.
71 www.wotif.com
72 www.wotif.com
73 T. Rohr (Manager, Owl Head Hotel and Rowena, Licensee, Prince of Wales Hotel) Pers. Comm., 17 November 2011
74 It is noted that MWRC consider wotif.com not to be an accurate reflection of accommodation availability as it also lists establishments that have less than 5 rooms and would, therefore, not meet the criteria for contractors to use. MWRC also note that of the 12 motels listed in the Mudgee Regional Tourist Information Guide only 6 are listed on wotif.com and that there is a $20 disparity per night between the average full rate for these motels ($148) and the average rate on wotif.com ($128).
Table 12  Property and housing

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>22,570</td>
<td>~23,000</td>
<td>24,134</td>
<td>~31,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population increase (from 2006)</td>
<td>570^{75}</td>
<td>~1,000^{77}</td>
<td>430</td>
<td>2,134^{76}</td>
<td>~9,100^{77}</td>
<td>6,966</td>
</tr>
<tr>
<td>Additional lot requirement</td>
<td>540^{75}</td>
<td>~947^{78}</td>
<td>407</td>
<td>1,200^{76}</td>
<td>~5096^{79}</td>
<td>3,896</td>
</tr>
</tbody>
</table>

The 2021 lot requirement is based on the long term predicted ratio of 0.56 lots for every new resident. This ratio has been derived from the lot predictions: expected population within Mid-Western Regional Council’s Comprehensive Land Use Strategy, Parsons Brinckerhoff, July 2010.

Table 12 demonstrates the significant potential shortfall in lot provision in the Mid-Western Region as a result of increased population growth. If housing demand is not met, there is likely to be an increase in the mean and median house price in the area from the current median house price of $287,000^{80} (it is noted that this is likely to be higher in regional centres, such as Mudgee).

During consultations for this report it was clear that early signs of the effects of this shortfall are being seen. Housing supply in the area is low, as is rental supply. This has led to an increase in property and rental prices, making housing less affordable for those not directly benefiting from the increase in mining activity. If housing supply did not improve, the increase in house price could mean that people not benefiting directly from the mining activity are priced out of the market.\(^81\)

Given the long lead time required to deliver a large number of houses to the market, it appears that there is unlikely to be a significant increase in housing stock in the near-term without significant efforts.

**Skilled labour**

Another emerging concern is the loss of skilled labour for housing provision and related servicing within the area. As more employees are required at the mine sites, it creates a drain on local construction and associated trades. As such, even with an increase in land availability, there is a small number of tradespeople available to build new houses and, as a result, the price for building houses will likely increase.\(^82\) To address this concern, MWRC hosted a ‘developer day’ to gauge interest from larger scale developers from Sydney in investing in the area. This has received a positive response, with interest in the region amongst developers considered to be quite high.\(^83\)

As a result of the lot shortage and increasing house prices, mining companies are looking to alternative means of housing for its employees. Most recently this has been constructing temporary workers

---

\(^{75}\) Predicted in 2008  
^{76}\) Mid-Western Regional Council’s Comprehensive Land Use Strategy, Parsons Brinckerhoff, July 2010.  
^{77}\) Manidis Roberts estimate as shown in the population methodology distributed for the workshop.  
^{78}\) Based on the prediction of 0.94 lot for every new resident (ratio derived from Mid-Western Regional Council’s Comprehensive Land Use Strategy, Parsons Brinckerhoff, July 2010)  
^{79}\) Based on the long term predicted ratio of 0.56 lots for every new resident (ratio derived from Mid-Western Regional Council’s Comprehensive Land Use Strategy, Parsons Brinckerhoff, July 2010)  
^{80}\) Australian Property Monitors  
^{81}\) Anecdotal evidence from consultation with local real estate agents.  
^{83}\) C. van Laeren (Group Manager, MWRC) 2011, Pers. Comm., 7 November 2011.
accommodation (TWA). These facilities are generally self-contained housing developments that cater to the specific requirements of mine workers.

Temporary workers accommodation (TWA) facilities are self-contained developments catering for the specific needs of an itinerate workforce, such as mine workers. While addressing the immediate needs of workers and relieving some, but not all, infrastructure pressures, these facilities can have unintended detrimental social consequences, such as segregation from the existing community or an ‘us and them’ mentality and social isolation\(^\text{84}\).

TWA developments have been constructed previously, however traditionally these have been located within mining land. With the mines in the Mid-Western Regional Council area being located near towns and associated services, there is an increased likelihood of locating these developments outside of mining land\(^\text{85}\). This presents unique challenges both in managing social issues arising from workforce specific accommodation that is disconnected from the town as a whole and in delivering infrastructure to meet the needs of these developments. During consultation, the key issue that was raised regarding TWA developments is the lack of planning controls and state guidance currently in place to assist in ensuring these developments meet acceptable standards. It is noted that the NSW Department of Planning and Infrastructure is now developing draft guidelines to assist Councils in managing this type of development.

**Short term accommodation**

Consultation and research has indicated that the majority of the housing needs of the current mine staff have been met by the previous land releases and the majority of short term accommodation needs for mining staff are met by a small number of hotels within the region. This means there is little indication that the cost of short-term accommodation has been significantly inflated or the availability constrained. However, as previous land releases are finalised, it is reasonable to expect an increase in demand for short and medium term accommodation that may be fulfilled by hotels and motels in the area. This would create a shortage in short-term accommodation. If no new land was rezoned in the next three years (it took approximately three years for the new LEP to be finalised) then the population scenario suggests that approximately an additional 3,000 people would be looking for accommodation in the region. This shortfall also has a knock-on effect on emergency accommodation needs of certain disadvantaged groups in the community, such as the homeless and emergency women’s refuge accommodation (this is discussed further in Section 9). It is noted that in April 2012 Council announced the first stage of a 1,400 lot development that may help address some of this shortfall. These 1400 lots have been identified in two Planning Proposals for land adjacent to the residential area of Mudgee. The Planning Proposals have been through an initial review and are anticipated to be on public exhibition soon. It is expected that stage 1 would deliver approximately 100 houses in the second quarter of 2013.

**Reduced rating base**

One of the significant conditions being placed upon coal mines during the planning and development process is the requirement to buy offset land areas. This means that the proponents are required to purchase and manage land in woodlands or national bushlands. This land therefore, becomes environmental conservation land, which is non-rateable, reducing Council’s potential rate base.

---

\(^\text{84}\) Social impact assessment and mining communities, John Rolfe and Vanessa Timmer, CQ University (presentation not dated).

\(^\text{85}\) http://gulgong.net/miningvillage/
Further to this, in some cases the environmental conservation land is not managed in a way that is acceptable to adjacent land owners (both in terms of weed control and animal control). This ultimately becomes a cost that Council eventually bears in managing this impact.

Therefore, the impact of mining expansion in the Region means that a council can face on the one hand reduced income from rates and on the other increased infrastructure costs and increased costs to manage or remediate offset land and its surrounds.

### 5.3 Employment and land availability

#### Summary of projected impacts

There is likely to be a shift in employment towards trade related professions. As such, the employment land provision will need to shift to cater for this shift in profession. Given the relatively low level of unemployment, it is likely that these workers will be found outside the area. As the area nears full employment, there will likely be a sharp increase in demand for workers, particularly tradespeople, in the local area to undertake building and maintenance work.

Mining will drive an increase in the number of tradespersons and related workers and machinery operators and drivers within the region and as a percentage of the workforce, these additional people and trades will need to be catered for. This could potentially lead to an industrial land shortage and a resulting shortage of businesses that support the mining industry.

#### Current situation

**Existing employment (including non-resident workforce)**

The region had an unemployment rate of 5.9 per cent in June 2011, which is a marginal decrease from 6.1 per cent as at June 2010. This is slightly higher than the unemployment rate in NSW, which was at 5.1 per cent in June 2011.\(^{86}\)

Based on previous data, it is likely that the 35 – 54 age group account for the majority of those unemployed (in 2001 this age group accounted for over 38 per cent of the unemployed in the region).\(^{87}\) It is unclear whether this drop in unemployment reflects an improving economy and job opportunities or contracting job market forcing people to look for work outside of the region and hence relocating.

**Income characteristics**

Table 13 shows that the median individual, family and household income were lower than the Australian average in 2006.\(^{88}\) However, it is worth noting that the average taxable income has increased between 2006 and 2009, from $32,143 to $38,870.\(^{89}\)

---

\(^{86}\) Small Area Labour Markets Australia, June Quarter 2011.


\(^{88}\) Australian Bureau of Statistics 2006 Census used ‘as supplied’.

\(^{89}\) Australian Bureau of Statistics 2010 National Regional Profile used ‘as supplied’.
Table 13  Median individual, family and household income in 2006\(^{90}\)

<table>
<thead>
<tr>
<th>Usual residents aged 15 yrs+</th>
<th>$/week</th>
<th>$/week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MWRC LGA</td>
<td>Australia</td>
</tr>
<tr>
<td>Median individual income</td>
<td>353</td>
<td>466</td>
</tr>
<tr>
<td>Median household income</td>
<td>700</td>
<td>1,027</td>
</tr>
<tr>
<td>Median family income</td>
<td>936</td>
<td>1,171</td>
</tr>
</tbody>
</table>

The fields of employment are shown in Table 14. These figures are beginning to illustrate the area’s reliance on industry and mining, with a large number of people being employed in fields required to support mining, including technicians and trade workers, labourers, and machinery operators and drivers.

Table 14  Fields of employment 2009\(^{91}\)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>8.5%</td>
</tr>
<tr>
<td>Professionals</td>
<td>13.7%</td>
</tr>
<tr>
<td>Tradespersons and related workers</td>
<td>12.7%</td>
</tr>
<tr>
<td>Community and personal service workers</td>
<td>9.2%</td>
</tr>
<tr>
<td>Clerical and administrative workers</td>
<td>13.3%</td>
</tr>
<tr>
<td>Sales workers</td>
<td>8.0%</td>
</tr>
<tr>
<td>Machinery operators and drivers</td>
<td>11.7%</td>
</tr>
<tr>
<td>Labourers</td>
<td>16.1%</td>
</tr>
<tr>
<td>Not stated</td>
<td>6.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Future direct and indirect impacts

**Employment shift**

With the increase in mining activity, it is likely that there will be a shift in the fields of employment in the region. Table 15 compares the Mid-Western Region to a more established mining region, in this case Muswellbrook. The table illustrates Muswellbrook has proportionally fewer people in the majority of occupations, it does have 5 per cent more of its residents working as a tradesperson or related worker and 4.3 per cent more of its residents working as machinery operators and drivers. From this it can be stated that mining will likely drive an increase the number of tradespersons and related workers and machinery operators and drivers within the region and as a percentage of the workforce. These additional people and trades will need to be catered for both in terms of housing and local services and trading premises.

---

\(^{90}\) Australian Bureau of Statistics 2006 Census used ‘as supplied’.

\(^{91}\) Australian Bureau of Statistics National Regional Profile used ‘as supplied’.
Table 15  Employment industry comparison

<table>
<thead>
<tr>
<th>Occupation</th>
<th>MWRC\textsuperscript{92}</th>
<th>Muswellbrook\textsuperscript{93}</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>8.5%</td>
<td>7.1%</td>
<td>-1.4%</td>
</tr>
<tr>
<td>Professionals</td>
<td>13.7%</td>
<td>11.5%</td>
<td>-2.2%</td>
</tr>
<tr>
<td>Tradespersons and related workers</td>
<td>12.7%</td>
<td>17.7%</td>
<td>+5%</td>
</tr>
<tr>
<td>Community and personal service workers</td>
<td>9.2%</td>
<td>8.9%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>Clerical and administrative workers</td>
<td>13.3%</td>
<td>12.1%</td>
<td>-1.2%</td>
</tr>
<tr>
<td>Sales workers</td>
<td>8.0%</td>
<td>7.5%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>Machinery operators and drivers</td>
<td>11.7%</td>
<td>16.0%</td>
<td>+4.3%</td>
</tr>
<tr>
<td>Labourers</td>
<td>16.1%</td>
<td>14.3%</td>
<td>-1.8%</td>
</tr>
<tr>
<td>Not stated</td>
<td>6.7%</td>
<td>5.0%</td>
<td>-1.7%</td>
</tr>
</tbody>
</table>

Employment land

With this shift in employment type, the amount of land required to cater for industry and employment would need to change. Whilst the Comprehensive Land Use Strategy 2010 allowed for some increase in industrial land to service the mines, it is unlikely that it allowed for the amount of growth the region is now predicted to experience. This could potentially lead to an industrial land shortage and a resulting shortage of businesses that support the mining industry. The extent of industrial land required would be determined through further detailed analysis of the demand for industrial land undertaken as part of broader economic development strategies for the whole local government area, as recommended in the Comprehensive Land Use Strategy 2010.

Skilled workers

As the workforce nears ‘full employment’\textsuperscript{94}, the increase in mining activity has resulted in a greater amount of pressure placed on the labour force within the area. This has seen a number of professionals and skilled tradespeople leave their traditional employment to begin working in the mines. This has meant a significant increase in demand for workers, particularly tradespeople, in the local area to undertake building and maintenance work.

\textsuperscript{92} Australian Bureau of Statistics National Regional Profile (Mid-Western Regional Council) used ‘as supplied’.

\textsuperscript{93} Australian Bureau of Statistics National Regional Profile (Muswellbrook) used ‘as supplied’.

\textsuperscript{94} A region is considered to be at ‘full employment’ when the unemployment rate is at 5%. Mid-Western Regional Council’s unemployment rate has dropped from to 5.9% in 2011 from 6.1% in 2010.
6 Transport

Summary of baseline
The Baseline Report found that currently the rail and airport facilities adequately cater for the population. The key pressure being felt currently is in the provision and maintenance of roads. At present MWRC estimates that there is a backlog of road sealing works estimated to be $21 million. Around 28 per cent of sub-arterial roads have a seal width less than 7m, resulting in increased edge wear and reduced levels of safety. Ulan Road between Mudgee and Gulgong in particular is experiencing very rapid growth in traffic (12.6 per cent increase p.a. between 2002 and 2011). However, Mid-Western Regional Council has a funding shortfall of at least $585,000 p.a. to maintain their sub-arterial roads to a minimum acceptable level of service. MWRC residents in the Community Plan engagement process rated roads as the priority concern in late 2011.

6.1 Introduction

Methodology
This section examines transport infrastructure and service needs in the region. It analyses current transport provision and potential future need. It then discusses the transport issues the region is currently, or likely to, face.

The methodology for data collection is explained in Section 2. The analyses in this section has been based on two forms of evidence, namely:

Published data
To assess the impact on transport, a number of technical reports were reviewed, including traffic studies undertaken for environmental assessments and for regional transport plans. This information was supplemented with Council management plans and associated costings. In some cases, particular issues or infrastructure elements have undergone additional assessment (for example Ulan Road). Where this has occurred, further analysis of service provision has been made.

Consultation findings
Once the information collected through published data had been analysed and initial conclusions on potential impacts could be drawn, it was then ‘ground-truthed’ with relevant stakeholders, government agencies and experts including Mid-Western regional Council, NSW Trade and Infrastructure and NSW Roads and Maritime Services. This ensured we established a reasonable baseline and impact assessment.

95 Mid-Western Regional Council 2010, Road Asset Management Plan 2010: Volume 1 Overview and Programs.
6.2 Roads

Summary of projected impacts
The increase in mining activity is likely to put increased pressure on key roads within the Council area. Principally these are Ulan Road and Bylong Valley Way. As such, it is predicted that upgrades of these roads may be required. However, the level of upgrade and the funding arrangements for these upgrades and ongoing maintenance is the subject of ongoing negotiation between Council and the mining companies. Furthermore, the additional population and changes in vehicle usage may present Council with additional traffic management issues within townships.

Current situation

Key roads
The road network consists of approximately 2,237 km of both sealed and unsealed maintained roads in the region over which Council has total asset management responsibility. Council owned sub-arterial roads make up 397.8 km of the total. In addition, Council maintains 203.5 km of arterial and sub-arterial roads under a Single Invitation Maintenance contract with the Roads & Traffic Authority (RTA). Council received funding assistance from the RTA for the maintenance of regional roads through the REPAIR Program – Council has received the maximum available $400,000 p.a. since its inception. Arterial and sub-arterial roads are shown in Figure 4.
Figure 4  Transport infrastructure and key statistics
Capacity of key roads

It was noted through the research and consultation process that there is a lack of current traffic data on which to draw conclusions. Only Ulan Road had a recent traffic count and, as such, impacts from mining have been extrapolated from this data for other areas to provide a very high level assessment of potential affects of further mining activity on key road infrastructure in the region.

Past and historical traffic data from 2002 for three key roads in the Gulgong and Mudgee regions are shown in Table 16. This was calculated by looking at a linear trend of historical traffic data up to 2002; however 2011 AADT data for Ulan Road shows a count of ~2,500. This traffic significantly exceeds 2016 projected volumes of 2,021. Each road is nevertheless expected to be within its accepted hourly capacity.

Table 16 Capacity and current Annual Average Daily Traffic for key roads

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Castlereagh Highway (SH 18)</td>
<td>2,951</td>
<td>4,122</td>
<td>~1260</td>
<td>~410</td>
</tr>
<tr>
<td>Ulan Rd (MR 214)</td>
<td>1,321</td>
<td>2,021 (Actual 2011 = ~2,500)</td>
<td>~820</td>
<td>~200 (~250 in 2011)</td>
</tr>
<tr>
<td>Cope Rd (MR598)</td>
<td>1,685</td>
<td>3,050</td>
<td>~820</td>
<td>~300</td>
</tr>
</tbody>
</table>

Road condition

MWRC has adopted a Road Classification and Standards Policy to ensure that important roads receive more maintenance and a higher ranking for construction than minor roads. The details of this can be found in the baseline report in Appendix A.

Road standard

Council had been working towards sealing all sub-arterial and collector roads within the next 10 years, however due to recent increases in sealing existing gravel roads, Council no longer consider this to be achievable. As such, the Seal Extension Program was suspended in 2010 until maintenance of the existing network of sealed roads is funded and the backlog of works cleared. Furthermore, sub-arterial roads should have a minimum seal width of 7m to reduce the incidence of edge wear and increase safety for these higher volume roads.

According to Mid-Western Regional Council, to 2009 there was a backlog of road sealing works estimated to be $21 million. Around 28 per cent of sub-arterial roads have a seal width less than 7m, resulting in increased edge wear and reduced levels of safety. The cost to bring these up to standard (> 8m) is estimated to be $20 million (it is noteworthy that there will be some overlap between this and $21 million backlog identified above).

---

96 Adapted from SKM, 2008, Moolarben Coal Project Stage 2: Traffic Impact Assessment.

97 Council figures indicate that since 2011, the average daily traffic count has increased a further 17% in 2012. The latest daily traffic data for Ulan Road indicates average daily traffic counts of 2,925. The actual traffic counts in 2012 exceed projected 2016 figures by 904 vehicles (ie. 44.7%).
Capital works

Table 17 illustrates the additional capital works Council consider necessary for the estimated capital and maintenance costs. Of particular note is the Ulan Road upgrade, which has the largest capital works budget of any of the roads.

Table 17  Potential road upgrades

<table>
<thead>
<tr>
<th>Road</th>
<th>Works required</th>
<th>Estimated capital cost</th>
<th>Maintenance cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulan Road</td>
<td>45km of road to be upgraded.</td>
<td>$32 million</td>
<td>$1.5 million per annum.</td>
</tr>
<tr>
<td>Cope Road</td>
<td>22km of road to be upgraded.</td>
<td>$8 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Spring Ridge Road</td>
<td>12.1km of road to be upgraded.</td>
<td>$9 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Laheys Creek Road</td>
<td>13.8km of road to be upgraded.</td>
<td>$5 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Ulan Wollar Road</td>
<td>7.8km of road to be sealed.</td>
<td>$5.7 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Wollar Bylong Road</td>
<td>22km of road to be sealed.</td>
<td>$31 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Bylong Valley Way</td>
<td>Road widening and straightening.</td>
<td>$2 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Lue Road</td>
<td>9km of road to be upgraded.</td>
<td>$4 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Barra and Pyangle Roads</td>
<td>7km of road to be upgraded.</td>
<td>$5 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
<tr>
<td>Barrigan Road</td>
<td>7km of road to be upgraded.</td>
<td>$3.5 million</td>
<td>$45,000 per km per annum (for life of the mines).</td>
</tr>
</tbody>
</table>

Cost of maintenance

The whole of life programs indicate that the roads budget is over $5 million short per annum for heavy patching, rehabilitation, grading and gravel resheeting.

An illustration of this shortfall in funding can be seen in the 2010 Council budgets for sub-arterial roads. Council allocate their $1.98 million p.a. to sub-arterial roads as show in Table 18, with a funding shortfall of at least $585,000 p.a. required to provide a minimum acceptable level of service.

Table 18  Summary of current and required budget for maintenance of sub-arterial roads (2010)

<table>
<thead>
<tr>
<th>Maintenance type</th>
<th>Annual expenditure for stated level of service ($’000)</th>
<th>Current Council budget</th>
<th>Minimal acceptable servicing</th>
<th>Optimal servicing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder maintenance</td>
<td>$86.3</td>
<td></td>
<td>$154.0</td>
<td>$154.0</td>
</tr>
<tr>
<td>Reseals</td>
<td>$1,045</td>
<td></td>
<td>$1,232</td>
<td>$1,308</td>
</tr>
</tbody>
</table>

98 Costs have been provided by Mid-Western Regional Council and are based on experience. All costs would require detailed analysis to ensure accuracy.

<table>
<thead>
<tr>
<th>Maintenance type</th>
<th>Annual expenditure for stated level of service ($'000)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Council budget</td>
<td>Minimal acceptable servicing</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>$851</td>
<td>$1,181</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,982</strong></td>
<td><strong>$2,567</strong></td>
</tr>
</tbody>
</table>

It is difficult to definitively determine the direct impact of mining on these assessments, as there are minimal current road traffic counts that can be used. However, we can use Ulan Road as an example and extrapolate the potential for impacts from this data across the region’s roads to get a very high level assessment of the effects of new mining activity.

**Table 19** Capacity and current Annual Average Daily Traffic for Ulan Road

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulan Rd (MR 214)</td>
<td>1,321</td>
<td>2,021</td>
<td>~3.1%</td>
<td>~2,500</td>
<td>~7.35%</td>
</tr>
</tbody>
</table>

These traffic counts were taken 50-100m north of Ulan Road/Wollar Road intersection. North of this point, three mines (Ulan, Moolarben and Wilpinjong) are operating, extracting a total of 45 Mtpa of coal. Table 19 illustrates a significant increase in the annual traffic growth rate, from 3.1 per cent to 7.35 per cent. This shows that the annual traffic increase is more than double that expected. This increase in use would likely accelerate road deterioration and increase maintenance costs.

If this trend were to continue proportionally across the main road network within the region, then it would also be likely that there would be an increase in mining traffic on Bylong Valley Way, as this road services the current Charbon mine and will likely service the proposed Mt Penny and Bylong mines. These mines combined extract a total of 13.5 Mtpa of coal. Table 20 illustrates that if the increases in traffic were proportional, then Bylong Valley Way can expect in the order of 667 additional vehicle movements per day when the Mt Penny and Bylong mines open. This is an increase of approximately 79 per cent.

**Table 20** Extrapolation of traffic data for Bylong Valley Way

<table>
<thead>
<tr>
<th>Ratio (vehicle movement/Mtpa coal)</th>
<th>Additional coal extraction (Mtpa)</th>
<th>Existing vehicle count*</th>
<th>Potential total vehicle movements</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500/45</td>
<td>12</td>
<td>847</td>
<td>1,514</td>
</tr>
</tbody>
</table>

*2002, RTA station 99.293

**Future direct and indirect impacts**

**Road funding**

Funding for road upgrades was the most contentious matter raised during the research and consultation process. While there were a number of funding issues raised, the principal concerns were:

- Mining traffic needs are currently absorbing Council’s general maintenance funds.

---

900 Adapted from SKM, 2008, Moolarben Coal Project Stage 2: Traffic Impact Assessment.
• Discrepancies in upgrade determinations. There is currently a disagreement on the level of traffic generated by mines and, as a result, the amount of money that should be sought from different parties.

• Funding sources for the determined upgrades. The Council rate base is limited. It is unclear whether the rate base would be able to keep pace with the total infrastructure and service needs.

### Ulan Road

Currently there are competing road strategies for Ulan Road. Council’s opinion is that a significant increase in service levels is required and the estimated cost for this increase is $32,851,875. However, a road strategy undertaken on behalf of the three mines operating along the road estimate that a lower level of service would be adequate and estimates the cost to be $17,218,750. This is the subject of ongoing negotiation between the mines and Council. There is also disagreement as to how costs should be apportioned.

### Road deterioration

There is a concern that the Council owned roads would deteriorate significantly without additional funds. This predicted road deterioration would be influenced by a number of factors including:

• Tendency for councils to ‘leave’ roads until stress occurs.

• Different requirements for urban and rural roads, which would result in different levels of servicing requirements. Traditionally, rural roads require less maintenance as they carry less traffic.

• Number and positioning of lots and land-use activities.

• Type and location of the different traffic generators (commercial areas etc).

• Vehicle type (in mining communities there is usually a high proportion of 4WD).

• Heavy vehicle movements (including equipment movements to/from mines).

• Where the community is drawn from. The mining workers may operate under drive in/drive out arrangements and could travel from surrounding towns (eg Wellington).

### Road statistics

The current road statistics in use were assessed in 2002 and are now considered to be very out date. Table 19 shows that the predicted traffic count for Ulan Road in 2016 of 2,021 has already been exceeded by 2011 (~2,500). This gives a clear indication that the growth experienced on roads affected by mining is higher than what would have been expected.

### Road planning

It was acknowledged that the planning for roads in the region would need to be revised. The particular issues that would need to be addressed are:

• Mid-Western regional Council investigating the need for traffic signals. Previously Council were opposed to traffic signals as it detracted from the ‘country’ character that Council consider important.

• Prioritisation of funding to ensure the roads with the most critical needs receive the required funding.

• How to cater for growth in other industries, such as mining support industries, wine and tourism.

• Need to investigate ways to make maintenance programs more responsive to rapid increases in traffic. Currently the programs are based on a gradual increase in traffic over an extended period of time.
• Changes in how the roads are used as many miners may drive in and out of town.
• Options for management of on-street parking as, traditionally, high occupancy in houses and worker pick-up locations results in strains on street parking.
• In the event that buses are used to transport workers to and from the mines, there needs to be a secure parking facilities for vehicles near the bus stop(s).
• How to manage specific traffic generators such as temporary workers accommodation.

Stakeholders expressed a need for detailed traffic modelling to inform a range of decision-making – car parking needs, road management options and road upgrade requirements. A total remodelling of traffic generation and destination in the region is required. Council has some recent data for Ulan Road however NSW Roads and Maritime Services (RMS) suggests that this could be reworked to provide more detailed information, which would go some way to filling the current data gaps and better inform urgent road investment decisions. It is understood that Council does not have adequate capacity and capability to undertake this assessment.

Road conditions have the potential to create significant flow-on effects throughout the community and economy, such as impacts on quality of life and amenity, as the character of the region and in particular its towns is changed due to traffic congestions and other transport related issues.

6.3 Airport

Summary of projected impacts
With the potential uncertainty of service combined with an increase in the number of people on fly in/fly out arrangements for work, there are predicted to be impacts on the Mudgee airport. The population modelling suggests that up to 640 workers per week (depending on mine shift system) could be on fly in/fly out arrangements for work. This significantly exceeds the 176 weekly seats currently available at the airport.

Current situation
Mudgee Airport is located approximately 5km north-east of Mudgee CBD and occupies an area of around 95 ha (refer to Figure 6). It is a Civil Aviation Safety Authority (CASA) certified facility, owned and operated by Mid-Western Regional Council. It has a two runway system:

• The main runway (04/22 alignment) is 1739m long by 30m wide and sealed. It is contained within a 90m wide graded runway strip and 150m wide flyover area. Runway 04/22 is classified as a Code 3C runway (suitable for aircraft requiring an aerodrome reference field length of less than 1800m and a wingspan and outer main gear span of less than 36m and 9m respectively), allowing aeroplanes such as the SAAB-340, DC3 and BAE Jetstream 32.
• The secondary runway (16/34 alignment) is 1075m long by 30m wide and is grassed and unlit. It is contained within a 90m wide graded runway strip. Runway 16/34 is classified as a Code 2C runway (suitable for aircraft requiring an aerodrome reference field length of less than 1200m and a wingspan and outer main gear span of less than 36m and 9m respectively), allowing aeroplanes such as the DHC8 and Cessna 550.

Another airstrip suitable for light aircraft is located at Rylstone.
Figure 5  Existing aircraft and rail facilities
**Figure 6**  Existing Mudgee airport layout

Current airport activity

Mudgee Airport facilitates direct scheduled passenger operations to and from Sydney. These are provided by Aeropelican, a Canberra-based airline that utilise a 19-seat BAE Jetstream 32 aircraft. The total weekly seats available (inbound plus outbound) has increased from 176 in 2004 to 418 in 2011. This translates to a total of around 21,700 seats per annum.
Aeropelican operate two return Mudgee-Sydney services on weekdays\footnote{Council advises that this has subsequently been increased to three Sydney to Mudgee return trips daily.} and one return Sunday service. The trip time for the scheduled passenger service to and from Sydney Airport is 50-55 minutes.

**Aircraft movements**

There were around 6,900 aircraft movements per month between 2001–04. This was forecast to increase to around 7,650 aircraft movements per year in 2014.

**Runway capacity**

Modelling undertaken in 2005 by SKM\footnote{SKM 2005, Mudgee Airport Master Plan.} forecast that with a 3–3.5 per cent growth rate in air service demand\footnote{Note: This estimate is based on forecasts prepared for the Sydney Airport Master Plan 2003/04 that suggest that regional passenger traffic for routes to and from Sydney Airport will average 2.3% over the period to 2023/24. Some routes will exhibit higher growth rates whilst some routes will be lower. In the case of Mudgee it is assumed that growth rates in the 3-3.5% range may be achievable given the results of recent marketing and air fare initiatives.}, that future air traffic is well within the runway capacity afforded by the two-runway complex. No additional infrastructure was therefore deemed to be required in the future. Council was not at that stage proposing any changes to either runway.

**Passenger terminal capacity**

The existing terminal would meet International Air Transport Association’s Level of Service A for handling PA31-350 or similar sized aircraft ie up to 9 seats. The terminal nevertheless was assessed by SKM in 2005\footnote{SKM 2005, Mudgee Airport Master Plan.} in 2005 as being capable of meeting Level of Service Standard C, during a single arrival and departure movement of up to 38 passengers. SKM considered it appropriate to make planning provision for the terminal to be expanded to accommodate the increased passenger numbers. There is sufficient land at each end to enable extensions to be undertaken, or increase the terminal depth.

**Aircraft Hangars**

SKM found that additional aircraft hangars (eg maintenance facilities, flying training facilities) were required. The development would take place in two stages:

- Stage 1 – extension of the northern general aviation area.
- Stage 2 – new southern general aviation area following decommissioning and removal of the non-directional beacon.

A development application has been approved for 15 lots for the construction of hangars.

### Future direct and indirect impacts

**Table 21** Flight availability\footnote{SKM 2005, Mudgee Airport Masterplan.}

<table>
<thead>
<tr>
<th></th>
<th>2004 passenger services\footnote{SKM 2005, Mudgee Airport Master Plan.}</th>
<th>Anticipated increase to 2014\footnote{SKM 2005, Mudgee Airport Master Plan.}</th>
<th>2014 estimate</th>
<th>Current passenger services</th>
<th>Percentage increase to 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger movements</td>
<td>176 seats per week</td>
<td>30–36%</td>
<td>–240 seats per week</td>
<td>418 seats per week</td>
<td>–138%</td>
</tr>
</tbody>
</table>

101 Council advises that this has subsequently been increased to three Sydney to Mudgee return trips daily.
102 SKM 2005, Mudgee Airport Master Plan.
103 Note: This estimate is based on forecasts prepared for the Sydney Airport Master Plan 2003/04 that suggest that regional passenger traffic for routes to and from Sydney Airport will average 2.3% over the period to 2023/24. Some routes will exhibit higher growth rates whilst some routes will be lower. In the case of Mudgee it is assumed that growth rates in the 3-3.5% range may be achievable given the results of recent marketing and air fare initiatives.
104 SKM 2005, Mudgee Airport Master Plan.
105 SKM 2005, Mudgee Airport Masterplan.
Capacity
Forecasting in 2005 by SKM\textsuperscript{106} showed that the runway has sufficient capacity to cater for future demand. However, additional aircraft hangars (as planned), and expansion of the passenger terminal is considered to be necessary. Furthermore, any future expansion plans will need to consider how to cater for potential fly in/fly out arrangements at mine sites. Based on the population scenario estimates, up to 30 per cent of the workers could be on fly in/fly out arrangements. This would total 640 people (this estimate does not include indirect jobs on fly in/fly out arrangements)\textsuperscript{107}.

Servicing
The air travel market is currently quite small and, as a result, has limited appeal to other air travel providers. Given this, there is a concern about the dependency on current providers – should the current operator withdraw servicing air travel to and from the area for any reason the functioning of the mining expansion activity would be significantly impacted. This could also be detrimental to many of other reliant industries in the region, including wine and tourism.

6.4 Rail

Summary of impacts
Given that the rail in the region is used for the transport of goods and not for passenger services, the impacts will be limited to those relating to rail expansion for the purposes of increased production. This may include the reopening of services through Mudgee, although this is not currently proposed.

Current situation
There are two rail links within the MWRC LGA (refer Figure 5):

- A dedicated freight line from Gulgong to Newcastle that is used predominantly by the coal industry. Gulgong-Muswellbrook section has recently been upgraded to improve speeds and passing opportunities.

- A light to medium graded rail service that links Gulgong and Mudgee with Lithgow and Dubbo. The Gulgong-Kandos section has been closed since 2006 due to under-utilisation. There are no current plans to reopen this line. Reopening this line would cost $210 million, and would be funded by ARTC with the support of mines.

Level of service

Ulan line
This track has no constraints in regard to types of locomotives and rolling stock. 1.6 km long coal trains at 30 tonne axle load are permitted. In August 2011, the Ulan Line Passing Loops and Duplication project was completed. Originally, it was a single-track line with passing loops spaced every 40 kilometres. The project broke up the long single sections of track with five new passing loops. A centralised train control was also installed, which allowed for higher average train speeds. The new loops have increased the

---

\textsuperscript{106} SKM 2005, Mudgee Airport Master Plan.
\textsuperscript{107} It is noted that MWRC accept that whilst there may be some FIFO arrangements, it is unlikely that the figure would ever be as high as estimated given it is a 3 hour drive from Sydney to Mudgee. Further, MWRC also note that if FIFO/DIDO arrangements were to increase significantly, it is expected that these mine employees would be predominantly travelling from other regional areas (including the Upper Hunter).
number of return paths available to coal trains. The project increased the line’s capacity and provided increased operational flexibility for the crossing of trains between Ulan and Muswellbrook.

**Gulgong junction**
The junction at Gulgong is designed to take trains from the west onto the Ulan Line. There is no direct Ulan to Mudgee connection without some form of shunting or a push pull train operation. A direct Mudgee connection could be provided via a ‘Y Link’.

**Gulgong to Mudgee**
There are no trains running in this section at present. This section of track was closed to all traffic on 21/09/05 due to the absence of trains and the inspection requirements.

This section is classified as Class 3 main line mainly due to the rail size and weight (80lb). The class 3 main line classification allows Classes A – E freight wagons at 35km/hr, hauled by locomotive classes S8 to S13. This would restrict the coal haulage options in the section to a maximum 19 tonne axle load at 35 km/hr.

**Mudgee to Kandos**
There are no trains running in this section at present. This section of track was also closed to all traffic on 21/09/05 due to the absence of trains and the inspection requirements.

This section is classified as Class 2 main line, it is of similar standard to the Gulgong – Mudgee section but has heavier rail (94lb). The Class 2 classification allows classes A-E freight wagons at 60-100km/hr hauled by locomotive classes S3 to S13. This would restrict the coal haulage options in the section to maximum 21 tonne axle load at 70 km/hr reducing to 20 kph over the timber bridges in the section.

**Kandos to Mt Piper**
The Kandos to Mt Piper section is classified as Class 1 main line which allows all but the heaviest locomotives and rolling stock. This section currently has coal trains departing from Charbon and Baal Bone operating at 25 tonne axle load.

**Future direct and indirect impacts**

*Rail upgrade requirements*
In the event of coal freight travel commencing through Mudgee, SKM in 2009 have broadly identified the following maintenance requirements to improve the condition of poor performing lines and allow coal freight operation:

- Re-classification of Gulgong-Mudgee to Class 2 minimum.
- Formation of a remotely controlled Y junction at Gulgong.
- Replacement of all timber sleepers with concrete sleepers and rerail with a minimum of 60kg/m rail.
- Selective straightening of alignments and ease gradients along Mudgee-Kandos.
- Building an overbridge at the Sydney Road railway crossing.
- Provision of boom gates with flashing lights and bells at Fairy Dale Lane crossing.
- Provision of boom gates at the Duoro Street railway crossing.

---

7 Water, sewerage, stormwater and waste

Summary of baseline
Drinking water quality and water availability is generally of an acceptable standard for current demand. There are some capacity constraints in the distribution systems for both the water and sewer, for example pumping stations and trunk mains. There are also some problems being encountered with population growth exceeding capacity of staged Water Treatment Plant upgrades. Stormwater studies undertaken in the region indicate that the additional stormwater management works need to be undertaken to protect some areas from inundation during the 100 year ARI event. The existing landfill cell at the Mudgee Waste Depot will reach capacity within 2-3 years. Plans are currently in place to open a new landfill site with a 50-60 year lifespan.

7.1 Introduction

Methodology
This section examines water, sewerage, stormwater and waste in the region. It analyses current provision and potential future need. It then discusses the water, sewerage, stormwater and waste issues the region is currently, or likely to, face.

The methodology for data collection is explained in Section 2. As stated in the methodology, the analyses in this section has been based on two forms of evidence, namely:

Published data
To assess the impact on water, wastewater, stormwater and waste services, a number of Council management plans were reviewed. This included strategic business plans for water and wastewater, the interim strategic plan for waste and floodplain risk management plans. These documents illustrated the current and future servicing plans for the region and the likely cost of these.

Consultation findings
Once the information collected through published data had been analysed and initial conclusions on potential impacts could be drawn, it was then ‘ground-truthed’ with the relevant stakeholders at Mid-Western Regional Council for this service area. This ensured we established a reasonable baseline and impact assessment.
### 7.2 Water supply

#### Summary of impacts
There are no absolute capacity constraints for provision of water supply that would limit development options for Mudgee. However, some areas will be more costly and difficult to service than others and the efficiency of utilisation of existing infrastructure investment is likely to become an increasingly important issue in assessing subdivision proposals within the existing urban release areas.

Also, given the extent of mining and the intensity of water usage involved in mining there is likely to be impacts on the groundwater system, for example at peak demand Wilpinjong mine alone will use 6.2ML\(^{109}\) alone. A 25 per cent increase in population in the region by 2030 would require new water supply infrastructure.

#### Current situation
Mid-Western Regional Council operates three separate water supply schemes serving Mudgee, Gulgong and Rylstone. The Rylstone scheme also serves the town of Kandos and the villages of Charbon and Clandulla. There are no plans to provide a water supply to any other villages. Across Council, an average of 2.8 GL of water is treated and supplied annually via more than 266 km of mains.

Council has three water treatment plants providing reticulated water supplies at Rylstone/Kandos, Mudgee and Gulgong. Water for Mudgee and Gulgong is sourced from the Cudgegong River downstream of the 368 GL Windamere Dam. Water for Rylstone and Kandos is sourced from the 3.04 GL Rylstone Dam, located in the upper reaches of the Cudgegong River, and is pumped to a water treatment plant at Rylstone. The dams can be seen in Figure 7 and the infrastructure can be seen in Figure 8.

---

\(^{109}\) Wilpinjong Coal Project, Environmental Impact Statement, Executive Summary
Figure 7  Regional water infrastructure
Figure 8  Local water and wastewater infrastructure
**Mudgee scheme**

The Mudgee water supply scheme serves a population of approximately 9,800 people. The last major augmentation of Mudgee’s water supply system occurred in 2006 with the construction of a new water treatment plant adjacent to Burrundulla Road. Water is drawn from the Cudgegong River in a regulated reach in the river flats. Council has a surface water license and an annual allocation of 2,000 ML p.a. The present usage is 1,400–2,000 ML p.a. Council also has a number of licensed bores totaling more than 3,000 ML p.a.

**Gulgong scheme**

Gulgong’s water supply system is supplied from the regulated reach of the Cudgegong River with a new water treatment plant completed and commissioned in 2006. Council has a surface water license and an annual allocation of 600 ML p.a. The present usage is 250-350 ML p.a. Council also has a number of licensed bores totaling 600 ML p.a.

**Rylstone and Kandos system**

Water is pumped from the Rylstone Dam to a 4 ML per day water treatment plant. Treated water is transferred to reservoirs near the Rylstone hospital where it is reticulated by gravity to Rylstone consumers. Water is pumped from Rylstone to Kandos, from Kandos to Charbon and from Charbon to Clandulla. The current connected population is approximately 2200 and the assessed capacity is approximately 2240. The water treatment plant was designed to accommodate a capacity upgrade to 5 ML per day, which would increase the service population to approximately 2,900. A new water treatment facility would be required for populations greater than 3,000. Whether this treatment plant is necessary will depend on how land is zoned and released in the area.

**Water supply parameters for the region**

Levels of service relating to supply and availability within urban areas are generally good, with key parameters outlined in Table 22. Council have identified the need to reduce the number of service interruptions arising from main breaks – that are occurring as a result of the ageing reticulation mains.

<table>
<thead>
<tr>
<th>Table 22</th>
<th>Compliance with accepted levels of service – water supply (2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameter</strong></td>
<td><strong>Level of service</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Current (2008)</strong></td>
</tr>
<tr>
<td><strong>Consumption levels</strong></td>
<td></td>
</tr>
<tr>
<td>Domestic – maximum daily demand</td>
<td>3,000</td>
</tr>
<tr>
<td>Domestic – annual average demand</td>
<td>370</td>
</tr>
<tr>
<td>Urban – average annual consumption</td>
<td>Mudgee – 1,800</td>
</tr>
<tr>
<td></td>
<td>Gulgong – 500</td>
</tr>
<tr>
<td></td>
<td>Rylstone – 500</td>
</tr>
<tr>
<td>Urban – maximum daily demand</td>
<td>Mudgee – 11</td>
</tr>
<tr>
<td></td>
<td>Gulgong – 4</td>
</tr>
<tr>
<td></td>
<td>Rylstone – 3</td>
</tr>
<tr>
<td><strong>Fire fighting</strong></td>
<td></td>
</tr>
<tr>
<td>Fire fighting servicing area</td>
<td>100%</td>
</tr>
</tbody>
</table>
### Future direct and indirect impacts

**Mudgee Scheme**

There are no absolute capacity constraints for provision of water supply that would limit development options for Mudgee. However, some areas will be more costly and difficult to service than others and the efficiency of utilisation of existing infrastructure investment is likely to become an increasingly important issue in assessing subdivision proposals within the existing urban release areas.

In the short term, growth can be catered for with existing infrastructure. However, a 25 per cent increase in the population will require an expansion of the Mudgee Water Supply Treatment Plant\(^\text{110}\). This will include new reservoirs (2), extension of underground pipe reticulation for main lines and pumping stations (5). Based on the population scenario estimate a 25 per cent increase in population would be reached in 2016.

**Table 23**  Council cost estimates for Mudgee water supply

<table>
<thead>
<tr>
<th>Works required</th>
<th>Estimated costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension of treatment plant</td>
<td>$7M</td>
</tr>
<tr>
<td>Two reservoirs</td>
<td>$3.8M</td>
</tr>
<tr>
<td>5 pumping stations</td>
<td>$750,000</td>
</tr>
<tr>
<td>Extension of underground reticulation</td>
<td>$300,000 per km</td>
</tr>
</tbody>
</table>

**Gulgong scheme**

There are no absolute capacity constraints in either the short or the long term for provision of water supply that would limit development options for Gulgong, although there are localized capacity constraints that will influence the staging of development.

However, the Gulgong Water Treatment system has reached capacity and requires upgrading. Whilst Council have already indicated that they are planning a 20 per cent upgrade of the existing plant, the current Gulgong Water Supply treatment system is likely to require additional works. This will include new reservoirs (2), extension of underground pipe reticulation for main lines and pumping stations (5).

---

\(^\text{110}\) Council correspondence, 21 February 2012.
Table 24 Council cost estimates for Gulgong water supply

<table>
<thead>
<tr>
<th>Works required</th>
<th>Estimated costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension of treatment plant (20% upgrade)</td>
<td>$3.5m</td>
</tr>
<tr>
<td>Two reservoirs</td>
<td>$3m</td>
</tr>
<tr>
<td>4 pumping stations</td>
<td>$600,000</td>
</tr>
<tr>
<td>Extension of underground reticulation</td>
<td>$300,000 per km</td>
</tr>
</tbody>
</table>

Water usage

Whilst there are no capacity constraints for the provision of water supply to residents, there is likely to be an impact from mining on the groundwater table, as a result of extraction and interception during mining activities. The scale of this impact would be dependant upon each mine’s ability to reuse extracted water and treat and recharge the aquifer as needed. This is potentially significant as water demand for mines is large. For example, it is estimated that Wilpinjong mine would require 6.2 ML per day during peak water demand.

7.3 Sewerage infrastructure

Summary of projected impacts
The key issue with sewer infrastructure is capacity constraints, both within the reticulation system and at the treatment plants. Without upgrades the infrastructure will likely come under increasing pressure and result in increased maintenance requirements due to cracking and increased overflow events. If upgrades are insufficient, it is likely the system’s capacity, which is estimated to be 23,600 Equivalent Population (EP), will be exceeded by approximately 2016, based on the population predictions.

Current situation
Council operates four sewage treatment plants (STPs) in Gulgong, Kandos, Mudgee and Rylstone treating effluent from approximately 13,100 residents. The system comprises a 174 km reticulation network across 1860 ha taking sewage from residents and businesses. It includes 12 pumping stations and 10 km of rising mains. The four treatment systems have a total capacity of 17,600 EP. This infrastructure is shown in Figure 8.

Mudgee Scheme
Mudgee’s reticulated sewerage comprises a gravity collection system with five sewage-pumping stations. The trickling filter based STP capacity is 10,000 EP. Council is in the process of upgrading the Mudgee STP with continuous extended aeration and biological nutrient removal processes (IDEA process) in order to prevent nutrient rich treated effluent being discharged to the Cudgegong River. The new STP is designed to be a 16,000 EP plant, servicing a residential population of 14,000 and a non-residential equivalent of 2,000 EP.

---

711 Wilpinjong Coal Project, Environmental Impact Statement, Executive Summary
**Gulgong Scheme**

The gravity sewage collection system of Gulgong comprises three sewage pumping stations with continuous extended aeration and biological nutrient removal processes (IDEA plant) adopted for treatment of collected town sewage. Treated effluent from the Gulgong treatment facility is fully reused for irrigation of lucerne and other agricultural crops around the site.

The current Gulgong Sewer Treatment plant will be adequate to cater for expected growth up to 25 per cent.

**Rylstone and Kandos schemes**

**Rylstone scheme**

The Rylstone scheme comprises gravity sewage collection system with two sewage pumping stations. The STP comprises primary clarifier, secondary trickling filter and tertiary lagoon treatment before discharging to the Cudgegong River.

**Kandos scheme**

Kandos town has a gravity sewage collection system with two sewage pumping stations. The STP comprises primary clarifier, secondary trickling filter and tertiary lagoon treatment before discharging to the Cudgegong River.

**New combined scheme**

Council is well under way with its planning for a 4,000 EP combined new sewer scheme for Kandos, Rylstone, Charbon and Clandulla. Capital works on this project are expected to commence in 2014.

**Summary of sewerage assets**

Council’s key sewerage assets are summarised in Table 25, qualitatively indicating the condition of each asset.

**Table 25  Condition of Council’s major sewerage assets**

<table>
<thead>
<tr>
<th>Asset</th>
<th>No./capacity/length</th>
<th>Year of construction</th>
<th>Condition (1 – poor; 10 – perfect)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pump stations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mudgee</td>
<td>5</td>
<td>1971-2004</td>
<td>6</td>
</tr>
<tr>
<td>Gulgong</td>
<td>3</td>
<td>1965-69</td>
<td>7</td>
</tr>
<tr>
<td>Rylstone</td>
<td>2</td>
<td>1971</td>
<td>8</td>
</tr>
<tr>
<td>Kandos</td>
<td>2</td>
<td>1972</td>
<td>7</td>
</tr>
<tr>
<td><strong>Gravity and rising mains</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mudgee</td>
<td>123 km</td>
<td>1930-2008</td>
<td>6</td>
</tr>
<tr>
<td>Gulgong</td>
<td>31 km</td>
<td>1970-2008</td>
<td>6</td>
</tr>
<tr>
<td>Rylstone</td>
<td>11 km</td>
<td>1971-2005</td>
<td>5</td>
</tr>
<tr>
<td>Kandos</td>
<td>28 km</td>
<td>1971-2007</td>
<td>5</td>
</tr>
</tbody>
</table>

---

### Future direct and indirect impacts

**Capacity constraints**

The key issue with sewer infrastructure is capacity constraints, both within the reticulation system and at the treatment plants. Without upgrades the infrastructure will likely come under increasing pressure and result in increased maintenance requirements due to cracking and increased overflow events.

**Mudgee Scheme**

The new Mudgee Sewer Treatment plant is under construction and will be adequate to cater for expected growth in the town to a population of approximately 16,000 people. The value of construction of the new plant is $25 million. However, pumping stations and reticulation will be required to accommodate expanded residential areas.

**Table 26**

<table>
<thead>
<tr>
<th>Work required</th>
<th>Estimated costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumping stations and reticulation</td>
<td>$2m</td>
</tr>
</tbody>
</table>

**Rylstone/Kandos/Clandulla/Charbon**

The sewer schemes in the above towns and villages are all at capacity. They are antiquated and do not meet environmental requirements. Council has a program to renew the sewer scheme over the next 5 years at a cost of $11.5 million. It is expected that Council will need to bring this work forward by at least 3 years to cater for expected population growth as a result of mining. There is a current shortage of funding to complete works. An interest free loan may be an appropriate solution to fast track necessary work.

**Future growth**

Council has a capital works plan that caters for high growth. However, given the pace of this growth the plan may need to be revised and capital works brought forward to cater for the potential additional population.

---

113 Mudgee’s population was 8,249 in 2006.
114 The STP has been designed to accommodate a capacity increase of 50% (i.e. to 21,000 residential and 3000 non-residential).
115 Council believe that the STP can accommodate 4,100 EP.
116 Gulgong’s population was 1,907 in 2006.
117 Rylstone’s population was 615 in 2006.
118 Kandos’ population was 1,306 in 2006.
7.4 Stormwater infrastructure

Summary of projected impacts
Some existing lots, as well as some of the recently rezoned areas, are subject to local stormwater inundation. To minimise the potential flood risk, investment in catchment wide stormwater management is required. The flood risk is important, as it not only impacts existing housing, but also potential developable areas. A full, recent assessment for the region has not been made by Council so accurate projections of impact could not be made.

Current situation
The urban drainage network is managed by MWRC and carries storm water to creeks and rivers adjacent to the region's townships. The waterways in Mudgee are managed by a flood study undertaken in 1998 and reviewed in 2008. A Gulgong study was completed in 2009. A stormwater management plan was also developed for Rylstone in 2001. A flood study is currently being developed for the Rylstone-Kandos area.

Mudgee
Seven creeks on the southern bank of the Cudgegong River drain the urban areas of Mudgee and having a total catchment area of about 20 km². The creek channels in general have low hydraulic capacity and would be surcharged by comparatively minor storms of around the 5 year ARI. Four high priority drainage improvements on Catchments A and B (as defined in the Mudgee Local Creeks Floodplain Risk Management Study And Plan, 2008) have been identified with an indicative cost of $795,000 which would mitigate flooding and associated damages in residential areas of those catchments for floods up to the 100 year ARI magnitude. The total potential structural improvements to Mudgee Creeks amounts to $3.66 million. This however does not consider increased runoff resulting from future development within the town (both within existing areas and future release areas).

Gulgong
In general the Gulgong system is capable of controlling minor storm events up to the 5-year ARI magnitude, in conformance with accepted engineering practice. During major storm events, which surcharge the capacity of the piped drainage system, or in areas where there is no existing, piped drainage, several of the streets, which are aligned with the direction of flow, act as overland flow paths. Street and gutter flow in the street systems of Catchments X and Y (as defined in the Gulgong Stormwater Drainage Study, 2009) may lead to unsafe situations along some roads during major storms. At those locations new piped drains have been sized which have a capacity sufficient to convey 20 years ARI flows. The purpose of the improvements is to reduce overland flows in the streets in the event of a 100-year ARI storm.

It is not feasible to implement large community owned retarding basins to reduce downstream flood peaks to the capacity of the existing system due to the absence of suitable sites. Consequently, stormwater management in Gulgong will need to rely on augmentation of the existing pipes stormwater system in the streets, in conjunction with drainage swales to convey overland flows through several residential allotments in Catchment X. The co-operation of the owners will be required to enable construction of the swales to proceed, and easements will need to be created for the maintenance of these flow paths.
Rylstone/Kandos

In both Rylstone and Kandos, most of the stormwater is carried by overland flow and street drainage. Both towns consist of a basic North-South, East-West grid system of roads. In Rylstone, a ridge running north-south through the town results in runoff either running in an easterly direction under the railway line, or west and into the Cudgegong River.

In Kandos, about 50 per cent of the town on the eastern side of the railway line drains into one main drainage line. This line is piped for about 65 per cent of its length and then discharges through an open channel to the railway line. Discharge from non-urban areas upstream of the town enters the town drainage system from the east and southeast.

The drainage of urban stormwater into the Cudgegong River has the potential to negatively impact upon infrastructure downstream of the urban areas, such as Windamere Dam. The dam has been subject to algal blooms and degraded water quality, partly as a result of nutrient enrichment from urban stormwater. A 2001 study was undertaken for Rylstone, and a flood study is currently being undertaken for the Rylstone-Kandos area, which will result in recommendations relating to work required in these two towns.

Future direct and indirect impacts

Flood risk

It is noted that substantial investment in stormwater management may be required to ensure water quality can be maintained and flooding risk minimised especially in the areas to the southwest of Mudgee, where the majority of growth is predicted to occur. The flood risk is important, as it not only impacts existing housing, but also potential developable areas. Currently MWRC have identified a large portion of land to the south and southwest of the existing township that could be subject to flooding, due to the low level of hydraulic containment within the creek system. It has been estimated that the creeks would surcharge water during any storm greater than the 5 year ARI event. This would significantly limit the areas development potential. Without adequate stormwater management in these areas, the amount of developable land will be decreased due to both flooding and access being cut-off. The total projected capital investment needed to manage these issues is $3.66M. These works are not fully accounted for in Council’s forward budgets.

7.5 Waste disposal and recycling

Summary of projected impacts
The existing landfill cell at the Mudgee Waste Depot will reach capacity within 2-3 years. Current Council waste services, such as kerb side pick up are currently at capacity and would require further investment if the population was to increase significantly.

---

Mid-Western Regional Council, Mudgee Local Creeks Floodplain Risk Management Study and Plan, Volume 1 (March 2008)
Current situation

Council's key waste facilities are outlined in Table 27. Domestic and recyclable waste is collected and transported to the Mudgee Waste Facility for landfilling and sorting/processing for reuse where possible. Charbon and Clandulla also have kerbside domestic waste collection services. The rural area and remaining villages are serviced with access to Waste Transfer Stations.

Table 27  Overview of Council waste and recycling assets

<table>
<thead>
<tr>
<th>Asset</th>
<th>Mudgee</th>
<th>Gulgong</th>
<th>Kandos</th>
<th>Rylstone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerbside waste collection</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Kerbside recycling collection</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste facility/landfill</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste facility for building and demolition waste</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling facility</td>
<td></td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste transfer station</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

Future direct and indirect impacts

Capacity of landfill

The existing landfill cell at the Mudgee Waste Depot will reach capacity within 2-3 years. Council is preparing a Landfill Environmental Management Plan, which will incorporate a staged landfilling plan and staged landfill closure and rehabilitation plan. Its detailed costing of various landfill stages will enable a comprehensive financial plan to be developed, as such no detailed costings can be provided. A detailed design has been undertaken of a new landfill cell will ensure the operation of the facility for the next 50-60 years. While a detailed budget for the new landfill was unavailable, a recent report estimates the cost of landfill disposal in rural Australia is approximately $25-50 per tonne.

Capacity of kerbside collection services

Council’s kerbside waste and recycling collection service has no further capacity for growth within the existing fleet. Any considerable increase in the number of dwellings that need to be serviced will likely require purchasing a new garbage truck and hiring additional employees to ensure the reliability of waste and recycling collection services.

Location of transfer stations

Council’s rural waste transfer stations are generally located at sites of decommissioned rural landfills, many of which are yet to be rehabilitated. Should these sites require rehabilitation in the future, this could potentially be a significant cost to Council.

---

121 The full cost of landfill disposal in Australia, DEWHA, 2009
8 Open space and recreation

Summary of baseline
In 2005 a SWOT analysis revealed that MWRC’s playing fields are of a high standard, however associated facilities are at a lesser standard (particularly amenities and change sheds). There is a general lack of shade as well as few walking/running/cycling tracks. Much of the playground equipment across the entire region requires upgrade to meet Australian Standards. Since then, a new $14 million Glen Willow Regional Sporting Complex has opened and Council have undertaken renewals of toilet blocks at a cost of $120,000 per annum.

8.1 Introduction

Methodology
This section considers the open space and recreation requirements in the region. It examines current provision and potential future need. It then discusses the open space issues the region is currently, or likely to, face.

The methodology for data collection is explained in Section 2. As stated in the methodology, the analyses in this section has been based on three forms of evidence, namely:

Published data
The provision of parks and open space was assessed by reviewing a number of Government documents including, Council’s recreational and open space strategic plan and the Department of Planning’s recreation and open space planning guidelines for local government. Standard provision ratios, provided by Council, were used to assess future needs and shortfalls.

Consultation findings
Once the information collected through published data had been analysed and initial conclusions on potential impacts could be drawn, it was then ‘ground-truthed’ with the relevant stakeholders at Mid-Western Regional Council for this issue. This ensured we established a reasonable baseline and impact assessment.

---

Feedback on Baseline Report, Catherine Van Laeren
8.2 Open space

Summary of projected impacts
There is potentially a shortfall in the provision of open space, given the likely increase in population. Even if the open space could be provided, there is also has an associated increase in the cost of maintenance that needs to be considered. Furthermore, Council have identified a need to increase the amount of youth facilities in the area.

Current situation
Council maintains 55 parks, gardens and oval/playing field areas, 64 road and other reserves, and 11 cemeteries, equating to 6,164m² of garden beds and 245.39 ha of turfed or general mowing area.

The Mudgee Recreational and Cultural Strategy (2003/04) identified the following community requirements and trends:

- Declining levels of participation in traditional organised sports (particularly for teenagers and adults).
- General increase in interest in physical fitness, healthy living and undertaking recreation in natural areas.
- Increasing demand for better facilities and increasing commercialisation of sport.
- Increasing demand for facilities and activities catering for older people.
- A trend away from direct government provision of facilities.

Popular activities that were not well provided for (based on number of facilities, supporting facilities/amenities and/or organised programs) included netball, soccer, touch football, and basketball. It is noted that this plan is now out of date as there have been employment and demographic changes in the period since plan was generated in 2003. However, given the population scenario predicts the population, overall, reducing in age, it is likely that many of these demands would remain.

The MWRC Social Plan (2006) identified the need for additional play equipment for young people in outlying areas. The majority of existing playground equipment throughout the region was out of date and required replacement. This has meant an increased need for capital investment in the area. However, with a further increase in population there will be a greater need for open space in the region. The cost of this additional space may be in the order of $2.9M by 2021. Further detail can be found in Table 28.

It is important to note that in February 2012 Council opened the Glen Willow Regional Sports Facility. This facility includes a 1,000 seat stadium and fields/courts to cater for a large number of sports including rugby league, rugby union, soccer, netball.

Future Direct and Indirect impacts

Capital works
Contributions for local and district parks are determined based on the level of existing provision within the region. A levy is proposed for local parks in Mudgee and Gulgong (the provision of local open space in the remainder of the region is considered adequate). Council will embellish local parks, district parks and sportsgrounds according to the following standards:

- Local parks – 13m² per person.
• District parks and sportgrounds – 49m² per person.

Using the above allocations, the additional open space required (and associated cost) for the projected increase for residential subdivision to 2021 is shown in Table 28. However it is acknowledged that an as needs approach is generally adopted as outlined in Department of Planning and Infrastructure guide for Recreation and Open Space Planning Guidelines for Local Government (2010).

Table 28 Additional park space requirements in 2021

<table>
<thead>
<tr>
<th>Facility</th>
<th>Original Projected population</th>
<th>Area required (m²)</th>
<th>Cost</th>
<th>Revised projected population</th>
<th>Revised area required (m²)</th>
<th>Cost per m²</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total MWRC area</td>
<td>5,097</td>
<td></td>
<td></td>
<td>8047</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mudgee</td>
<td>970</td>
<td>12,610</td>
<td>$556,100</td>
<td>1455</td>
<td>18,915</td>
<td>$44.31 123</td>
<td>~$838,123</td>
</tr>
<tr>
<td>Gulgong</td>
<td>114</td>
<td>1,482</td>
<td>$63,400</td>
<td>171</td>
<td>2,223</td>
<td>$44.31 123</td>
<td>~$98,500</td>
</tr>
<tr>
<td>District parks (region wide)</td>
<td>1,690</td>
<td>82,810</td>
<td>$1,314,200</td>
<td>2,535</td>
<td>124,215</td>
<td>$15.87 123</td>
<td>~$1,971,290</td>
</tr>
<tr>
<td>Total</td>
<td>96,902</td>
<td>$1,933,700</td>
<td>145,353</td>
<td>$2,907,913</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specific facilities

Council note that the Mid-Western Region does not have adequate youth facilities such as movie theatres and skate parks. Council is currently reviewing its strategic plan for the development of skate parks because with a growing youth population. It has suggested that two new skate parks are required, with one in Mudgee and one in Gulgong.

Council also state that one of the programs it would like to promote into the future is the development of cycleways/bike paths. However, this is considered to be non-essential infrastructure or a “nice to have” facility. As such, Council’s main focus at this stage is on the core infrastructure and/or the upgrading of existing facilities depending on other priorities, such as neighbourhood parks.

Table 29 Mid-Western Regional Council – cost estimate for skate parks

<table>
<thead>
<tr>
<th>Work required</th>
<th>Estimated cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skate park (2)</td>
<td>$350,000</td>
</tr>
</tbody>
</table>

---

123 Section 94 Development Contributions Plan, 2005-2021, Amendment No 1, Mid-Western Regional Council
124 Based on population prediction distributed by Manidis Roberts
125 Calculated by multiplying revised area (in square metres) required by the cost per square metre
126 Since 2005
127 Uses standard local parks provision of 13m² per person
128 Population in each area is based on a conservative proportional increase in total population (50%).
129 Uses standard district parks provision of 49m² per person
9 Social infrastructure and services

Summary of baseline
Community health is a significant issue for the region. In terms of private health care, there are difficulties in attracting and retaining General Practitioners (GPs) in the region, as with other rural areas. Further, the number of GPs in the region nearing retirement age confounds this issue. In our research we received reports of long waiting periods to see health professionals, as well as concerns over the capacity of Mudgee hospital and the Health One Facility in Gulgong.

In terms of community services, there are pressures on the provision of services in the region. Such pressures include waiting lists for accommodation, case management and therapy services. Housing affordability has become an issue for vulnerable persons including those with disability or from a lower socio-economic background.

9.1 Introduction

Methodology
This section considers the social infrastructure and services requirements in the region. It examines current provision and potential future need. It then discusses the social infrastructure and services issues the region is currently – or likely to – face.

The methodology for data collection is explained in Section 2. As stated in the methodology, the analyses in this section has been based on three forms of evidence, namely:

Published data
To assess the impact on social infrastructure and services, various publicly available data was reviewed, including hospital admission rates, school enrolment data and pre-school waiting lists. This information helped generate a more accurate picture of what the region is currently experiencing and what it is likely to experience.

Case studies
When the information was considered inadequate, it was supplemented with additional case studies. For example, looking at regions that are considered to have adequate health provision or comparisons of provision with national averages.

Consultation findings
Once the information collected through published data had been analysed and initial conclusions on potential impacts could be drawn, it was then ‘ground-truthed’ with relevant stakeholders, government agencies and experts, including Mid-Western Regional Council, local schools, local health service providers, TAFE Western, NSW Rural Fire Service, NSW Education and Communities and NSW Aged Disability and Home Care. This ensured we established a reasonable baseline and impact assessment.
9.2 Rural Fire Service

Summary of projected impacts

Existing mining projects are already having an impact on the availability of volunteers. An increasing number of volunteers are employed in the mining industry and at times their ability to respond to an emergency incident is restricted by the shifts they work, as well as the remote locations of the mines in which they work. This is impacting on the availability of volunteers. Also, land bought as part of a mining lease need to have better fire management practices applied to ensure bushfire risk is minimised.

Current situation

The NSW Rural Fire Service was established in 1997 by an act of Parliament as the successor to the first bush fire brigade. The NSW Rural Fire Service comprises over 2,100 volunteer rural fire brigades with a total membership of just over 70,000. In addition, salaried staff are employed to manage the day to day operations of the Service at Headquarters, regional offices and district fire control centres.

The region is part of the Cudgegong Rural Fire District NSW Rural Fire Service. The number of Rural Fire Service volunteers currently registered in the Cudgegong Rural Fire District (excluding junior members) is 1245. This number was extracted from the NSW Rural Fire Service database, Resource Management System – Firezone on 3 November 2011. This number includes both active and non-active volunteers, that is, both fire fighting and non-fire fighting roles.

Each fire brigade has a team that includes a captain, deputy captain, treasurer and training officer, and each operates under its own constitution. At the Cudgegong Rural Fire District office there are five fulltime staff that coordinate the fire brigades activities and delivers training to volunteers.

Future Direct and Indirect impacts

Availability of volunteers

An increase in the population in the region will result in an increase in the number of volunteers willing and able to join the Cudgegong District Rural Fire Service. However, existing mining projects are already having an impact on the availability of volunteers. An increasing number of volunteers are employed in the mining industry and at times their ability to respond to an emergency incident is restricted by the shifts they work, as well as the remote locations of the mines in which they work. This is impacting on the availability of volunteers.

According to interviewees for this project one brigade has been disbanded due to volunteers moving after a mining company bought out a large area of land. Some of these volunteers joined other brigades in the region, while others left the area altogether. Currently, a substantial number of properties and homes within the two other brigade areas are being purchased by mining companies which is resulting in the relocation and planned relocation of brigade members.

--

130 Via Jayne Leary, Cudgegong Rural Fire District NSW Rural Fire Service on 3 November 2011.
131 J. Leary (Cudgegong Rural Fire District NSW Rural Fire Service), Pers. Comm. 1 November 2011.
132 Ibid.
133 Ibid.
Fire management on mining land

The Rural Fire Service is also being impacted by mining companies purchasing land from small private land owners. Often these land owners would manage the land to prevent fires, for example through slashing and grazing. A lack of management of these parcels of land by the mining companies can lead to fire hazards. \(^{134}\)

9.3 Community health and hospitals

Summary of projected impacts
The increase in population is likely to increase the use of health facilities. NSW Health modelling suggests that there would be adequate capacity in the existing system. However, Council disagree and consider upgrades to health facilities are necessary.

Current situation

Table 30 Statistics in relation to hospitals in the Mid-Western Region \(^{135}\)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Performance benchmark</th>
<th>Mudgee Hospital</th>
<th>Rylstone Multi Purpose Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of same day admissions (2010)</td>
<td>1,780</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Number of overnight admissions (2010)</td>
<td>1,613</td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>Number of beds (2010)</td>
<td>50-100</td>
<td>&lt; 50</td>
<td></td>
</tr>
<tr>
<td>Budget (2010)</td>
<td>$12.18 million</td>
<td>$2.3 million</td>
<td></td>
</tr>
<tr>
<td>Number of babies born (12 months to 30 June 2011)</td>
<td>223</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastroenterology, General Medicine, General Surgery, Infectious Diseases, Kidney Medicine, Maternity, Neurology, Ophthalmology</td>
<td></td>
<td>Multi-purpose Service (MPS) providing integrated acute health, nursing homes, hostels, community health and aged care services.</td>
<td></td>
</tr>
</tbody>
</table>

Performance

<table>
<thead>
<tr>
<th>Positive patient rating</th>
<th>N/A</th>
<th>88%</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloodstream infections</td>
<td>&lt;2.0 per 10,000 bed days</td>
<td>0 in 10,000 bed days</td>
<td>0 in 10,000 bed days</td>
</tr>
</tbody>
</table>

Median waiting times for surgery (compared to national averages)

<table>
<thead>
<tr>
<th>Ear, nose and throat</th>
<th>64 days</th>
<th>176 days</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye</td>
<td>71 days</td>
<td>329 days</td>
<td>N/A</td>
</tr>
<tr>
<td>General</td>
<td>32 days</td>
<td>63 days</td>
<td>N/A</td>
</tr>
<tr>
<td>Gynaecological</td>
<td>30 days</td>
<td>37 days</td>
<td>N/A</td>
</tr>
</tbody>
</table>

\(^{134}\) Ibid.

Community health continues to be a significant issue for the region since identified as an issue in a feasibility study of medical services in the region completed in 2006. The Mid-Western Region draft Towards 2030 Community Plan identifies health as a key concern of the community – coming second only to roads.

Through consultation with both private and public sector health organisations, and research into acceptable standards of provision, this section highlights constraints currently facing community health and hospitals in the region. The assessment of potential health service needs has been undertaken by NSW Health (population and demographic details were supplied) using their aIM-modeling and as such cannot be verified or tested by our team.

Current services in Mid-Western Region

There are three public health service providers in the Mid-Western Region: Mudgee Health Service, Rylstone Multipurpose Service (MPS) and Gulgong Health Service.

Mudgee Heath Service, including Mudgee Hospital, is a District Health Service. District Health Services provide emergency services, acute medical and surgical services, maternity services, subacute services including palliative care, and rehabilitation, primary and community health services.

There is currently one hospital in the region – Mudgee Hospital. Gulgong Hospital closed in 2010 due to the presence of asbestos in the building, and at the time of closing had approximately 22 standard beds, 12 aged-care beds, six acute-care beds, and four emergency beds. The closing of Gulgong Hospital received significant political and media attention, and approximately 1,500 residents protested against its closing. The State Government is developing a $3 million multi-purpose health service called the Health One facility, which is essentially two projects. The HealthOne Service focuses on primary and preventative health and is under construction. The second is a Multi-Purpose Service (ie. acute hospital and high aged care), which is only at the DA stage. Health One will include emergency services and two beds, which is below the capacity of the previous facility.

While the Health One facility is recognised as a step in the right direction, MWRC views this as a minimum requirement for restoring appropriate medical facilities in the Gulgong area, and are discussing the provision of more hospital beds with the NSW Government. The Health One facility is the closest hospital to the mining project sites.

Private health care

There are also a number of private medical practices in the region. Consultation with a sample of private practices indicates that there are waiting lists to see doctors (up to a month in some cases) and generally the practices are at full capacity. During consultation it was noted that some patients are taking medical appointments in other cities such as Sydney and Dubbo due to the long waiting lists at local practices and hospitals. Consultations also suggested that these long waiting lists are having impacts on individuals with mental illness, or drug and alcohol abuse issues, whereby they may cease seeking help.

---

136 MWRC (date unknown), Submission to the Standing Committee on State Development – Inquiry into Economic and Social Development in Central Western NSW.
138 W. Bennett (General Manager, Mid-Western Regional Council), Pers. Comm. 4 November 2011.
139 S. Stait (Manager Case Work, Mudgee Community Services Centre), Pers. Comm. 2 November 2011.
140 Ibid.
Family and community services

Department of Ageing Disability and Home Care services

The Department of Ageing, Disability and Home Care (ADHC) provides services to persons with disability including supported accommodation, early intervention, therapy, day programs, and home care services. These services are provided on an individual basis – based on an assessment of each person’s specific needs. While there are parameters for services such as accommodation support, day programs and early intervention activities, with these parameters based on funding levels and/or hours of service. ADHC does not provide funding strictly on a geographic or population basis.

ADHC employs both permanent and casual staff. In the home care service, ADHC employs casual staff if service requirements exceed the capacity of the permanent staff to meet the demand in a region. Essentially ADHC seeks to meet service needs as they arise, and attempts to address shortfalls through allocation of casual staff where needed, or through recruitment drives[141].

ADHC expects to meet anticipated future demand in the Mid-Western Region without a shortfall – taking into account anticipated growth in some areas due to mining and other ventures[142]. The Stronger Together 2011 – 2016 Program will provide opportunities – including through increased funding to relevant NGOs – to meet increasing demands in the region[143].

ADHC does not have specific numbers for persons with disability in the Mid-Western region, but does work with the ABS population and demographics data. It is also acknowledged that some people do not register a service need with ADHC.

Accommodation places for persons over 65 years are generally funded privately and/or by the Commonwealth Government. ADHC does provide home care services to persons of all ages with a large percentage being over 65 years. According to ADHC, there is no waiting list at this time for these home care services in the region[144].

Perspectives of other disability service providers

Other disability service providers attending the Mudgee Disability/HACC Service Providers Network meeting have reported an increase in demand, some of which has come from mining families moving into the region. For example in 2011, Mudgee & District Host Family Respite Care Service had enquiries from two mining families who moved into the area seeking recreational and employment opportunities for young adult members with disability[145].

Two interviewees[146] in the consultation process for this report from two separate organisations discussed pressures on the provision of services in the region for persons with disability, including some waiting lists for accommodation, case management and therapy services.

Families moving from large metropolitan areas can have high expectations of the level of services available and these may not be met in smaller, regional towns like Mudgee or Gulgong. This unmet expectations have led to some families moving away (or planning to) from the region[147].

[141] Phone and email correspondence from Scott Griffiths, ADHC Western Region Director, 19 December 2011.
[142] Ibid.
[143] Ibid.
[144] Ibid.
[145] Phone and email correspondence with Judy Blackman (Coordinator Mudgee & District Host Family Respite Care), 4 January 2012.
[146] These individuals have preferred to remain anonymous.
[147] Ibid.
Housing affordability impacts on persons with disability

An issue identified by ADHC and other disability service providers for the region are the impacts of rising property rental prices in some communities.

ADHC purchases land, builds houses and undertakes housing refurbishments to meet the needs of individuals as required. For example, ADHC has provided significant funding for four homes in Mudgee to provide 24 hour supported accommodation for people requiring a high level of support. According to ADHC, an increase in property prices would not necessarily affect the ability of ADHC to purchase (or be able to afford) property to provide such supported accommodation.

Mudgee Community Services Centre

The Mudgee Community Services Centre (part of the Department of Family and Community Services) services disadvantaged individuals, families and communities in the study area. It also funds services for non-government organisations to provide similar services. The Centre currently does not have sufficient human resources to service the community, for example it cannot respond to the number of reports regarding children at risk.

Housing availability – both in terms of affordability and housing stock – is also an issue for disadvantaged individuals and families. Housing issues are discussed in Section 5.

The Interagency Network is a forum through which a number of organisations operating in the social services area can exchange information and ideas through regular meetings.

Future Direct and Indirect Impacts

A preliminary assessment of current standards and rations was undertaken. The findings are presented in Table 31.

148 Phone and email correspondence from Scott Griffiths, ADHC Western Region Director, 19 December 2011.
149 Phone and email correspondence with Judy Blackman (Coordinator Mudgee & District Host Family Respite Care), 4 January 2012.
150 S. Stait (Manager Case Work, Mudgee Community Services Centre), Pers. Comm. 2 November 2011.
Table 31 Preliminary assessment of impacts on health services in the Mid-Western Region

<table>
<thead>
<tr>
<th>Service area</th>
<th>Indicator of service level</th>
<th>Benchmark (2010/11)</th>
<th>2010/11 level of service in Region</th>
<th>Potential 2030 shortfall or need in Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>General surgery waiting time for Mudgee Hospital</td>
<td>32 days (National average)(^{152})</td>
<td>63 days(^{153}) 2 times the National average</td>
<td>∼90 days(^{154}) 3 times the National average</td>
</tr>
<tr>
<td>Medical practice (GPs)</td>
<td>Total number of GPs(^{155})</td>
<td>31 (Yorke Peninsula SA)(^{156})</td>
<td>∼19(^{157}) 0.7 of the benchmark</td>
<td>∼19(^{158}) 0.49 of the benchmark</td>
</tr>
<tr>
<td></td>
<td>Total number of GPs Mudgee Medical Centre</td>
<td>−11 FTE (self-assessed need)(^{159})</td>
<td>8 FTE(^{160})</td>
<td>−31 FTE(^{161})</td>
</tr>
</tbody>
</table>

After our initial assessment was undertaken, NSW Health undertook a more detailed assessment of potential need based on the supplied population scenario and industry benchmarks for the Mudgee, Rylstone and Dubbo Health Services. The assessment has been carried out using its confidential aIM-modelling tool and, as such, cannot be tested or verified by our team.

It demonstrated the following:

- Mudgee will experience an increase in beddays of 3,056 (44 per cent) by 2022.
- Analysis of projected activity at Rylstone MPS indicates an increase in beddays of 688 (45.6 per cent) by 2022.
- Dubbo Health Service activity to increase by 4,789 beddays (11 per cent) by 2022.

It is to be noted that projections beyond 2022 have not been included as the aIM Modelling Tool does not provide rigorous analysis beyond this date.

A review of this projected increased activity in beddays against available beddays (eg number of beds currently available at facilities multiplied by 365 days) indicates capacity within these facilities to cater for the projected demand.

\(^{151}\) Based on business as usual - not taking into account any improvement plans in private or public sector.

\(^{152}\) Australian Institute of Health and Welfare, My Hospitals [www.myhospitals.gov.au](http://www.myhospitals.gov.au) (see Table 2). It is acknowledged that there are differences in standards of service provision between metropolitan and non-metropolitan hospitals.

\(^{153}\) Australian Institute of Health and Welfare, My Hospitals [www.myhospitals.gov.au](http://www.myhospitals.gov.au) (see Table 2).

\(^{154}\) Based on 2030 estimated population being 143% of 2011 population estimate. 63 days x 143%.

\(^{155}\) Based on Primary Health Care Research and Information Service, Key Division of General Practice Characteristics 2009 – 2010 – Dubbo Plains Division (includes Mid Western Region).

\(^{156}\) Based on estimated number of GPs in Yorke Peninsula Division of General Practice in South Australia which is comparable in terms of estimated population size (26,000) to Mid Western Region (23,000).

\(^{157}\) Total population estimate for 09/10 for Dubbo Plains Division = 102,765. Mid Western Region 2010/11 population = approx. 22% of that population. Estimated number of practicing GPs for whole division = 86. Estimated number of practicing GPs for Mid Western Region = 19 (86/100 x 22). This number was checked via consultation with local medical practices.

\(^{158}\) Assumes the estimated total number of GPs stays the same.

\(^{159}\) This is the number of FTE Mudgee Medical Centre believes it needs to cater for existing population (23,000).

\(^{160}\) Source: Mudgee Medical Centre.

\(^{161}\) Based on Mudgee Medical Centre self-assessed need of 7 additional FTE GPs between 2011/12 and 2017 (i.e. in next 5 years). This amounts to an annual growth (on average) in need of 1.5 GPs. By 2030, it is estimated that 31 FTE GPs will be required to meet demand.
This increase in activity has also been considered against occupancy rates. Occupancy rates are the percentage of time that a bed is actually occupied averaged over a year. The higher the occupancy rate the greater the number of beds required to accommodate a given number of bed days. Economies of scale would indicate a preferred occupancy rate of 75 per cent to 85 per cent.

Analysis of occupancy rates at Mudgee Health Service, Rylstone MPS and Dubbo Health Service are as follows:

- Mudgee Health Service, between 2006/07 to 2009/10, demonstrates an occupancy rate ranging from 38.5 per cent to 57.1 per cent. Provisional analysis of 2010/11 indicates that this utilization continues.
- Rylstone MPS has a similar occupancy rate eg 2009/10 44 per cent.
- Dubbo Health Service has high occupancy rates.

Further analysis of the projected Mudgee beddays by 2022, expressed as an occupancy rate, indicates that Mudgee’s occupancy rates would remain at under this benchmark at 52 per cent. Rylstone MPS is similarly under this benchmark. With regards Dubbo Health Service, Dubbo Health Service is currently undergoing progressive redevelopment, which will result in an increase in the available beds.

However, Council consider that there is a shortfall in health provision, both at Gulgong MPS and Mudgee Hospital.

**Gulgong MPS**
Planning has commenced to build an MPS (mini hospital facility) at Gulgong. The State Government has allocated $5 million towards the development of this facility. Based on the current funding, the facility is likely to include only 14 beds (which is a shortfall of 7 beds, an ideal size of facility should be 21 beds to cater for current needs).

There is a need for additional capital funding to expand the number of beds to cater for existing needs let alone future growth in the Region. The priority for additional funding would be to establish a secured dementia unit of at least 6 beds.

**Mudgee Hospital upgrade**
NSW Health growth in the Region is likely to require an upgrade of the Mudgee Hospital facility. This upgrade is likely to require additional beds, upgrade to existing facilities and equipment and expansion of emergency facilities. The nearest large hospital facility is in Dubbo (ie. it is located outside the Region and isolated from the local community given there are no public transport links to Dubbo).
9.4 Schools, preschools and early childhood centres

Summary of projected impacts
The key issue facing educational and day care facilities is capacity constraints. With the increase in population, there will likely be an associated increase in day-care, primary and high school enrolments. Some early signs of this increase are already being seen. NSW Department of Education and Communities state that there is a level of flexibility within the existing facilities to cater for additional students. Based on the estimated population scenario, there would be enough new lots to warrant the construction of a new primary school. It is estimated that there may be as many as 1,200 additional high school students within the region by 2030. Given the costings provided in Table 36, the estimated costs for the additional education infrastructure are shown in Table 37.

Current situation – Preschools and early childhood education
The NSW Government has committed to ensuring that all children have access to quality early childhood education, and has established a review of funding for early childhood education which will make recommendations for a funding system that will help increase participation in early childhood education, particularly for disadvantaged children.162 The review is expected to report to the Government by the end of 2011.

The NSW Government does not set thresholds or benchmarks for childcare services generally (that is, for allocation of new services). However, under the Preschool Investment and Reform Plan ‘Growth Phase’ (which finished in 2010/11), some NSW Government funding has been used for service access initiatives and some capital projects to create additional preschool places in identified areas of need. Further, the Children’s Service Regulation, 2004 has operating standards that must be adhered to by service providers. A National Regulation Scheme for most education and care services commenced on 1 January 2012. Preschools are funded by the Department of Education and Communities and are not-for-profit community-based organisations that cater for children three to five years of age.

Future Direct and Indirect impacts

Pre-school capacity constraints
Many of the pre-schools in the study area (namely in Mudgee, Gulgong and Rylstone) have a long waiting list, particularly for three to four year olds (ie the two years before school). For example, Rylstone-Kandos Pre-School three to four year old class is currently full, while the one year before school class has some capacity. In contrast, Mudgee Pre-School has a very long waiting list (approximately 40 students) for all its classes and is unable meet the demand for preschool places.163

It is Council’s view that, given the current waiting list of four year olds, there is justification to build two additional classrooms immediately, but this does not capture the number of children being turned away from preschool this year (and either going without preschool or taking positions in the long day care centre).

It also does not take into account considerations, such that currently many three year old children are no longer offered preschool services. The estimated number of three year olds who have been turned away from preschool this year is in excess of 100 (based on the number of children who have already been put on waiting lists for 2013).\textsuperscript{164}

Given that there are up to 100 three year olds who are on a waiting list for a 3 year preschool placement if they were available, they would justify another 2–3 classrooms.\textsuperscript{165}

The current preschool caters for 160 children and it is considered unlikely that it could accommodate a doubling in size. Evidence would suggest there is a need for another preschool facility to be built to address the immediate shortfall.\textsuperscript{166}

**Table 32** Estimated cost of new preschool

<table>
<thead>
<tr>
<th>Works required</th>
<th>Estimated costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>New preschool building (4 x rooms)</td>
<td>$2 million</td>
</tr>
</tbody>
</table>

Given that increases in population will likely exacerbate this problem, it is considered likely that investment in child care facilities will be needed in the future.

**Day-care capacity constraints**

The family day care centres are largely at capacity with part of the overflow being absorbed by long day care. In some cases these centres are restricting enrolments to 4 year olds only, which has implications for children in high-risk situations. Population increases will contribute to this problem, with the population scenario forecasting an additional 2,084 children 4 years and under by 2030. Where there is child protection and/or safety concerns for a child, regular attendance at a day care centre contributes to a positive environment for the child, can act as a ‘safety net’, and for the parent or carer is a source of information about child development, parenting and other local support services.\textsuperscript{167} Many children arrive at school in the region in their first year without ever having been to a pre-school or a long day centre. This is especially the case in smaller schools in the outlying areas such as Goolma, Lue and Hargraves.\textsuperscript{168} This situation can impact on the development and progression of these children. This can impact on reading and other developmental issues. This issue is being further compounded by the increasing education requirements to work in early childcare, reducing the number of people available to work in this industry.

**Meeting government policy requirements**

The current demand on pre-schools in the region is problematic, taking account of COAG’s National Quality Agenda for Early Childhood Education and Care 2009, which aims to provide 15 hours of pre-school to every child in the year before they attend school. It is also an issue for achievement of Goal 15 of the NSW Government’s Plan 2021: A Plan to Make NSW Number One, which is to ‘improve education and learning outcomes for all students’.\textsuperscript{169} The NSW Government through the Department of Family and Community Services is committed to universal access to quality programs and has identified the Mid-Western region as an area in need of additional pre-school places.

\textsuperscript{164} Communication from MWRC, 21\textsuperscript{st} February 2012
\textsuperscript{165} Communication from MWRC, 21\textsuperscript{st} February 2012
\textsuperscript{166} Communication from MWRC, 21\textsuperscript{st} February 2012
\textsuperscript{167} J. Burnstein (Senior Manager, Barnardos, Western NSW) Pers. Comms., 2 November 2011.
\textsuperscript{168} Gibbs, R. (Director, Mudgee Preschool), (date unknown), A Vision for Early Childhood Education and Care for the Mid-Western Region. Submission on the Mid-Western Regional Council Draft Community Plan ‘Towards 2030’. Emailed to Manidis Roberts 1 November 2011.
\textsuperscript{169} NSW Government, NSW 2021: A Plan to Make NSW Number One, 3 and 31.
In addition to the pre-schools there are a number of private, for-profit, long day centres that usually operate for longer hours and meet the needs of working parents of children 0 – 5 years of age, as well as Council-operated family day care centres. The long-day care centres are currently able to meet their demand, but are typically more expensive than pre-schools.

**Early childhood intervention services**

Another key issue is limited resources for early childhood intervention services and increased therapy services, the need for which has been identified by local parents and service providers and the information passed on to ADHC Regional Planning officers\(^{170}\). The Mudgee Child and Family Network (comprised of representatives from a number of services/agencies including Community Health, MWRC, Department of Education and Communities, Department of Aging, Disability and Home Care, Barnardos, Benevolent Society, Mudgee Preschool, private therapists and private long day care providers) have been advocating for a number of years for children with disabilities and their families. There is currently no dedicated early childhood intervention service for these children and long waiting lists to receive services including from ADHC\(^{171}\). In Council’s experience, this means that if a child in the Region has a disability or delay in development (such as speech, motor skills, toilet training etc) it is not being picked up until the child enters preschool (at aged 4) or even later when the child starts kindergarten. This places significant demand on the education provider to try to address the issues and considerable concern for the parents and children involved. There are lengthy delays for accessing services through the public health system, so only those that can afford to pay for private therapists are the only children getting assistance.

There is likely to be a need to develop an early childhood intervention service, which delivers both the necessary therapy and preventative support that children require. Council sees this need as immediate.

**Current situation – Primary and secondary education**

Thresholds for primary education include a 15.5 student-teacher ratio for government, and for non-government a 16.5 student-teacher ratio.\(^{172}\) For secondary education these ratios comprise 12.3 for government and 12.0 for non-government.\(^{173}\)

The current student-teacher ratio is 14.1 for Mudgee High School. This is unlikely to change in the next five years as it is based on a formula for staffing which moves with enrolments. It includes all mainstream students having a ratio of approximately 16:1 for years 7-10 and 14:1 for years 11 and 12. For students in the support unit the ratio is from 7:1 to 10:1 and includes additional staff that is non-teaching.\(^{174}\) These ratios are shown in Table 33.

<table>
<thead>
<tr>
<th>Type</th>
<th>Student:Teacher Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary – Government</td>
<td>15.5:1</td>
</tr>
<tr>
<td>Primary – Non-government</td>
<td>16.5:1</td>
</tr>
</tbody>
</table>

\(^{170}\) Phone and email correspondence with Judy Blackman (Coordinator Mudgee & District Host Family Respite Care), 4 January 2012.


\(^{173}\) Ibid, p.276.

<table>
<thead>
<tr>
<th>Type</th>
<th>Student:Teacher Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary – Government</td>
<td>12.3:1</td>
</tr>
<tr>
<td>Secondary – Non-government</td>
<td>12.0:1</td>
</tr>
<tr>
<td>Mudgee High School</td>
<td>14.1:1</td>
</tr>
</tbody>
</table>

Such ratios however do not accurately reflect the reality in the classroom as they include all teaching staff such as principal, careers advisor, librarian and counsellors who do not take classes. For example in Mudgee High School, most classes in years 7-10 in core subjects will have approximately 25 students and in specialist subjects, eg woodwork, approximately 20.\(^{175}\)

The allocation of teacher resources in public schools is generally more generous when it comes to students with special needs and to specialist teachers, as public schools guarantee to provide for the needs of all students. The national ratio would also take into account schools that provide for very small populations, including very isolated rural schools such as Bylong Upper Public School. Larger centres like Mudgee allow for the concentration and more economical use of resources due to population density.

In addition, the NSW Department of Education and Communities (DEC) provided a trigger of 2,000 – 2,500 new residential dwelling lots for a new primary school.\(^{176}\) However, this is a trigger for a greenfield development on an urban fringe, likely to be occupied predominantly by the 20 – 40 year age group.\(^{177}\) This increases to 7,500 new residential dwelling lots for a new high school. The higher threshold for secondary education can be attributed to high school being built to accommodate a greater number of students – typically 1,000 to 1,200 students, to provide the full range of specialist learning units for the curricula.\(^{178}\) Further, the students are older and are expected to be able to travel further to attend school. In contrast, primary schools are built for around 300 to 400 students so that they can be more localised to the students’ homes.\(^{179}\) Also the ratio of students attending non-government schools increases for high schools.

Population characteristics and dwelling types are taken into account in making projections of the likely government public school and high school student numbers.\(^{180}\) For example if a large proportion of retirement or semi-retirement dwellings are proposed then the student numbers will be substantially less. Developers are typically required to provide details of the timing of releases, how many of each dwelling type, and anticipated market for releases, for example prestige lots are not likely to be first home buyers and likely to produce fewer government students. This enables DEC to plan the allocation of resources.

Appendix A lists the public schools operating in the region. Consultation with a sample of public schools reveals that, generally, the public schools have capacity to take on more students provided adequate funding is available for suitable infrastructure and human resources (although exact capacity is hard to define as additional students can be catered for quickly with demountable classrooms). For example,

---

\(^{175}\) Ibid.

\(^{176}\) Provided via Bill Tatnell, Department of Premier and Cabinet through the Mining Expansion Working Group. The Working Group responded to a set of questions on the current level of provision of social services and infrastructure developed jointly by the Department of Premier and Cabinet and Manidis Roberts.

\(^{177}\) Email correspondence from Michael Cronk, DEC Demography Unit and Ruth Thomason, Regional Asset Planner – Western, Planning and Delivery Unit, Asset Management Directorate, NSW Department of Education and Training.

\(^{178}\) Email correspondence from Michael Cronk, DEC Demography Unit and Ruth Thomason, Regional Asset Planner – Western, Planning and Delivery Unit, Asset Management Directorate, NSW Department of Education and Training.

\(^{179}\) Ibid.

\(^{180}\) Email correspondence from Michael Cronk, DEC Demography Unit and Ruth Thomason, Regional Asset Planner – Western, Planning and Delivery Unit, Asset Management Directorate, NSW Department of Education and Training 13 December 2011.
currently Mudgee Public School has an enrolment of 509 students but has the capacity to grow to approximately 600.\textsuperscript{181}

According to DEC’s Demography Unit, any changes to the Mid-Western Region in light of mining activity are being monitored. They plan to provide the human resources necessary to meet any increased or changing demands for educational service.\textsuperscript{182}

**Future Direct and Indirect impacts**

When the growth predicted in the populations scenario is extrapolated, a number of potential future impacts can be identified, for example an increase in the student to staff ratios and the potential increase in the need for disability classes. These impacts are shown in Table 34.

<table>
<thead>
<tr>
<th>Service area</th>
<th>Indicator of service level</th>
<th>Benchmark (2010/11)</th>
<th>2010/11 level of service in Region</th>
<th>Potential 2030 shortfall or need in Region\textsuperscript{183}</th>
</tr>
</thead>
<tbody>
<tr>
<td>High schools</td>
<td>Student-teacher ratio for government</td>
<td>12.3\textsuperscript{184}</td>
<td>14.1 (year 11–12)\textsuperscript{185}</td>
<td>24.96 (year 11–12)\textsuperscript{186}</td>
</tr>
<tr>
<td></td>
<td>Mild intellectual disability class waiting list (Mudgee High School)</td>
<td>TBC</td>
<td>12 students</td>
<td>38 students\textsuperscript{187}</td>
</tr>
<tr>
<td>Public schools</td>
<td>2000 – 2500 new dwellings = 1 new primary school (Greenfield)\textsuperscript{188}</td>
<td>N/A</td>
<td>1 Primary School: 573 Dwellings\textsuperscript{189}</td>
<td>~1 Primary School: 994 new dwellings\textsuperscript{190}</td>
</tr>
</tbody>
</table>

Note: Some of the primary schools, particularly some of the village primary schools, may require improved infrastructure and increased staffing to cater for additional students.

\textsuperscript{181} Individual wish to remain anonymous, Pers. Comms., 28 October 2011.

\textsuperscript{182} Email correspondence from Michael Cronk, DEC Demography Unit and Ruth Thomason, Regional Asset Planner – Western, Planning and Delivery Unit, Asset Management Directorate, NSW Department of Education and Training.

\textsuperscript{183} Based on business as usual - not taking into account any improvement plans in private or public sector.


\textsuperscript{185} For Mudgee High School – figure supplied by Mudgee High School.

\textsuperscript{186} This assumes that the number of teachers remains constant and 30% of the population between 15-24 is in year 11 and 12 for both the population stated in the Australian Bureau of Statistics, National Regional Profile – 2010 and for the estimates provided by Manidis Roberts. Based on these assumptions, the estimated number of teachers is ~57.

\textsuperscript{187} Based on increase from 0 to 12 students on waiting list from 2005 – 2011. There has been on average 2 students per year added to the waiting list. It is therefore estimated that, without increased capacity or plans for improvement, by 2030 there could be 38 students on the waiting list. This number could be even greater when taking into account increase % of estimated population in 0 – 14 and 15 – 24 age groups in 2030 from 2010/11.

\textsuperscript{188} Based on existing number of primary schools (14) and lot additional lot estimates required for population increase of 10,530 people at 0.56 lots per person.
### Year 11 and 12 capacity constraints

St Matthews Central School, a non-government school, only offers schooling up to year 10. Mudgee High School is the only secondary school offering schooling up to year 12, and has approximately 1100 students, with an estimate of an increase to 1,600 students in the next five years. The school has reached capacity in terms of student and staff numbers. Expansion of the school site to cater for an increase in student numbers is constrained, unless recreational space (including school oval and basketball courts) is used, which is not an ideal or optimal option for the school or the community (unless the recreational space is replaced).

### Catering for disability

The ability of Mudgee High School to cater for students with disability is also constrained. There are currently five classes servicing these students. The mild intellectual disability class can take 18 students, and currently there are 12 students on the waiting list. This is an increase from 2005 where there were 12 students in this class with no waiting list. This is illustrated in Table 35. A lack of availability of specialist teachers to cater for students with disability (such as with a hearing-related disability) is an issue for the Region. The need for a school for students with severe intellectual disability has also been identified.

### Table 35 Demand on disability classes in the region

<table>
<thead>
<tr>
<th>Organisation/service</th>
<th>2005</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mudgee High School Mild Intellectual Disability Class waiting list</td>
<td>0 students</td>
<td>12 students</td>
</tr>
<tr>
<td>Mudgee Public School number of special needs classes</td>
<td>2 classes</td>
<td>5 classes</td>
</tr>
</tbody>
</table>

### Growth patterns and capacity constraints

Some schools in the region have experienced exponential growth in the past five years, while others have experienced comparatively slower growth, and even a decrease in student numbers. For example, Gulgong High School has had significant development in the past few years and now has space to expand student numbers. Gulgong Primary has experienced a decrease in student numbers and therefore has capacity to expand. Our consultation revealed that the total number of additional

---

191 Based on increase from 2 to 5 classes from 2005 – 2011. This represents an average growth of 0.5 classes per year. It is therefore estimated that, by 2030 there will (or will be) a need for 15 classes (9.5 classes from 2011 – 2030 + 5 classes in 2011). This increased demand could be even greater when taking into account increase % of estimated population in 0 – 14 age group in 2030 from 2010/11.

192 MWRC. January 2011. Powerpoint presentation to Coal Mining Working Group. Contra L. Manwaring (Principal of Mudgee High School) who stated that this figure may be too high.

193 MWRC (date unknown), Submission to the Standing Committee on State Development – Inquiry into Economic and Social Development in Central Western NSW.


195 Ibid.

196 Ibid.

197 Ibid.

students that can be catered for is difficult to estimate, but demountable classrooms can be installed on existing school land, such as ovals and playgrounds, to cater for spikes in enrolment. Conversely, Mudgee Public School has experienced an increase in the number of students enrolled in the past five years. As another example of growth, Mudgee Public School had two special needs classes five years ago, and this has now increased to five.

NSW Education and Communities provided some initial cost estimates for the range of potential infrastructure options. These are outlined in Table 36.

Table 36  Education infrastructure costs\textsuperscript{201}

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Typical cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>A recently refurbished demountable, including travel and installation.</td>
<td>Approximately $95,000.</td>
</tr>
<tr>
<td>A double modular design range (MDR) classroom unit eg for two primary classes.</td>
<td>Approximately $500,000.</td>
</tr>
<tr>
<td>A new primary school for 301–510 students.</td>
<td>Approximately $10.7M (without land costs).</td>
</tr>
<tr>
<td>Major capital works to the existing school. This would likely include more specialist spaces (eg science labs, general learning spaces etc).</td>
<td>Approximately $10 to $15M.</td>
</tr>
</tbody>
</table>

These capacity constraints are being further exacerbated by reduction in class sizes as a result of government policy and the additional teachers needed to cater for this as well as the number of teachers entering retirement. This has the potential to create a shortage of teaching staff in the region.

Based on the estimated population scenario, there would be enough new lots to warrant the construction of a new primary school. It is estimated that there may be as many as 1,200 additional high school students within the region by 2030. Given the costings provided in Table 36, the estimated costs for the additional education infrastructure are shown in Table 37.

Table 37  Estimated school infrastructure costs

<table>
<thead>
<tr>
<th>School level</th>
<th>Infrastructure</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>New school</td>
<td>$10.7M</td>
</tr>
<tr>
<td>Secondary</td>
<td>30 additional demountable classrooms</td>
<td>$2.85M</td>
</tr>
</tbody>
</table>

| Total        |                                       | $13.55M |

9.5 TAFE and universities

Summary of projected impacts
Since 2005, Western Institute has seen enrolments increase by 6373 from 34,177\textsuperscript{202} to 40,544\textsuperscript{203} in 2010. That represents growth of approximately 18.5 per cent. Currently, TAFE can’t meet the expressed training demand and, as a result a large amount of training is happening on-line or on the job. Increases in training requirements associated with the mining industry will put this system under further pressure.

\textsuperscript{201} Estimated costs provided by NSW Department of Education and Communities
\textsuperscript{202} TAFE Western Institute 2005 Annual Report.
\textsuperscript{203} TAFE Western Institute 2010 Annual Report
Current situation
The main TAFE institution in the study area is the TAFE Western Mudgee College. There are no universities in the region, with the Dubbo campus of Charles Sturt University being the closest.

With the increased number of mining employers there is increased demand for training in mining-related areas (however many mines have their own trainers). TAFE Western Mudgee College has targeted course in mining, providing training as part of mining apprenticeships (including in electrical fitting and machinery). These apprenticeships are run through the mines (namely Xstrata for Ulan Coal and Moolarben Mine) with a component of training taking place at the TAFE.

Future Direct and Indirect impacts

Increase in training demand
During consultation with education and training providers, including TAFE, it was made clear that there had been an increase in the demand for training. Since 2005, Western Institute has seen enrolments increase by 6373 from 34,177\textsuperscript{204} to 40,544\textsuperscript{205} in 2010. That represents growth of approximately 18.5 per cent. Currently, TAFE can’t meet the expressed training demand and, as a result a large amount of training is happening on-line or on the job.

Catering for a variety of training requirements
Traditionally training would be undertaken at or near the workplace. However, with the increased mobility of the mining workforce, either through drive in/drive out or fly in/fly out arrangements, TAFE have found that a number of workers are being trained elsewhere. This results in a change in training patterns and can make catering for an areas training and education requirements more difficult.

9.6 Police

Summary of projected impacts
The key impacts facing the police force are the recruitment and retention of staff for the region. With an increase in population, the need for police will likely increase and, as such, recruitment of additional officers will become increasingly important.

Current situation
There are four police stations in the Mid-Western Region, namely in Rylstone, Kandos, Gulgong and Mudgee Police Stations, however this police region stretches from Lithgow to Broken Hill (South Australian border), down to Dareton (Victorian border) and up to Tenterfield (Queensland border). Mudgee is a Local Area Command (LAC) comprising of Mid-Western Region and Warrumbungles local government areas.

In the Mid-Western Region there is an authorised strength of two police officers at Kandos, two at Rylstone and two at Gulgong. Mudgee has 30 staff specifically attached to the Mudgee sector. This does not include management, high-way patrol, criminal investigation and specialist staff who are based at

\textsuperscript{204} TAFE Western Institute 2005 Annual Report.
\textsuperscript{205} TAFE Western Institute 2010 Annual Report
Mudgee Police Station but cover the entire command. With these additions there are currently 43 staff located at Mudgee.

Future Direct and Indirect impacts

If the population scenario is extrapolated to meet the benchmark police officer to population ratios, then it is estimated that the region will require an additional 31 officers. This is shown in Table 38.

Table 38  Preliminary assessment of impacts on Police services in the Mid-Western Region

<table>
<thead>
<tr>
<th>Statistic</th>
<th>2010/11</th>
<th>Projected (2030)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>~23,000</td>
<td>~33,000</td>
</tr>
<tr>
<td>Service area Indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population:police</td>
<td>430:1²¹⁰</td>
<td>500²¹² (70 additionals per officer)</td>
</tr>
<tr>
<td>officer ratio</td>
<td></td>
<td>77 police officers²¹³ (or additional 31 officers)</td>
</tr>
</tbody>
</table>

Servicing future demand and adapting to potential changes in policing roles

Mudgee LAC recently had a business case approved by the Expansion Review Committee for an additional three staff. However, this has only addressed the current shortfall, with future stresses on this service are expected. Estimates on additional police requirements are shown in Table 38. It was noted during consultation that the current need for policing within the community was being met. Whilst the community would like to see a 24hr service 7 days per week, the current crime figures do not indicate that this is necessary. However, it was noted that the Parson’s Report has been completed and will have recommendations that may affect policing roles within the command²¹⁵.

Recruitment and retention of staff

It was also noted in the consultation process that it is difficult to recruit staff in the Mudgee LAC. This is attributed to increased housing prices, and those prices being more expensive than other areas such as Dubbo and Orange. Further, the retention of staff is an issue and relates directly to existing mining activity in the region. There have been four officers leave for the mines, with two having left in the past six months. Police salaries are distributed according to rank, not region, and these salaries cannot compete with those offered by the mines.

²⁰⁷ Demographic estimates for 2010 based on National Regional Profile, Mid-Western Regional Council LGA, Australian Bureau of Statistics used ‘as supplied’.
²⁰⁸ Demographic estimates for 2030 based on Manidis Roberts’ population methodology.
²⁰⁹ Based on business as usual - not taking into account any improvement plans in private or public sector.
²¹⁰ NSW Police Force serves approx. 6,927,000 people (NSW population source: ABS). In December 2011, the NSW Police Force had 16,092 Police Officers (actual) (source: NSW Police Force Strength Statement December 2011). That equates to (on average) 1 police officer for every 430 persons, or a person-police officer ratio of 430.
²¹¹ Based on estimated 23,000 population and 46 police officers in Mudgee LAC.
²¹² Based on average person-police officer ratio of 425.
10 Potential opportunities

This section discusses potential opportunities to address some of the issues identified above.

This listing of potential issues and opportunities was obtained through our consultation process – interviews and workshops. In some cases stakeholders identified the specific additional infrastructure that will be required as a result of growth of coal mining in the region in other cases they pointed to further research and investigation that would be needed in order to make such an assessment. Please note that the listing is not an exhaustive list of priority issues for the region.

The issues have been categorised into seven broad areas, namely:

- Policy.
- Planning.
- Governance.
- Infrastructure.
- Training/education.
- Partnering.
- Other.

10.1 Housing demand and supply

Policy

MWRC review of its Section 94 Plan

General review of the contributions under Section 94 process by the local mining developments is needed. This could be part of a general overview of mining related developer contributions in NSW. This review would likely need to focus on both the amount of money likely to be generated and how it is best directed to support likely population growth related to mining activity. Best practice methods to prioritise new or upgrade to existing infrastructure would need to be looked at. This prioritisation would likely need to be applied across government agencies to ensure that all infrastructure needs are consistently identified. It is acknowledged that how funds are directed varies greatly between councils. It is noted that both the Draft New England North West Strategic Regional Land Use Plan and the Upper Hunter Strategic Regional Land Use Plan suggest that this should be a consideration as part of the State Government policy response. Action 4.2 in each of these plans outlines the delivery date for the consistent VPA methodology.

Strategic planning process

The strategic planning process has long ‘lead times’ in bringing land to market. Given the speed at which land requirements can change, particularly due to industry investment, it is worth considering ways in which the strategic planning process can be made more responsive. This may be through councils such as MWRC identifying additional, potentially developable land that can be rezoned quickly should population pressures require it.
Monitoring of housing provision

As population is predicted to increase, it may be worth considering closer monitoring of housing delivery in areas and establishing thresholds for key services and infrastructure components, if these don’t already exist. If these thresholds were reached, it would trigger a coordinated infrastructure response to ensure the demands of the population can be met.

Cumulative impact assessment

As part of the mining companies environmental assessment and approval process, it is suggested that more rigour be applied to the cumulative impact assessment process and results. Given the scale of each operation and the shared use of a number of Council provided infrastructure, it is considered that more accurate cumulative impact assessment may have identified some of the key infrastructure capacity constraints earlier and appropriate planning controls may have been able to be implemented. It is noted that the NSW Department of Planning and Infrastructure have prioritised this in the Draft Upper Hunter and Draft New England North West Strategic Regional Land Use Plans (action 7.1 in both plans).

Planning

New MWRC Land Use Strategy and LEP

It may be necessary for Mid-Western regional Council to undertake a new land use strategy and associated technical reports to inform a further redraft of its LEP. This focus of this work would be to account for the expected increase in growth as a result of mining activity as identified in this report. It is noted that Mid-Western Regional Council have not resourced undertaking another LEP drafting within such quick succession (within a year).

Development guidelines and zoning requirements

It is suggested that specific development guidelines and zoning requirements be formulated for temporary workers accommodation. These guidelines would help councils enforce development standards on these unique housing developments and ensure that these do not place an unacceptable burden on existing local infrastructure. It should also ensure there is a process to address adequacy of local infrastructure and services in parallel with the development application process. The guidelines would also help balance the housing and affordability requirements with amenity issues associated with increases in population. It is noted that the NSW Department of Planning and Infrastructure is now developing draft guidelines to assist Councils in managing this type of development.

Partnerships

Alternative development delivery opportunities

It is worth Council considering different methods of bringing zoned land to market. The opportunities that were identified during consultation:

- Encouraging more housing diversity in existing infill areas.
- Looking at alternative development approaches in areas that are already zoned, but where development is not occurring. This can include constructing accommodation under State planning controls such as State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 and suspending the restrictions so these units can serve as mining accommodation until such time as the population has stabilised and housing supply is adequate.
- Investigating different development models leveraging off high rents and possible capital growth over the long term.
Opportunities with affordable and community housing providers
Options investigated for potential partnership opportunities with affordable and community housing providers. This could help ease the pressures being felt on people who are not benefiting directly from the mining boom and reduce the number of people being ‘priced out’ of the real estate market. It may also provide an opportunity to diversify the housing stock available for sale.

10.2 Employment and land

Planning

Rezoning for industrial purposes
It is suggested that additional land be prepared in MWRC for rezoning for industrial purposes in the event that the increase in mining activity results in a shortage of readily available industrial land.

Partnerships

Mining industry specific support services
It is worth investigating potential partnership opportunities with mining companies to collocate some mining industry specific support services on land near mine sites to reduce congestion and land demand nearer to the major centres.

10.3 Roads

Regional Royalties
To help address infrastructure shortfalls within regions that experience extensive mining, it is worth considering potential ‘regional royalties’ schemes, for example the NSW ‘Resources for Regions’ program. These are systems that see a proportion of the money generated in mining royalties be reinvested directly into a region. This would assist in upgrading and maintaining regional infrastructure assets so they are better able to cope with growth.

Planning

Planning traffic and transport infrastructure needs
Council should assess the need to ‘future-proof’ the region in relation to traffic and transport infrastructure needs. There is an urgent need to revise all the traffic volumes used for all Council roads no just those serving the mines, as the impact from miners and their families moving into the area is can be experienced on local roads, as well as those roads directly servicing the mines. A detailed traffic study is required. This could also include investigation of options for the provision of additional parking areas, extra lanes or paid parking. It is noted that this may represent a deviation from the traditional methods for traffic management in rural areas.

Other

Funding for infrastructure
Potential funding options including:

- For road infrastructure – consider a volume agreement, similar to that used at Parkes, NSW, where roads are progressively sealed as vehicle counts increase, funding is progressively released by agreed parties.
- New Public/Private Partnership (PPP) options.
- New Voluntary Planning Agreements to cover specific road upgrades.
- Look at regional block grant from NSW Roads and Maritime Authority.
- The NSW ‘Resources for Regions’ program.

## 10.4 Airport

### Planning

**Airport development opportunity**

It is considered that the airport has adequate capacity for growth in the short and medium term, as documented in the airport masterplan. However, it is noted that there is a development opportunity around the site should there be a need to further increase capacity or locate ancillary services nearer the airport in the future.

## 10.5 Rail

### Infrastructure

**Expansion of the existing rail network**

Expansion of the existing rail network may create a viable alternative to road transportation to allow mines to ensure coal and other resources are distributed in a timely manner and delivery impacts are limited.

## 10.6 Water supply

### Infrastructure

**Water reuse strategies**

Beyond expanding the infrastructure to meet the possible demand, there may be potential to investigate reuse strategies to limit water consumption in the area. This can include water recycling plants, rainwater tanks and stormwater harvesting.

### Training/education

**Water consumption community education programs**

It is worth investigating the potential to reduce water consumption through community education programs. Traditionally these programs have been used as a method demand management and have proved successful. These programs can be coupled with rebates on water saving devices, such as water efficient showerheads and low flush/dual flush toilets.
10.7 Sewerage infrastructure

Infrastructure

Stand-alone recycling solutions
Beyond expanding the infrastructure to meet the possible demand, there may be potential to investigate stand-alone recycling solutions for large scale users, most likely industrial users. These solutions include on-site water recycling plants and on-site reuse of the recycled water.

Training/education

Sewer usage community education programs
There is potential to reduce sewer usage through community education programs. Traditionally these programs have been used as a method of demand management and have proved successful. These programs can be coupled with rebates on water saving devices, such as low flush/dual flush toilets.

10.8 Stormwater infrastructure

Infrastructure

Stormwater-harvesting options
Beyond expanding the infrastructure to meet the possible demand, there may be potential to investigate stormwater-harvesting options. This may have a dual benefit of both reducing water demand and reducing the amount of stormwater run-off generated and the associated negative water quality impacts downstream.

10.9 Waste disposal and recycling

Planning

Toughen waste management conditions
There is the potential to impose tougher waste management conditions on new projects. This can include waste avoidance strategies and mandatory waste tracking and reporting. This can help drive industry change and create more efficient waste practices.

Infrastructure

Waste reuse options
Beyond expanding the infrastructure to meet the possible demand, there may be potential to investigate waste reuse options to limit the amount of refuse going to landfill. This can include traditional recycling options as well as more advanced technology, such as energy generation through biomass plants.

Training/education

Community waste education
There is the potential to further educate the community about what can and can’t be recycled through kerbside waste disposal.
10.10 Open space

Infrastructure

New youth facilities
It is noted that Council has recently successfully consolidated a number of its playing fields. It now may be timely for Council to consider prioritising youth facilities within its open space plans.

Partnering

Mining support for youth programs
Council may consider a partnership with mining companies to help fund sports clubs and improvement in recreation facilities in the regions.

10.11 Rural fire service

Training/education

Mining lands best practice fire management
The rural fire service may consider educating mining companies on best practice fire management techniques for land these companies own or lease.

Partnering

Mining employee volunteer program
The rural fire service may consider entering into a partnership with the mining companies to help ensure that volunteers are available for volunteer service through coordinated shift times.

10.12 Community health and hospitals

Planning

Collaborative model
During consultation it was noted that there was need to generate a collaborative health-servicing model to ensure health services were integrated. This would allow for a clearer picture of health provision in the region and identify any potential shortfalls and allow agencies time to coordinate a response to address this. This may also allow Mid-Western Regional Council to work with, and complement existing Government and non-government health programs eg Rural Training Pathways Program and university programs. Any collaborative model should also consider Allied Health and Nursing requirements.

Partnerships

Partnering with mining companies
There is an identified need to understand mining companies’ needs in terms of health services for its employees and their families and work with those companies to come up with effective solutions to recruit staff to cater for mining and broader population.
As part of addressing workforce needs, consideration should be given to public-private partnerships in service provision. Recent examples in the region include the Xstrata Coal funded program (Cudgegong Program) to support more General Practitioners in the area. The success of such as model should be monitored and if successful promoted and progressed with other mining companies.

Resources for therapy services
There is also the potential for partnerships between health and education organisations for therapy services. In particular, it was noted that speech pathologists were needed as part of early intervention services.

10.13 Schools, pre-schools and early childhood centres

Training/Education
Community education on the pre-school programmes
It could be worthwhile educating the community on the pre-school programmes now being offered by long day care centres. Whilst these centres are not affordable for all people, they may be able to act as a temporary alternative to traditional pre-school as an interim measure to address potential shortfalls.

Infrastructure
Expansion of Catholic High School
While there are no concrete plans at this stage to expand the student body at the Catholic High School to Year 12, the prospect is being discussed in light of the changed school leaving age and the elimination of the School Certificate as an exit credential. Any decision to expand the school to year 12 would depend on the viability of student number growth well beyond the current enrolment levels as well as on the support of government and demand from the local community.

Flexibility of infrastructure provision
There are a number of short to medium term solutions available to the existing schools to cater for rapid increase in student numbers, including demountable classrooms. Should enrolments increase significantly in a short space of time, these solutions should be able to be implemented quickly and allow for the students to be catered for within the existing school boundaries.

Partnerships
Partnership of mining companies and Council to provide for long day care services
Investigate potential partnerships between the mining companies and Council to provide for long day care services that cater to a child’s pre-schooling needs.

10.14 TAFE and universities

Training/education
Self-training options
To cater for the increased demand, recently TAFE has acted as a manager and allowed miners to train themselves. These courses and results are then audited by TAFE. This has reduced the pressure being placed on the instructors and allowed for greater flexibility and on-the-job training.
Partnerships

Partnering arrangements for skills development
Investigation of the potential for partnering arrangements between the relevant education stakeholders, including NSW Education and Communities, local schools, the Department of Education Employment and Workplace Relations with Council and mining companies to assist in catering for the increased requirement for skilled workers in the region.

10.15 Police

Planning

Alternative rental accommodation
Police to consider providing cheaper rental accommodation to new employees to assist them as they move into a new area and begin looking for more permanent accommodation.

Partnership

Partnership to address antisocial behaviour
Police could establish a partnership with the local mines to help address some of the potentially antisocial behaviour that can arise as a result of shift work. This can include pubs, hotels and licensed venues extending trading hours into the morning to cater for mine workers. These extended can increase the level of alcohol related incidents and change the lifestyle and culture of the region.
11 Bibliography

Population, housing and employment

Australian Bureau of Statistics, National Regional Profile for Mid-Western Regional Council LGA.
MWRC, 2011, Powerpoint Presentation to the Coal Mining Expansion Working Group.

General infrastructure

Mid-Western Regional Council – Strategic Asset Management Strategy and Asset Management Policy V1.2 (figures for 2004-05)
Mid-Western Regional Council – Management Plan, 2009/10-2013/14

Roads

MWRC, February 2009, Road Network Strategic Plan 2008: Volume 1 Overview and Programs
SKM, August 2006, Moolarben Coal Project: Traffic Impact, Road Safety and Railway Level Crossing Assessment.
Airport

SKM, 2005, Mudgee Airport Master Plan.

Rail

SKM, 2009, Moolarben Coal Project - Stage 2: Rail Traffic Assessment.

Water supply

MWRC, August 2008, Development and Servicing Plan for Mid-Western Regional Council Water Supply.

Sewerage

MWRC, August 2008, Development and Servicing Plan for Mid-Western Regional Council Sewerage.

Stormwater

MWRC, Lyall and Associates 2009, Gulgong Stormwater Drainage Study.

Waste

The full cost of landfill disposal in Australia, 2009, DEWHA.

Open space and recreation

Department of Planning 2010, Recreation and Open Space Planning Guidelines for Local Government.
MWRC, August 2007, Recreational and Open Space Strategic Plan.
Section 94 Development Contributions Plan, 2005-2021, Amendment No 1, Mid-Western Regional Council.

**Social infrastructure and services**


Gibbs, R. (Director, Mudgee Preschool), (date unknown), A Vision for Early Childhood Education and Care for the Mid-Western Region. Submission on the Mid-Western Regional Council Draft Community Plan ‘Towards 2030’.


MWRC, January 2011, Powerpoint Presentation to the Coal Mining Expansion Working Group.

MWRC (date unknown), Submission to the Standing Committee on State Development – Inquiry into Economic and Social Development in Central Western NSW.

NSW Government, NSW 2021: A Plan to Make NSW Number One, 3 and 31.

TAFE Western Institute 2005 Annual Report.

TAFE Western Institute 2010 Annual Report.

Social impact assessment and mining communities, John Rolfe and Vanessa Timmer, CQ University (presentation not dated).


MWRC (date unknown), Submission to the Standing Committee on State Development – Inquiry into Economic and Social Development in Central Western NSW.


**Mining projects**


Lessons from the social and Economic Impacts of the Mining Boom in the Bowen Basin, 2004-2006, Rolfe et al.

NSW Local Government and Shires Association submission on the State Budget, 2006/07.
NSW Coal Industry Profile, Statistical supplement, 2010, NSW Trade and Investment.
Coal Services Pty Ltd, 2010-2011 (figures provided by Mid-Western Regional Council).
Xstrata, 2010 Annual Report.
Appendix A  Baseline report
## Appendix B  Consultation database

### Table 39  Housing and employment land consultees

<table>
<thead>
<tr>
<th>Agency/Organisation</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Western Regional Council</td>
<td>Catherine Van Laeren</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Julie Robertson</td>
</tr>
<tr>
<td>Raine and Horne</td>
<td>Alexandra Stockman</td>
</tr>
<tr>
<td>Prince of Wales Hotel</td>
<td>Rowena Ellis</td>
</tr>
<tr>
<td>Owl Head Lodge</td>
<td>Tanya Rohr</td>
</tr>
<tr>
<td>The Property Shop</td>
<td>Damian Kearns</td>
</tr>
<tr>
<td>Mudgee Tourism</td>
<td>Lucy White</td>
</tr>
<tr>
<td>Housing Plus</td>
<td>Vic Cox</td>
</tr>
<tr>
<td>Housing Plus</td>
<td>Josh Smith</td>
</tr>
</tbody>
</table>

### Table 40  Transport consultees

<table>
<thead>
<tr>
<th>Agency/Organisation</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Western Regional Council</td>
<td>Catherine Van Laeren</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Julie Robertson</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Sally Mullinger</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Andrew Drummond</td>
</tr>
<tr>
<td>NSW Trade and Investment</td>
<td>Chris Dennis</td>
</tr>
<tr>
<td>Roads and Maritime Services</td>
<td>Tony Hendry</td>
</tr>
</tbody>
</table>

### Table 41  Water, sewerage, stormwater and waste consultees

<table>
<thead>
<tr>
<th>Agency/Organisation</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Western Regional Council</td>
<td>Catherine Van Laeren</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Julie Robertson</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Brett Corven</td>
</tr>
</tbody>
</table>

### Table 42  Open space and recreation consultees

<table>
<thead>
<tr>
<th>Agency/Organisation</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Western Regional Council</td>
<td>Catherine Van Laeren</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Julie Robertson</td>
</tr>
</tbody>
</table>
### Table 43 Social infrastructure and services consultees

<table>
<thead>
<tr>
<th>Agency/Organisation</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Western Regional Council</td>
<td>Catherine Van Laeren</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Julie Robertson</td>
</tr>
<tr>
<td>Mid-Western Regional Council</td>
<td>Marissa Quintin</td>
</tr>
<tr>
<td>TAFE Western Mudgee</td>
<td>Samantha Cosgrove</td>
</tr>
<tr>
<td>TAFE Western Mudgee</td>
<td>Eileen Simmons</td>
</tr>
<tr>
<td>Mudgee Public School</td>
<td>Tod Morley</td>
</tr>
<tr>
<td>Gulgong Primary</td>
<td>Alan Walker</td>
</tr>
<tr>
<td>Mudgee Pre-School Kindergarten</td>
<td>Rosie Gibbs</td>
</tr>
<tr>
<td>Gulgong Health Service</td>
<td>Fiona Nott</td>
</tr>
<tr>
<td>Mudgee Community Services Centre</td>
<td>Sharon Stait</td>
</tr>
<tr>
<td>Mudgee Police Station</td>
<td>Greg Spinks</td>
</tr>
<tr>
<td>Rural Fire Service (MWRC district)</td>
<td>Jayne Leary</td>
</tr>
<tr>
<td>South Mudgee Surgery</td>
<td>Melissa Lees</td>
</tr>
<tr>
<td>Rafton-Kandos Pre-School</td>
<td>Sandra MacIntosh</td>
</tr>
<tr>
<td>Ageing Disability and Home Care</td>
<td>Kylie Manners</td>
</tr>
<tr>
<td>Bernandos</td>
<td>Jodi Burnstein</td>
</tr>
<tr>
<td>NSW Government: Early Childhood Education and Care</td>
<td>Celia Murphy</td>
</tr>
<tr>
<td>NSW Government: Education and Communities</td>
<td>Ruth Thomason</td>
</tr>
<tr>
<td>Mudgee Medical Centre</td>
<td>Colleen Best</td>
</tr>
<tr>
<td>Host Family Respite Service</td>
<td>Judy Blackman</td>
</tr>
</tbody>
</table>
Appendix C  Future population estimate

Methodology

Stage 1 – National Regional Profile
The average growth rate identified in the National regional profile between 2006 and 2010 was used as a 'system growth'. This growth rate was 0.88 per cent per annum. This growth rate was extrapolated to predict the population year on year to 2030, being compounded annually.

Stage 2 – Mining growth
The number of new jobs as a result of the mining industry was calculated, both for construction and operation. Multipliers for families were then applied to all operational jobs to estimate the number of families associated with the mining jobs. Construction jobs had no multipliers applied to them as these jobs are considered temporary and, as such, the likelihood of a construction worker moving their family into the area is considered to be limited.

A migration factor of 65 per cent was then applied to estimate the number of people that would move into the area. This migration factor was selected, as it represented a mid range estimate on likely migration to the region. The remaining 35 per cent of mining families are considered to either already live in the area or the mining worker has chosen not to move their family into the area. This could be due to the worker being employed under a fly-in/fly-out (FIFO) or drive-in/drive-out (DIDO) arrangement.

Stage 3 – Indirect growth
To support the new population a number of indirect jobs will be created. A consistent indirect jobs multiplier of 1.5 was applied to all mining jobs. The same family and migration factors were applied. A correction factor of 50 per cent was then applied to this calculation. This accounts for jobs taken by family members of mine workers who move into the area and are, therefore, already counted in Stage 2.

Stage 4 – Sensitivity analysis
The migration rate was then varied to test the sensitivity of the estimates. The final 2030 population estimates ranged from 29,972 (at a 30 per cent migration rate) to 34,526 (at an 80 per cent migration rate). Table 44 shows the population estimate with a mid range 65 per cent migration rate.

<table>
<thead>
<tr>
<th>Table 44</th>
<th>Population estimate at a 65 per cent migration rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td>System growth multiplier</td>
<td>1.0088</td>
</tr>
<tr>
<td>System Growth (extrapolated from the ABS National Regional Profile)</td>
<td>23,063</td>
</tr>
<tr>
<td>Additional mining construction jobs</td>
<td>620</td>
</tr>
<tr>
<td>Mining operation jobs</td>
<td>1,109</td>
</tr>
<tr>
<td>Family multiplier</td>
<td>2.44</td>
</tr>
<tr>
<td>Indirect jobs multiplier</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td>------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Correction factor for jobs absorbed by mining families</td>
<td></td>
</tr>
<tr>
<td>Migration factor</td>
<td>0.65</td>
</tr>
<tr>
<td>Total population</td>
<td>23,063</td>
</tr>
</tbody>
</table>

**Assumptions**

There are a number of assumptions that underlay the population growth scenario we have developed for this assessment. These include:

- There will be adequate housing stock for people to relocate to in the region.
- There will be an adequate number of skilled workers available and all predicted job vacancies will be filled.
- All current mine growth is as accounted for in the National Regional Profile growth rate. (This is significant, as it would appear many of the existing mines have expansion plans).
- A consistent indirect jobs multiplier of 1.5.\(^{219}\)
- A consistent family multiplier of 2.44.\(^{220}\)
- A correction factor of 0.5 for indirect jobs, to account for mining families absorbing indirect mining jobs.
- When jobs data was unavailable an equation based on the Mt Penny mine Mt/per employee was used.\(^{221}\)
- The age structure is standardised to:
  - 0–24 years – 50 Male: 50 Female
  - 25–64 years – 60 Male: 40 Female
  - 65+ years 40 Male: 60 Female

\(^{219}\) This was the lowest multiplier used in the Moolarben, Wilpinjong and Airly mines impact assessments.

\(^{220}\) Upper Hunter Mining and Expansion Needs, Manidis Roberts (Appendix A). This was adopted as a reasonable assumption of family profile.

\(^{221}\) 102.6 (Mt of Coal) / 205 (operational jobs created)