Eglinton Village Expansion
Local Environmental Study

Bathurst Regional Council

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Introduction

Connell Wagner has prepared this local environmental study (LES) on behalf of Bathurst Regional Council to assess the suitability of a 347 hectare area of rural land surrounding the existing Eglinton village for further residential development and the possible expansion of the village boundaries.

Eglinton village is located 10 kilometres north of the Bathurst CBD within the Bathurst Regional local government area (LGA) in central western NSW. The Macquarie River separates Eglinton from the outer urban area of Bathurst. Eglinton is one of three villages located outside the main urban area of Bathurst.

The possible expansion of the Eglinton village to accommodate further residential development has been identified in a number of important strategic planning documents prepared for the Bathurst area over the past decade. These documents include:

- City of Bathurst Structure Plan 1994
- Village of Eglinton Residential Expansion Study 1997
- City of Bathurst Housing Strategy 2001

Bathurst Regional Council initiated the preparation of this LES based on the recommendations of the 2001 Bathurst Housing Strategy. The LES presents a planning and environmental assessment of the suitability of the area surrounding the existing Eglinton village for residential development and an assessment of possible options for expansion of the village.

Bathurst Regional Council will consider the findings of this LES and make a decision on whether to proceed to rezone land surrounding the Eglinton village to enable further expansion of the village as part of a comprehensive review of the Bathurst Region local environmental plan (LEP) over the next few years.

Consultation

Stakeholder and community consultation was undertaken as part of the LES. The consultation activities undertaken included:

- Written consultation with relevant public authorities and other relevant stakeholders.
- Face-to-face interviews with interested landowners within the study area & stakeholder groups.
- A community meeting with the Eglinton community and a community information day.
- The distribution of a series of community information sheets to update the local community on the progress of the LES.

The consultation undertaken identified a number of important issues that have been considered as part of the technical investigations and in the formulation of development options for the study area.

Some of the community held a strong view that further expansion of the village was not required and was undesirable for several reasons. However others felt that some minor expansion of the village could be acceptable provided that the village character is not compromised and infrastructure and traffic issues are addressed. Fewer people considered a major expansion of the village to be appropriate. These views tend to be supported by the various comments made about the development options and the number of people who preferred to No Growth or Low Growth options.

The number of people that indicated a preference for the High Growth scenario options is somewhat at odds with many views. The fact that the highest growth option included some provision for rural residential development surrounding the expanded urban village may explain these views. The
The selection of this option could reflect the fact that rural-residential development opportunities across Bathurst are limited and there is anecdotal evidence of pent up demand for this form of development.

**Planning framework**

The future expansion of Eglinton village must be considered in the context of the strategic and statutory planning framework for the Bathurst Regional local government area and the state. The planning framework comprises statutory planning instruments and plans and strategic planning policies. This includes:

- state environmental planning policies
- local environmental plans
- development control plans
- section 94 contributions plans
- strategic planning policies that provide direction for the future growth of the region
- directions issued under section 117 of the EPA Act

There are no significant impediments to the rezoning and future urban development of the site presented by the review of relevant planning instruments and policies. There are however several important and relevant issues and principles identified within the various planning instruments and policies that have been considered and addressed as appropriate in the development options.

**Planning and environmental issues**

Most of the study area is considered to be suitable for urban development for residential purposes based on the investigations undertaken and there are no significant constraints to development within the study area.

In the event that council decides to pursue further development within Eglinton the planning and environmental assessment undertaken has highlighted a number of issues that require further investigation before development can proceed or consideration in the design and construction of future development. These issues are summarised below.

- **Soils.** The potential impact of the high shrink-swell capacity of the Raglan soil landscape needs to be considered in the design of road and building foundations and appropriate erosion and sediment controls implemented during construction.

- **Land contamination.** A number of potentially contaminating activities and potential contaminated areas were identified within the study area and the overall likelihood of encountering contamination is considered to be moderate to high. An intrusive soil investigation should be undertaken at the potential source areas proposed to be developed prior to rezoning.

- **Surface water, hydrology and water quality.** Flooding will only effect a small portion of the study area. An area to the east of the existing village and north of Eleven Mile Drive as well as a very small area to the west of the existing village along the southern boundary of the study area have been identified as being effected by the 1% AEP flood. The 5% AEP flood will cause disruptions to Eleven Mile Drive. Rankens Bridge is designed to withstand the 1% AEP flood however in the event that the bridge is overtopped the village would not become isolated for extended periods.

- **Stormwater management.** The existing stormwater system for Eglinton has no spare capacity and any future development would need to drain around the existing village.

- **Ecology.** A 100 metre wide corridor linking remnant Box Gum Woodland and isolated woodland trees along the northern boundary of the study area with remnant Box Gum Woodland to the north-west should be set aside as a conservation area and rehabilitated under a management plan for the area. A 40 metre wide riparian zone should be established along both sides of Saltram Creek to protect the natural hydrological and ecological functions of the creek system.
- **Bushfire hazard.** A minimum asset protection zone of 20 metres from the outer edge of development is recommended based on the slope and vegetation characteristics of the study area. This asset protection zone should be incorporated within the development area.

- **European heritage.** An archival recording of two European heritage sites identified within the study area and a reassessment of a third site should be carried out before development proceeds. Negotiations should be carried out with relevant landowners for the conservation of moveable heritage items identified. Approval should be sought from the NSW Heritage Office for the destruction of all heritage sites identified and the removal of moveable heritage items.

- **Aboriginal heritage.** A consent to destroy application for the single Aboriginal site identified within the study area should be made to the Department of Environment and Conservation.

- **Piper Airfield.** Potential noise impact on future residents under the take-off and landing path of Runway 21 would need to be considered further and could require acoustic house design measures to minimise disturbance to residents within the area west of the existing village.

- **2BS radio transmission towers.** No development can occur within a 103 metre radius from the base of the two existing towers (the drop zone) until the towers are removed from the area.

- **Rural-urban land use separation.** A minimum 40 metre buffer with a 20 metre vegetative buffer treatment should be provided around the edge of proposed development to separate rural and urban land uses and minimise potential land use conflicts.

- **Human services.** An expansion to the village should provide for a 0.5 hectare extension to the existing primary school site to cater for future population growth. The provision for the future development of additional convenience shops within Eglinton should be considered depending on the extent of further development.

- **Utilities.** The water treatment plant for Bathurst has adequate capacity for expansion of the Eglinton village however the trunk main which supplies water to Eglinton would need to be upgraded to service additional growth. Security of the supply to Eglinton would also need to be addressed as currently the village relies on a single main. The Bathurst sewerage waste water treatment plant has recently been upgraded and can accommodate growth of Bathurst to a population of 55000 however the sewerage system connecting to Eglinton is currently operating at capacity and would need to be upgraded to allow for expansion of the village. The electricity infrastructure to Eglinton does not have capacity for expansion of the village however Country Energy plans to construct a new 11kV feeder from the Stewart Zone Substation within the next three years which could accommodate future demands from the study area. A 132 kV transmission line runs through the northern portion of the study area within an easement 30.48 metres in width. No buildings would be able to be constructed within this easement. It is estimated that an additional 570 lots could be serviced by the current communications network provided by Telstra. The existing gas main that services Eglinton has capacity for an additional 150 residential dwellings. A gas main is also located on the corner of Eleven Mile Drive and Gilmore Road in Kelso which could service a further 600 residential dwellings.

**Development options**

Development options for the study area have been prepared based on development principles derived from the assessment of planning and environmental issues and the community consultation process. These options represent a range of possible growth scenarios for the study area and can be categorised into four basic growth scenarios:

- No Growth – no further development
- Low Growth – minor expansion of the village area to the east and west
- Moderate Growth – moderate expansion of the village area further north
High Growth – more extensive development across the area.

The salient features of the options that involve some growth are provided below:

**Low Growth Scenario**
- Village expansion limited to south of Wellington Street with the balance of the area retained for rural uses.
- Predominantly larger lot residential development with potential for future subdivision. The predominant lot size is 2000 square metres.
- An eastern growth boundary formed by Saltram Creek.
- A western growth boundary formed by the formalisation of a natural drainage channel.
- A 0.5 hectare expansion area for Eglinton Public School.
- A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
- A minimum 40 metre riparian zone along Saltram Creek.
- A new cycle path along the open space / environmental protection corridor to form a circuit around the village.
- The potential for future redevelopment of existing battleaxe lots along Alexander Street through the provision of road frontage.

**Moderate Growth Scenario - Option 1**
- Village expansion limited to south of Wellington Street with the balance of the area retained for rural uses.
- 1000 square metre lots consistent with existing development within the village.
- An eastern growth boundary formed by Saltram Creek.
- A western growth boundary formed by the formalisation of a natural drainage channel.
- A 0.5 hectare expansion area for Eglinton Public School.
- A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
- A minimum 40 metre riparian zone along Saltram Creek.
- A new cycle path along open space / environmental protection corridor to form a circuit around the village.
- The potential for future redevelopment of existing battleaxe lots along Alexander Street through the provision of road frontage.

**Moderate Growth Scenario - Option 2**
- Village expansion extended north of Wellington Street.
- 1000 square metre lots south of Wellington Street and larger lots north of Wellington Street.
- An eastern growth boundary formed by Saltram Creek and tributary.
- A western growth boundary formed by formalisation of a natural drainage channel.
- A northern growth boundary formed by an open space corridor connecting drainage channels to the west and east.
- A 0.5 hectare expansion area for Eglinton Public School.
- A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
- A minimum 40 metre riparian zone along Saltram Creek.
- A new cycle path along the open space / environmental protection corridor to form a circuit around the village.

**High Growth Scenario - Option 1**
- Village expansion extended north of Wellington Street.
- 1000 square metre lots consistent with existing development.
An eastern growth boundary formed by Saltram Creek and tributary.
A western growth boundary formed by the formalisation of a natural drainage channel.
A northern growth boundary formed by an open space corridor connecting drainage channels to the west and east.
A 0.5 hectare expansion area for Eglinton Public School.
A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
A minimum 40 metre riparian zone along Saltram Creek.
A new cycle path along the open space / environmental protection corridor to form a circuit around the village.

High Growth Scenario - Option 2

Urban expansion contained with rural residential development of balance of study area.
A transition of rural residential lot sizes from 4000 square metres to 2 hectares.
An eastern urban growth boundary formed by Saltram Creek and tributary.
A western urban growth boundary formed by the formalisation of a natural drainage channel.
A northern growth boundary formed by an open space corridor connecting drainage channels to the west and east.
A 0.5 hectare expansion area for Eglinton Public School.
A minimum 50 metre buffer between rural residential and residential uses including a 20 metre vegetative buffer element.
A minimum 40 metre buffer between rural residential and rural land including a 20 metre vegetative buffer element to be incorporated within lots.
A minimum 40 metre riparian zone along Saltram Creek.
A new cycle path along open space / environmental protection corridor to form a circuit around the village.
The protection of the Box-Gum Woodland endangered ecological community to the north of the study area with a 100 metre corridor to be fenced regenerated.

The following table provides a summary of the estimated additional lots and estimated additional population that would be associated with each development option.

<table>
<thead>
<tr>
<th>Development option</th>
<th>Estimated additional lots</th>
<th>Estimate additional population</th>
<th>Estimated no. of years land supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Growth Scenario</td>
<td>146</td>
<td>409</td>
<td>7</td>
</tr>
<tr>
<td>Moderate Growth Scenario – Option 1</td>
<td>278</td>
<td>778</td>
<td>14</td>
</tr>
<tr>
<td>Moderate Growth Scenario – Option 2</td>
<td>409</td>
<td>1,145</td>
<td>20</td>
</tr>
<tr>
<td>High Growth Scenario – Option 1</td>
<td>519</td>
<td>1,453</td>
<td>26</td>
</tr>
<tr>
<td>High Growth Scenario – Option 2</td>
<td>729</td>
<td>2,041</td>
<td>36</td>
</tr>
</tbody>
</table>

A strategic assessment of the development options has been carried out to highlight the potential impacts of the alternative development options and enable direct comparison between the options. This has been provided to assist Bathurst Regional Council to determine the appropriate extent and form of future development within the area. A summary of the major advantages and disadvantages which have been identified with each option is provided below.

No Growth Scenario

The major advantage of the No Growth scenario is that it is most consistent with community expectations with the consultation process showing that it is the option most favoured by the Eglinton community. In addition no upgrades would be required to services or utilities. The option would not result in loss of agricultural land or changes to the visual environment or village character. The major disadvantage of the option is that demand for additional lots in Eglinton would not be met. In addition if no further growth of Eglinton proceeds then existing land use conflicts between residential and rural
land would remain. There is also the danger that in the absence of a development plan for expansion development pressure could result in ad hoc rezoning and poorly managed village sprawl.

**Low Growth Scenario**

This option also provides the advantage that it is relatively consistent with community expectations for Eglinton and would result in minimal change to the landscape and character of the village whilst satisfying some demand for additional lots. The option would also result in only a minor loss of agricultural land with much of this land already fragmented with low productivity. The option also results in minimal impact on the surrounding road network and relatively minor requirements for upgrade of utility services. Whilst the expansion would result in some improvement to existing rural-urban land use conflicts, these conflicts would not be reduced for the northern portion of the village. The option would also result in the provision of a small amount of additional passive open space with cycle and pedestrian paths. This option would provide an estimated 7 year supply of residential land and therefore would meet short to medium term demand.

**Moderate Growth Scenario – Option 1**

The advantages and disadvantages for this option are relatively similar to those for the Low Growth scenario. The major points of difference are the need for more significant upgrades to sewer and water infrastructure. This option would provide an estimated 14 year supply of residential land and therefore would meet medium term demand.

**Moderate Growth Scenario – Option 2**

Major advantages of the Moderate Growth Scenario – Option 2 are the significant reduction in rural-urban land use conflict that would result from the implementation of a land use buffer around the urban area and the provision of a continuous cycle / pedestrian path within a passive open space corridor around the village which would connect into the wider network. In addition the land use buffer and open space corridor would form a continuous growth boundary around the village to contain village expansion.

The option has less community support than the No Growth or Low Growth scenarios and would result in more significant visual change than the three options discussed above. However it is considered that the implementation of a vegetated buffer around the village would create a positive visual distinction between the urban and rural areas. Whilst the option would result in greater loss of agricultural land it is considered that the management of rural-urban land use conflicts may enhance the production potential of the remaining agricultural land. The option would also require relatively minor upgrades to the surrounding traffic network. More significant upgrades to utility services would be required than for the previously discussed options. This option would provide an estimated 20 year supply of residential land and therefore would cater for long term demand.

**High Growth Scenario – Option 1**

The advantages and disadvantages for the High Growth Scenario – Option 1 are relatively similar to those for the Moderate Growth Scenario – Option 2. The major points of difference are that the High Growth Scenario – Option 1 would require much more significant upgrades to the surrounding road network to enable development and some additional upgrades to utility services. This option would provide an estimated 26 year supply of residential land and therefore would cater for long term demand.

**High Growth Scenario – Option 2**

Whilst the High Growth Scenario Option 2 received a considerable amount of community support it also raised a significant community concern about the extent to which it would change the character and visual environment of Eglinton. The option would also result in significantly greater impact on the surrounding road network resulting in greater need for additional upgrades to enable development and additional upgrades to utility infrastructure would also be required. The expansion would result in the loss of a much greater area of agricultural land than the other options. A major perceived benefit of this option which was identified through the consultation process was the development of rural residential
lots. This option would provide an estimated 36 year supply of residential land and expansion of the village to this extent may not be appropriate at this stage. This option however would result in the greatest loss of class 2 agricultural land.

Findings and conclusions
The technical investigations have found that most of the land within the study area is suitable for urban development for residential purposes and there are no significant constraints to development within the area.

The critical issue for Bathurst Regional Council is how much urban expansion is appropriate within Eglinton. A residential land assessment undertaken for the Bathurst area suggests that further expansion of Eglinton to cater for long-term population growth is not required given the available residential land supply within zoned areas or areas identified for future development. However council has identified Eglinton for urban expansion as part of its strategic planning for the Bathurst area. There is also anecdotal evidence that there is localised demand for residential lots within Eglinton as an alternative residential environment close to Bathurst.

The most significant issue raised consistently in the consultation activities was the maintenance of the village character of Eglinton and this does represent a valid consideration for council. An expansion of the village through additional urban development will not necessarily result in the destruction or diminution of the village character and atmosphere but the limits of change need to be considered in the evaluation.

The High Growth scenario options would result in wholesale change to the village. The No Growth option would not necessarily result in a good planning outcome given that there is demand for the alternative residential environment that Eglinton provides and some additional population could provide the potential for additional services and facilities within Eglinton. A balance between these two extremes could represent the most acceptable planning outcome for Bathurst Regional Council and the Eglinton community.

The findings of the LES suggest that the Low Growth Scenario or Moderate Growth Scenario – Option 1 development options would be the most appropriate options for an expansion of Eglinton at this stage for the following reasons:

- These options would provide a 7 to 14 year supply of residential land and meet short to medium term demand for residential land within Eglinton.
- A minor expansion of the village is consistent with the community expectations identified through the community consultation process.
- These options would result in only a minor loss of Class 2 agricultural land and implementation of land use buffers around urban expansion areas would better manage existing rural-urban land use conflict.
- Rural land between the village and Saltram Creek which is no longer viable for agricultural production would be developed.
- Minor expansion would not have significant impact on the visual environment and would not result in significant change to the village character.
- Passive open space would be provided along the eastern and western boundaries south of Wellington Street.
- Development would have only a minor impact on the road and transport network.
- Development would require only relatively minor upgrades and extensions to existing utility infrastructure.
- Provision of growth boundaries around new expansion areas would curtail potential village sprawl.

Development of one of these lower growth options at this stage would not preclude further village expansion in the future. The development of Moderate Growth Scenario – Option 2 or High Growth
Scenario – Option 1 could be considered at some stage in the future and would offer a number of additional benefits including:

- A continuous land use buffer surrounding the village to manage rural-urban land use conflicts.
- A continuous open space corridor around the village with cycle / pedestrian paths connecting into the surrounding cycle network. This corridor would also form a growth boundary around the village.

More extensive development of the outer parts of the study area for rural-residential purposes (such as proposed under High Growth Scenario – Option 2) is not considered appropriate at this stage. This option would cater for expected demand over a 36 year period which is clearly not required at this stage. This option would be expensive to service and would result in the loss of a considerable area of Class 2 agricultural land. There are a number of areas of Class 3 agricultural land that surround the urban areas of Bathurst which may be more suitable for rural-residential development. This broader strategic planning issue needs to be considered as part of the Bathurst Region Rural Strategy being undertaken by council.
1. Introduction

1.1 Background

Connell Wagner has prepared this local environmental study (LES) on behalf of Bathurst Regional Council. The purpose of the LES is to assess the suitability of certain rural land surrounding the existing Eglinton village for further residential development and the possible expansion of the village boundaries.

The possible expansion of the Eglinton village to accommodate further residential development has been identified in a number of important strategic planning documents prepared for the Bathurst area over the past decade. These documents include:

- City of Bathurst Structure Plan 1994
- Village of Eglinton Residential Expansion Study 1997
- City of Bathurst Housing Strategy 2001

The potential expansion of Eglinton was first identified as part of the major findings of the 1994 Bathurst Structure Plan. The structure plan stated that the village of Eglinton would be expanded in the longer term to cater for a total population of nearly 4,000 people. The 1994 population was estimated to be 1590 people. The structure plan therefore envisaged a doubling of the village population.

The area surrounding the Eglinton village was confirmed in the 2001 Bathurst Housing Strategy as an important future residential expansion area within the Bathurst area. The strategy identified the area surrounding Eglinton as warranting further investigation into its potential for future low-density residential development around Bathurst.

Bathurst Regional Council has initiated the preparation of this LES based on the recommendations of the 2001 Bathurst Housing Strategy. The LES presents a planning and environmental assessment of the suitability of the area surrounding the existing Eglinton village for residential development and considers possible options for expansion of the village.

Bathurst Regional Council will consider the findings of this LES and make a decision on whether to proceed to rezone land surrounding the Eglinton village as part of a comprehensive review of the Bathurst local environmental plan (LEP) over the next few years.

1.2 The Eglinton village and the study area

Eglinton is located 10 kilometres north of the Bathurst CBD within the Bathurst Regional local government area (LGA) in central western NSW (Figure 1.1). The Macquarie River separates Eglinton from the outer suburbs of Bathurst.

Eglinton is one of three villages located outside the main urban area of Bathurst. The existing village comprises single-storey and some double storey detached housing development with a current housing stock of approximately 555 dwellings. Facilities located within the village include a primary school (Eglinton Public School), a recreation area or “village green” including playing fields and tennis courts, a community hall (Eglinton War Memorial Hall) and a local convenience shop (Eglinton Store). A rural fire station is also located in the village.

The study area for the purposes of this LES comprises 347 hectares of land surrounding the village as shown on Figure 1.2 and described in Table 1.1 below. The study area comprises rural land used predominantly for grazing purposes as well as some cropping and market garden activities. Salttram Creek and a number of other minor drainage channels traverse the site from north to south and drain into the Macquarie River to the south of the study area.
The land surrounding the study area is rural land used predominantly for grazing purposes. To the south between the Eglinton village and Macquarie River are a small number of rural residential allotments. Approximately 500 metres from the south-west corner of the study area is the Pipers Airfield which is a private airstrip used by the Bathurst Soaring Club.

1.3 LES preparation process

This LES has been prepared in three stages:

- **Stage 1 – Baseline investigations**
  Stage 1 involved initial consultation with stakeholders and the Eglinton community and a range of planning and environmental investigations to identify development constraints and opportunities. The initial consultation comprised written consultation with relevant government agencies and other organisations, interviews with landowners within the study area, and an initial community meeting to gain the views of the Eglinton community on village expansion.

- **Stage 2 – Development options**
  Stage 2 involved the preparation and assessment of possible development options for the study area based on three growth scenarios and consultation with the Eglinton community on the village expansion options.

- **Stage 3 – LES report preparation**
  Stage 3 involved the preparation and finalisation of the LES report.

1.4 Content and structure

This LES has been prepared pursuant to the provisions of the *Environmental Planning and Assessment Act 1979* (EPA Act). The LES addresses the specifications for LES preparation issued by the former Department of Infrastructure Planning and Natural Resources (DIPNR). These specifications were set out within correspondence to Bathurst Regional Council dated 3 November 2002. A copy of the letter from DIPNR is provided in Appendix A.
The main elements of the LES are:

- A planning and environmental assessment of the study area to determine its suitability for residential development and limitations on the future expansion to the Eglinton village area.

- Preparation and assessment of possible future development options for the study area based on identified development constraints and opportunities and various growth scenarios.

The LES is divided into six sections:

- Section 1 provides an introduction to the LES and sets out the background to the LES and describes the study area.

- Section 2 outlines the relevant strategic and statutory planning documents that establish the planning framework for the study area and considers the appropriateness of village expansion within the context of this planning framework.

- Section 3 provides an overview of the consultation undertaken during the preparation of the LES and the outcomes of the consultation. This includes statutory consultation with government agencies and community consultation.

- Section 4 assesses the suitability of the study area for residential development based on an analysis of relevant planning and environmental issues and establishes land use and environmental safeguards and conditions to be incorporated into any future development of the area.

- Section 5 investigates the appropriate form of future development of the area and presents and assesses development options for the area that respond to identified planning and environmental issues and constraints and that reflect various growth scenarios for the village.

- Section 6 presents the conclusions and recommendations of the LES based on the technical assessment and consultation outcomes.
2. Planning framework

2.1 Introduction

The future development of the Eglinton village must be considered in the context of the strategic and statutory planning framework for the Bathurst area and NSW. This includes:

- state environmental planning policies (SEPPs)
- local environmental plans (LEPs)
- development control plans (DCPs)
- section 94 contributions plans
- strategic planning policies and studies
- directions issued under section 117 of the EPA Act

The relevant issues and principles identified within these planning instruments and policies must be considered and addressed in the rezoning and development process for the study area. Those planning instruments and policies considered relevant are highlighted in Table 2.1 and discussed below.

Table 2.1: Planning framework for the LES

<table>
<thead>
<tr>
<th>Type of policy or instrument</th>
<th>Policy or instrument description</th>
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<tr>
<td><strong>Statutory</strong></td>
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</tr>
<tr>
<td>State</td>
<td>State Environmental Planning Policy No 44 – Koala Habitat Protection</td>
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<tr>
<td></td>
<td>State Environmental Planning Policy No 55 – Remediation of Land</td>
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<td></td>
<td>Section 117 Directions</td>
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<tr>
<td>Local</td>
<td>Bathurst Local Environmental Plan 1997 and Draft Bathurst Regional (Interim) LEP 2005.</td>
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<td></td>
<td>Bathurst Development Control Plan – Residential Subdivision 1997</td>
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<td>Bathurst Development Control Plan – Residential Housing 1997</td>
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<td></td>
<td>Section 94 Contributions Plans</td>
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<tr>
<td><strong>Strategic</strong></td>
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<tr>
<td>State</td>
<td>Planning for Bushfire Protection</td>
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<td></td>
<td>Integrating Land Use and Transport</td>
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<td>Policy for Sustainable Agriculture in New South Wales</td>
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<td>Rural Lands Policy</td>
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<td>Regional</td>
<td>Macquarie Bogan Catchment Water Quality and River Flow Interim Environmental Objectives</td>
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<td>Village of Eglinton Residential Expansion Study 1997</td>
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<td>City of Bathurst Draft Rural Strategy 2004</td>
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<td>Draft Bathurst Region Urban Strategy – Discussion / Issues Paper</td>
</tr>
<tr>
<td></td>
<td>Draft Bathurst Region Rural Strategy – Discussion / Issues Paper</td>
</tr>
</tbody>
</table>

2.2 Statutory planning considerations

2.2.1 State environmental planning policies

State Environmental Planning Policy 44 – Koala Habitat Protection

SEPP 44 aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas and to ensure a permanent free living population and to reverse the trend of koala population decline.

An assessment of Koala habitat provided below concludes that the study area does not contain either potential or core Koala habitat as defined under the SEPP.
Potential Koala habitat is defined by SEPP 44 as that in which a minimum of 15 per cent of the trees in the 'upper or lower strata of the tree component' are species listed in a Koala feed species in Schedule 2 of SEPP 44. Within the study area, dominant eucalypts include *Eucalyptus melliodora* (Yellow Box) and *Eucalyptus polyanthemos* (Red Box). One Koala feed tree species (*Eucalyptus viminalis*) was recorded. This species was represented by a few isolated trees and constitutes less than 15 per cent of the tree component of the study area. Based on this assessment the study area does not contain potential Koala habitat and accordingly an assessment of core Koala habitat is not required, hence there is no requirement for the preparation of a koala plan of management.

Less than one per cent of the original over-storey within the study area remains intact. Where present, the tree component is dominated by ornamental plantings and exotics such as Weeping Willow (*Salix babylonica*), *Acacia baileyana* (Cootamundra Wattle), and conifers (*Chamaecyparis* sp., *Juniperus* sp. and *Thuja* sp.). The study area does not form part of a local wildlife or bushland corridor and has little, if any, connectivity with more extensive vegetation remnants in the local area, such as those to the north-east. No evidence of Koala activity was recorded and it is considered highly unlikely that Koalas would utilise the study area.

**State Environmental Planning Policy 55 – Remediation of Land**

SEPP 55 aims to provide a state wide planning approach to the remediation of contaminated land and reduce the risk of harm to human health or any other aspect of the environment. A draft LEP is not to propose the rezoning of land unless the planning authority has considered whether the land is contaminated. If the land is contaminated the planning authority must be satisfied that the land is suitable for the proposed use or that the land will be remediated before the use commences.

A Phase 1 contamination assessment has been prepared as part of the LES. This assessment concluded that the overall likelihood of encountering contamination if development were to proceed was moderate to high due to the potential sources of contamination identified within the study area and the proposed future land use indicated in the LES. A number of recommendations were made in the report to be carried out before rezoning and development of the site proceeds. The findings of this assessment are summarised in section 4.4 and the complete assessment report is provided in Appendix F.

**2.2.2 Ministerial directions**

Section 117(2) of the EPA Act provides for the Minister to issue directions to local councils concerning the preparation of draft local environmental plans. A review the section 117 ministerial directions issued under the EPA Act on the 30 September 2005 has identified relevant issues that will need to be addressed in the rezoning process. The relevant section 117 directions and requirements are summarised in Table 2.2 below.

**Table 2.2: Relevant section 117 directions**

<table>
<thead>
<tr>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
</table>
| 2         | Approval, concurrence and consultation  
This direction requires that a draft LEP shall not contain provisions requiring concurrence, consultation or referral of a minister or public authority. |
| 9         | Conservation and management of environmental and indigenous heritage  
This direction requires that a draft LEP contain provisions to facilitate the conservation of items of heritage significance, Aboriginal objects, areas of Aboriginal heritage significance or Aboriginal places. |
| 12        | Development near licensed aerodromes  
This direction requires that in preparation of a draft LEP, consultation is carried out with the Civil Aviation Authority and the lessee of the aerodrome and that consideration be given to the Obstacle Limitation Surface. |
<table>
<thead>
<tr>
<th>Direction</th>
<th>Requirement</th>
</tr>
</thead>
</table>
| 15        | Flood prone lands  
A draft LEP shall not rezone flood liable land from a rural to residential zone. |
| 17        | Integrating land use and transport  
This direction requires that a draft LEP locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of the planning policies and guidelines contained within the document Integrating Land Use and Transport (DUAP 2001). |
| 19        | Planning for bushfire protection  
This direction requires consideration of the document Planning for Bushfire Protection and shall impose asset protection zones where bushfire hazard is present. |
| 21        | Residential zones  
This direction requires that residential development is not permitted until land is adequately serviced with water and sewerage infrastructure. The direction also requires land which is zoned for residential development will in as much as is practical and compatible with the environmental quality of the area provide for a variety of housing forms and increase the permissible residential density on the land. |
| 22        | Rural zones  
This direction requires that rural land is not rezoned for urban purposes until such action is justified by an environmental study. |

The rezoning of the land within the study area must be consistent with these directions or any inconsistency must be justified.

### 2.2.3 Regional environmental plans

There are no regional environmental plans that apply to the study area.

### 2.2.4 Local environmental plans and other local plans

**Bathurst Local Environmental Plan 1997 and Draft Bathurst Regional (Interim) Local Environmental Plan 2005**

The Bathurst Local Environmental Plan 1997 (Bathurst LEP) is the current principal statutory planning instrument for the Eglinton expansion area that controls the use and development of the land. Bathurst Regional Council has prepared a Draft Bathurst Regional (Interim) LEP 2005 (Draft LEP) to combine the Bathurst LEP and the Evans Interim Development Order (Evans IDO). The Draft LEP will supersede the current Bathurst LEP and Evans IDO when gazetted.

Under the Bathurst LEP the majority of the study area is zoned 1(a) General Rural. The land to the south-east of the existing village along Saltram Creek is zoned 1(b) Market Garden (Figure 2.1). The proposed zoning of the study area under the Draft Interim LEP is 1(a) Inner Rural. The existing and proposed zoning of the study area under the respective LEPs does not provide for further expansion of the existing Eglinton village. An LEP amendment would be required to enable the residential development of the area. The rezoning of land within the study area identified as suitable for residential expansion within this LES is expected to be undertaken as part of a comprehensive review of the planning controls across the Bathurst Regional local government area to be completed over the next few years.

The land within the existing village area is zoned Residential 2(a) under the Bathurst LEP and the Draft Interim LEP. The zone objectives under both LEPs include a requirement to protect and conserve the low-density rural atmospheric of the three Bathurst villages. This objective is relevant to the future form of an expansion of the Eglinton village.

**Bathurst Development Control Plan – Residential Subdivision**

The Bathurst Development Control Plan – Residential Subdivision (Residential Subdivision DCP) sets out controls for the management of subdivision of land zoned Residential 2(a) under
the Bathurst LEP and provides land use and subdivision controls for certain lands across Bathurst including the Eglinton village.

The existing Eglinton village is zoned Residential 2(a) with the exception of the open space areas. The development controls under the Residential Subdivision DCP should be considered in the design of new urban areas surrounding the Eglinton village to ensure new development is consistent with existing village development. The development controls set out in the DCP that should be considered include:

- minimum lot standards including minimum lot size and minimum lot frontages
- minimum requirements for road access to residential lots
- standards for residential development within flood prone areas

**Bathurst Development Control Plan – Residential Housing**

The Bathurst Development Control Plan – Residential Housing (Residential Housing DCP) sets out development controls for residential development within the Residential 2(a) zone based on designated precincts. The Eglinton village forms part of the Inner Fringe Precinct (Precinct 2) as defined under the DCP. The controls set out for this precinct allow for residential development including dual occupancies, single dwelling and granny flat development. Residential units are not permitted in Eglinton and the other Bathurst villages. The objectives for the Inner Fringe Precinct are:

- To provide for a mixed residential character in which single dwellings and dual occupancy developments are evenly distributed throughout the precinct.
- To permit forms of dual occupancy housing which are compatible with the single dwelling character of the precinct and whose impact on the existing amenity of neighbourhoods is minimised.
- To permit forms of residential units which are compatible with the single dwelling character of the precinct excluding land located in the villages of Eglinton, Raglan and Perthville, land at Boundary Road and land within the 50dBA noise contour.

The minimum allotment size in Precinct 2 for the villages is 900sqm which is larger than for other areas within the precinct. The development standards for the precinct should be considered in the preparation of development options for the study area to ensure new development is consistent with existing village development.

**Section 94 contributions plans**

Section 94 contributions plans enable councils to require new developments to make a monetary contribution towards the provision or upgrading of services or facilities where that development places a greater demand on those services or facilities.

There is a number of existing section 94 contributions plans in place for the Bathurst area. None of these plans apply specifically to the study area. A decision to proceed with the rezoning and development of the study area would necessitate amendments to the existing plans or the preparation of a new development contributions plan specific to the expansion area.

### 2.3 Strategic planning considerations

#### 2.3.1 State planning policies

**Planning for Bushfire Protection**

*Planning for Bushfire Protection* (NSW Rural Fire Service 2001) sets out planning considerations for residential development on sites within proximity to areas affected by bushfire hazard. The guide contains strategies and guidelines to address bushfire issues in planning instruments. The guidelines highlight the need to incorporate bushfire planning
provisions in draft local environmental plans. The document sets out requirements for asset protection zones that are relevant to future expansion of the Eglinton village.

A bushfire assessment has been undertaken as part of the LES which establishes minimum asset protection zone requirements. The bushfire protection requirements for the study area are discussed in detail in section 4.8.

**Integrating Land Use and Transport**

*Integrating Land Use and Transport* (DUAP 2001) has been developed as part of the NSW Government initiative to improve the integration of land use and transport planning. Principles and initiatives are provided for locating land uses and designing development that encourages use of more sustainable transport modes such as public transport, walking and cycling.

The document sets out 10 principles for accessible development:

- concentrate in centres
- mix uses in centres
- align centres within corridors
- link public transport with land use strategies
- connect streets
- improve pedestrian access
- improve cycle access
- manage parking supply
- improve road management
- implement good urban design

Location and design guidelines apply each of the 10 principles to different land use types or urban areas. Most relevant to the Eglinton study area are the urban design guidelines for housing development. These design guidelines should be considered in the formulation of development options for the area.

**Policy for Sustainable Agriculture**

The *Policy for Sustainable Agriculture in NSW* (Department of Primary Industries 1998) has been prepared to promote a coordinated approach to achieving an ecologically and economically sustainable agricultural sector in NSW. The key goals of the policy are for agricultural industries that contribute positively to the productivity and economy of the state and to protect the biological and physical resource base and support rural people and communities.

The policy sets out objectives and strategies for a range of issues. The issues and associated strategies considered relevant to the Eglinton village expansion are set out in Table 2.3 below. Relevant strategies are addressed in Section 4.11.2.

**Table 2.3: Strategies relevant to the LES**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Relevant strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land management</td>
<td>• Maintain effective barriers to the importation and spread of weeds and pest animals.</td>
</tr>
<tr>
<td>Integrated management</td>
<td>• Ensure the equitable and efficient allocation of land and other natural resources between agriculture and other sectors of the community.</td>
</tr>
<tr>
<td></td>
<td>• Ensure land use planning is undertaken in association with agriculture to avoid conflict that may jeopardise agricultural sustainability.</td>
</tr>
<tr>
<td></td>
<td>• Develop and adopt agricultural activities and planning strategies that minimise impacts on community amenity from noise, dust and odour.</td>
</tr>
</tbody>
</table>
The fundamental issue that needs to be considered is the creation of potential land use conflicts between agricultural and urban uses and the potential impact on agricultural operations. The potential rural-urban interface issues are land use planning and urban design issues that are considered further in section 4.11.3. The avoidance of potential land use conflicts between rural and urban uses has been an important design principle for the formulation of the development options for the study area presented in section 5.

**Rural Lands Policy**

The *Rural Lands Policy* (DUAP 2000) has been developed to assist councils in inland NSW to prepare draft LEPs applying to rural land. The policy sets out objectives and matters for consideration when preparing a draft LEP. The document is set out in two sections: rural land resources and settlements. The issues and matters for consideration contained within the policy that are relevant to this LES are set out in Table 2.4 below. The objectives of this policy are addressed in Section 4.11.2.

**Table 2.4: Objectives and matters relevant to the LES**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Objectives</th>
<th>Matters for consideration when preparing an LES</th>
</tr>
</thead>
</table>
| **Rural land resources** | • To minimise loss or fragmentation of agricultural land or holdings.  
• To maintain and promote agricultural activities and uses and to provide opportunities for a greater variety of agricultural uses in the future.  
• To protect the productive capacity of agricultural land.  
• To minimise land use conflicts and environmental impacts.  
• To protect and maintain the scenic and landscape values of rural land.  
• To protect and restore the natural resource base on which agriculture and other land uses depend. | • Ensure provisions do not unreasonably increase agricultural land values.  
• Identify and investigate the cumulative impacts of the LEP on agriculture and the natural and cultural environment. |
| **Settlement** | • To ensure supply of new housing relates to demand.  
• To plan for rural residential development in the context of a rural release or settlement strategy.  
• To maximise use of existing infrastructure in the provision of urban and rural residential lots.  
• To conserve or use land in a way that will not prejudice future urban purposes.  
• To minimise impact on the existing and potential productivity of agricultural land.  
• To minimise land use conflicts and environmental impacts.  
• To protect and maintain scenic landscape values.  
• To provide for a variety of urban and rural living opportunities.  
• To ensure settlement relates to the physical, social and service catchments.  
• To ensure coordination on a regional level and between adjoining local government areas. | • The council may prepare a draft LEP for land that is zoned rural to allow rural residential or urban purposes where the land has been identified in a current rural residential strategy or urban settlement strategy. |
The expansion of the Eglinton village would result in the loss of agricultural land and has the potential to increase land use conflicts between rural and urban land uses. The loss of agricultural land is a strategic planning issue that is discussed further in section 4.11.2. The potential rural-urban interface issues are land use planning and urban design issues that are considered further in section 4.11.3. The avoidance of potential land use conflicts between rural and urban uses has been an important design principle for the formulation of possible development options for the study area as presented in section 5.

2.3.2 Regional planning policies

Macquarie Bogan Catchment Water Quality and River Flow Interim Environmental Objectives

The NSW Government has prepared Interim Environmental Objectives for all catchments across the state as part of a number of reforms to ensure the long-term health of NSW waterways. The objectives establish a classification system for rivers across the state. Up to 11 interim water quality objectives and 11 interim river flow objectives have been applied to each class of waterway.

Bathurst is located towards the south western edge of the Macquarie Bogan catchment. Under the guidelines for this catchment the Macquarie River where it passes through Eglinton is classified as a controlled river with reduced flow. Saltram Creek is classified as an uncontrolled stream. The objectives for these waterways are summarised below in Table 2.5.

Table 2.5: Relevant water quality and river flow objectives for the Macquarie River and Saltram Creek

<table>
<thead>
<tr>
<th>Water quality objectives</th>
<th>River flow objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Controlled river with reduced flow – Macquarie River through Eglinton</strong></td>
<td>Protection of aquatic ecosystems.</td>
</tr>
<tr>
<td>Protection of visual amenity.</td>
<td>Protect natural low flows.</td>
</tr>
<tr>
<td>Protection of primary and secondary contact recreation.</td>
<td>Maintain natural flow variability.</td>
</tr>
<tr>
<td>Protection of livestock water supply.</td>
<td>Minimise effects of weirs and other structures.</td>
</tr>
<tr>
<td>Protection of homestead and irrigation water supply.</td>
<td>Protect important rises in water levels.</td>
</tr>
<tr>
<td>Protection of drinking water at point of supply.</td>
<td>Maintain wetland and floodplain inundation.</td>
</tr>
<tr>
<td>Protection of aquatic foods (cooked).</td>
<td>Maintain natural rates in change in water levels.</td>
</tr>
<tr>
<td><strong>Uncontrolled stream – Saltram Creek</strong></td>
<td>Same as above.</td>
</tr>
<tr>
<td></td>
<td>Protect natural low flows.</td>
</tr>
<tr>
<td></td>
<td>Protect important rises in water levels.</td>
</tr>
<tr>
<td></td>
<td>Maintain wetland and floodplain inundation.</td>
</tr>
<tr>
<td></td>
<td>Manage groundwater for ecosystems.</td>
</tr>
<tr>
<td></td>
<td>Minimise effects of weirs and other structures.</td>
</tr>
</tbody>
</table>

The policy sets out key indicators for each of the objectives. Appropriate water management principles would need to be applied to any further urban development within Eglinton to meet these targets. This is discussed in more detail in section 4.6.
2.3.3 Local planning studies and strategies

City of Bathurst Structure Plan 1994 Review

This review of the 1974 Bathurst Structure Plan was developed on population forecasts that considered Bathurst would reach these progressive population targets:

- 40,000 people between 2003 and 2009
- 50,000 people between 2011 and 2020
- 60,000 between 2017 and 2029

The structure plan considered all land uses in Bathurst and gave them current and future direction based on these population targets. The structure plan identified a number of areas for strategic residential expansion.

Village of Eglinton Residential Expansion Study 1997

The residential expansion study was prepared to assess the potential for Eglinton to provide additional “village-type” residential housing. The study considered a number of opportunities and constraints to development. It was found that the following factors would not be expected to constrain urban development:

- the need for stormwater drainage management
- the potential for site contamination
- the potential for bush fire hazard
- the existence of Aboriginal and European heritage items
- the presence of threatened flora and fauna
- the availability of utilities infrastructure
- the surrounding land uses
- the agricultural capability of the land

Community concerns with regard to future expansion of the existing village were highlighted through the consultation process carried out as part of the study. In particular, the process highlighted a preference to maintain the existing character of Eglinton. The study recommended that further investigations regarding possible urban expansion of Eglinton should consider the concerns of the Eglinton community.

The study identified a number of assessments to be carried out prior to preparation of a draft LEP:

- determination of exact location of the 1% AEP flood line
- preparation of a stormwater management plan for the existing and future residential area of Eglinton
- completion of a heritage survey to determine locations of Aboriginal sites
- completion of a traffic assessment for Eglinton including the impact of further development on the existing road system and a definite road hierarchy
- investigation of site contamination relating to previous uses of the site

The study also involved an assessment of housing demand. This indicated that the Eglinton village would need to be expanded by around the year 2015 if low-density residential housing continued to be made available in Eglinton.

City of Bathurst Housing Strategy 2001

The 2001 Bathurst Housing Strategy was prepared to reassess the demand and supply of low and medium density housing and to provide recommendations on future housing demand. The strategy defined low density as detached housing. Low to medium density was defined as dual occupancy. Medium density was defined as residential unit development.
The strategy indicated that low density housing is the dominant housing preference in Bathurst and that low density housing would mainly be provided in the outer fringe areas and surrounding villages (including Eglinton). Eglinton was considered to follow this trend with demand being generally for low-density housing. Demand for low to medium density housing in Eglinton was low despite dual occupancy being permissible under relevant planning instruments.

It was estimated that existing land stocks in the outer fringe areas and villages of Bathurst could last at least 28 years based on the take-up rates at the time. This was considered to be an appropriate planning horizon but it was recommended that consideration be given to housing demand both beyond the 28-year timeframe and in case the population growth rate of Bathurst increased. Accordingly the strategy recommended that new urban expansion areas be identified.

The strategy stated that the areas intended for urban expansion had not changed considerably since the 1994 Structure Plan was adopted. However Eglinton was identified for urban expansion based on the relative ease of extending services from the existing village and the previous work that had been carried out in the Village of Eglinton Residential Expansion Study 1997.

Based on the available residential land stock within the village at the time (estimated to be 111 new or undeveloped lots) it was estimated that the population of Eglinton could increase from 1660 to 2076 people without further expansion of the village boundaries. The strategy looked at three scenarios for possible expansion of Eglinton based on a 65-hectare area to the west of the existing village. These scenarios each proposed around 1100 new detached dwellings and were all based on a six-year development period.

City of Bathurst Draft Rural Strategy 2004

The 2004 Draft Rural Strategy has been prepared but not considered or adopted by Council to identify an ecologically sustainable future for rural land within the former Bathurst City LGA. In particular the strategy respondents to the increasing demand for rural residential land and the need to preserve the distinctive character of the Bathurst rural areas and the agricultural potential of the land. The document sets out strategies for each of the rural zones under the Bathurst LEP.

The land within the study area is zoned 1(a) General Rural and 1(b) Market Garden under the Bathurst LEP. The most relevant strategy contained within the document to both the 1(a) and 1(b) zones is to protect prime agricultural land from fragmentation and from conversion to non-agricultural uses. This issue is discussed further in section 4.11.2.

Draft Bathurst Region Urban and Rural Strategies – Discussion / Issues Paper

Bathurst Regional Council was formed on 26 May 2004 by a proclamation that dissolved the former Bathurst City and Evans Shire Councils. The Bathurst Regional Council encompasses all of the former Bathurst City Council and approximately 87% of the former Evans Shire Council.

As a result of the structural reform process, Bathurst Regional Council is now subject to a number of strategic and statutory planning controls. Council seeks to develop a comprehensive local environmental plan for the new LGA and as a precursor to this process the Bathurst Region Urban Strategy and the Bathurst Region Rural Strategy are currently being prepared.

The objective of the Bathurst Region Urban Strategy is to provide a broad land use strategy to guide the future land management and development of the urban areas of the Bathurst LGA including the urban villages (Eglinton/Raglan/Perthville). The objective of the Bathurst Region Rural Strategy is to provide a broad land use strategy to guide the future land management and
development of the rural lands and settlements for the Bathurst Regional LGA. The outcomes of this LES process will be incorporated into the Draft Bathurst Urban Strategy and Rural Strategy.

2.4 Conclusion

The planning instruments and policies that comprise the planning framework do not highlight significant impediments to the rezoning and future urban development of the land surrounding Eglinton.

There is however several important and relevant issues and principles identified within the various planning instruments and policies that must be considered and addressed in the rezoning and development process. These issues are discussed further in section 4 and have been considered in the formulation of possible development options for the area as set out in section 5.
3. Consultation

3.1 Introduction

Stakeholder and community consultation is an essential part of the LES preparation process and is enshrined within the provisions of the EPA Act. The consultation activities undertaken during LES preparation has included:

- Written consultation with relevant public authorities and other relevant stakeholders.
- Face-to-face interviews with interested landowners within the study area and stakeholder groups.
- A community meeting with the Eglinton community and a Community Information Day.
- The distribution of a series of community information sheets to update the local community on the progress of the LES.

These consultation activities are outlined below.

3.2 Consultation with public authorities

Public authorities and other relevant organisations were invited to submit written comments on the LES. This consultation sought information from public authorities relevant to the study area and advice on additional issues that the LES should consider and address. This was intended to fulfil the consultation requirements under section 62 of the EPA Act despite the fact that council has not at this stage resolved to prepare a draft LEP.

The written comments received are summarised in Table 3.1. A response to each issue raised or a reference to the relevant section of the LES where the issue is addressed is also provided in Table 3.1. The written submissions received are contained in Appendix B.
Table 3.1: Comments from public authorities and other organisations during LES preparation

<table>
<thead>
<tr>
<th>Authority / Issues</th>
<th>LES section reference / response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department of Education and Training</strong></td>
<td></td>
</tr>
<tr>
<td>If the LES proposes the rezoning of a substantial number of new residential lots</td>
<td>Sections 4.14.2 and 5.</td>
</tr>
<tr>
<td>there may be a future requirement to extend the existing school site by 0.46</td>
<td></td>
</tr>
<tr>
<td>hectares to meet the current standard of 3 hectares.</td>
<td></td>
</tr>
<tr>
<td><strong>Department of Infrastructure Planning and Natural Resources</strong></td>
<td></td>
</tr>
<tr>
<td>The LES should place any potential expansion of Eglinton in the context of the</td>
<td>Section 4.12.</td>
</tr>
<tr>
<td>wider demands for land and growth pressures in Bathurst.</td>
<td></td>
</tr>
<tr>
<td>Should growth be supported and sustainable, then it should be demonstrated that</td>
<td></td>
</tr>
<tr>
<td>Eglington is an appropriate location.</td>
<td></td>
</tr>
<tr>
<td>The LES should evaluate the potential impacts upon or demand for retail/shopping</td>
<td>Sections 4.14 and 5.4.</td>
</tr>
<tr>
<td>facilities, education and other social infrastructure, open space, recreation,</td>
<td></td>
</tr>
<tr>
<td>entertainment facilities, roads and other infrastructure both locally and within</td>
<td></td>
</tr>
<tr>
<td>the wider Bathurst area.</td>
<td></td>
</tr>
<tr>
<td>The LES should take into consideration community expectations particularly in light</td>
<td>Section 3.4.</td>
</tr>
<tr>
<td>of the opposition which has been identified in previous consultation.</td>
<td></td>
</tr>
<tr>
<td>The health and environmental implications of the electricity supply lines to the</td>
<td>Section 4.11.3.</td>
</tr>
<tr>
<td>north of Eglinton and the radio transmitting towers should be evaluated.</td>
<td></td>
</tr>
<tr>
<td>The LES should consider land use conflicts of agricultural and other land uses.</td>
<td>Section 4.11.3.</td>
</tr>
<tr>
<td>In addition to the current Agricultural land uses, consideration should be made</td>
<td></td>
</tr>
<tr>
<td>for future agricultural uses in light of the trend toward more intensive</td>
<td></td>
</tr>
<tr>
<td>agricultural production.</td>
<td></td>
</tr>
<tr>
<td>The LES should assess the quality and significance of loss of any agricultural</td>
<td>Section 4.11.2.</td>
</tr>
<tr>
<td>land.</td>
<td></td>
</tr>
<tr>
<td>The LES should take into consideration the constraints of the red solodic soils</td>
<td>Sections 4.3.2 and 4.6.5.</td>
</tr>
<tr>
<td>which comprise a large portion of the site.</td>
<td></td>
</tr>
<tr>
<td>The NSW Salinity Strategy directs future planning to identify characteristics of</td>
<td>Section 4.3, 4.5 and 4.6</td>
</tr>
<tr>
<td>soil, vegetation and hydrology as related to salinity.</td>
<td></td>
</tr>
<tr>
<td>The protection of groundwater from pollution and ensuring its long term sustainability is to be considered as is provided for the NSW State Groundwater Policy.</td>
<td>Section 4.3, 4.5 and 4.6</td>
</tr>
<tr>
<td>Contaminated land should be considered as required by State Environmental Planning Policy 55 – Remediation of Contaminated Land.</td>
<td>Section 4.4.</td>
</tr>
<tr>
<td>Consideration should be given to modification to natural ecosystems, habitat loss</td>
<td>Section 4.7.</td>
</tr>
<tr>
<td>and fragmentation.</td>
<td></td>
</tr>
<tr>
<td>Consideration should be given to buffer design and management of riparian zones.</td>
<td>Section 4.7.</td>
</tr>
<tr>
<td>Stormwater disposal and its associated volume, storage and point of entry should</td>
<td>Sections 4.6.4 and 5.4.</td>
</tr>
<tr>
<td>be considered as described in the publication Soils and Construction (Landcom 2004).</td>
<td></td>
</tr>
<tr>
<td>Water requirements of the proposed land use needs to be addressed in terms of</td>
<td>Section 4.16.1 and 5.4.</td>
</tr>
<tr>
<td>water sources, adequacy of supply and infrastructure requirements.</td>
<td></td>
</tr>
<tr>
<td>Water management should be provided for with the objectives of water use efficiency and best practice guidelines for water sensitive urban design should be followed.</td>
<td>Section 4.6.</td>
</tr>
<tr>
<td>Appropriate consideration is required of the necessary infrastructure and potential pollution of the groundwater and surface water associated with any sewerage management system.</td>
<td>Section 4.16.2 and 5.4.</td>
</tr>
<tr>
<td><strong>Department of Environment and Conservation</strong></td>
<td></td>
</tr>
<tr>
<td>The LES should demonstrate how any expansion area integrates with the settlement</td>
<td>Section 2.3.</td>
</tr>
<tr>
<td>strategies for the whole Bathurst Regional Local Government area. In particular</td>
<td></td>
</tr>
<tr>
<td>consideration should be given to how expansion fits within the broader context of</td>
<td></td>
</tr>
<tr>
<td>the Council wide land use and settlement strategies currently being prepared.</td>
<td></td>
</tr>
<tr>
<td>The LES should establish a clear case for expanding the settlement at Eglinton.</td>
<td>Section 4.12.</td>
</tr>
<tr>
<td>Such a case should be based on the validity of the settlement opportunities within</td>
<td></td>
</tr>
<tr>
<td>the context of managing the values of the area to achieve a clearly established</td>
<td></td>
</tr>
<tr>
<td>long-term vision for settlement in Bathurst as well as the wider region.</td>
<td></td>
</tr>
<tr>
<td>Authority / Issues</td>
<td>LES section reference / response</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Engage with the community to clearly define the values they hold for Bathurst in general and in particular the locality of Eglinton.</td>
<td>Section 3.4.</td>
</tr>
<tr>
<td>Provide map-based direction for settlement formed around objectively stated criteria for opportunities identified in the LES process. This should include identification of areas of natural and cultural heritage and appropriate management.</td>
<td>Section 5.</td>
</tr>
<tr>
<td>The LES should consider biodiversity and recognise it as a fundamental value to be protected and enhanced.</td>
<td>Section 4.7.</td>
</tr>
<tr>
<td>Aboriginal heritage within the areas should be conserved and appropriately managed within the relevant statutory mechanisms.</td>
<td>Section 4.10.</td>
</tr>
<tr>
<td>Environmentally sensitive lands should be identified and appropriate protection measures defined. Environmentally sensitive areas include:</td>
<td>Section 4.7.</td>
</tr>
<tr>
<td>• remnant native vegetation</td>
<td>No public land is located within the study area.</td>
</tr>
<tr>
<td>• public land, particularly crown land with existing native vegetation</td>
<td>Section 7.</td>
</tr>
<tr>
<td>• all wetlands, creek lines and land within 100 metres of rivers</td>
<td>Section 7.</td>
</tr>
<tr>
<td>• threatened species, populations, communities and their habitats</td>
<td>Section 7.</td>
</tr>
<tr>
<td>• all potential archaeological sites and Aboriginal objects and places</td>
<td>Section 7.</td>
</tr>
<tr>
<td>• all wildlife corridors, roads and reserves containing native vegetation</td>
<td>Section 7.</td>
</tr>
<tr>
<td>• all significant scenic landforms</td>
<td>No significant land forms were identified within the study area.</td>
</tr>
<tr>
<td>• all flood prone lands.</td>
<td>Section 4.7.</td>
</tr>
<tr>
<td>The LES should demonstrate how any settlement changes in Eglinton would contribute to protecting or achieving the following NSW Government endorsed objectives.</td>
<td>Section 4.6.</td>
</tr>
<tr>
<td>• Interim Water Quality and River Flow Objectives relevant to Bathurst Regional Council (Macquarie Bogan Catchment).</td>
<td>Section 4.6.</td>
</tr>
<tr>
<td>• Water quality management objectives</td>
<td>Section 4.6.</td>
</tr>
<tr>
<td>The reduction and management of waste should be addressed.</td>
<td>Not within the scope of the LES.</td>
</tr>
<tr>
<td>The management of sewerage in the context of the Environment and Health Guidelines – On Site Sewage Management for Single Households (Department of Local Government 1998)</td>
<td>All proposed lots are to be connected to Council sewerage system.</td>
</tr>
<tr>
<td>Any land contamination should be identified and managed as defined in the Planning Guidelines SEPP 55 Remediation of Land.</td>
<td>Section 4.4.</td>
</tr>
<tr>
<td>The relationship of settlement patterns should be considered and potential conflicts over issues such as dust, noise, odour and chemical use should be managed.</td>
<td>Section 4.11.3.</td>
</tr>
<tr>
<td>The management of site and soil disturbance and associated pollution hazards during development and with expected ongoing use should be considered.</td>
<td>Sections 4.3.2 and 4.6.5.</td>
</tr>
<tr>
<td>Consideration of flooding extent and frequency on potentially affected land in terms of environmental sensitivity.</td>
<td>Section 4.6.2.</td>
</tr>
<tr>
<td>Cumulative impacts of development should be considered. DEC recommends that a Green Offsets approach should be included in consideration of cumulative impacts to ensure that any new development will have a neutral or positive impact on the environment in relation to water pollution.</td>
<td>No other significant developments have been identified in the immediate area.</td>
</tr>
</tbody>
</table>

**Department of Primary Industries**

<table>
<thead>
<tr>
<th>Authority / Issues</th>
<th>LES section reference / response</th>
</tr>
</thead>
<tbody>
<tr>
<td>The context of the village expansion in relation to the council wide issue of protecting agricultural land for current and potential primary production should be considered.</td>
<td>Section 4.11.2.</td>
</tr>
<tr>
<td>Boundary issues and land use conflicts between urban and agricultural land uses should be addressed. Appropriate provisions for separating land uses should be considered.</td>
<td>Section 4.11.3.</td>
</tr>
<tr>
<td>Consideration should be given to how planning provisions deal with environmental management issues such as efficiency of water use and</td>
<td>Outside the scope of this LES.</td>
</tr>
</tbody>
</table>
### Authority / Issues

<table>
<thead>
<tr>
<th>Authority / Issues</th>
<th>LES section reference / response</th>
</tr>
</thead>
<tbody>
<tr>
<td>The whole area which may be effected either directly or indirectly by the development or activity must be identified and shown on an appropriately scaled map with aerial photographs.</td>
<td>Figure 1.2.</td>
</tr>
<tr>
<td>All waterways and waterbodies within the proposed area likely to be effected by development including freshwater lakes, wetlands and streams are to be identified.</td>
<td>Figure 1.2.</td>
</tr>
<tr>
<td>Descriptions of the effected streams and rivers should include a maximum or minimum or flow percentile (megalitres/day), length, presence of gravel beds, presence of waterfalls or barriers to fish movement and substrate type.</td>
<td>Section 4.6 and 4.7.</td>
</tr>
<tr>
<td>A description of aquatic vegetation, large woody habitat (snags), gravel beds and any other protected, threatened or dominant habitats should be presented.</td>
<td>Section 4.7.</td>
</tr>
<tr>
<td>A description of any activity that is likely to effect any waterway is required. For this development this may include but it not limited to upgrade or establishment of waterway crossings and abstraction of water.</td>
<td>Sections 4.6 and 5.4.</td>
</tr>
<tr>
<td>Developments should aim to achieve no net impact upon the receiving waterway. Impact assessments should, as a minimum, included analysis of dissolved oxygen, pH, turbidity, temperature, toxicants, salinity and nutrients and take account the existing water quality status of the receiving waterway.</td>
<td>Section 4.6.3.</td>
</tr>
<tr>
<td>Stormwater from roads and other paved surfaces should be channelled away from aquatic habitats into well established terrestrial vegetation which can act as a filter and absorb nutrients and sediments.</td>
<td>Section 4.6.4.</td>
</tr>
<tr>
<td>Nutrient concentration, particularly forms of nitrogen and phosphorous in stormwater and surface runoff must comply with relevant guidelines and should be minimised to prevent excessive growth of algae and other vascular plants.</td>
<td>Outside the scope of this LES.</td>
</tr>
<tr>
<td>A list of threatened fish species that may be directly or indirectly impacted upon by the development must be prevented. An eight part test is required to be carried out for threatened species that historically occur within the region.</td>
<td>Section 4.7.</td>
</tr>
<tr>
<td>It should be established if any affected waters are used by aquaculture operators, commercial or recreational fishers and evaluation of the importance of these attempted.</td>
<td>Establishment of riparian zones and public open space along Saltram Creek would improve water quality and access.</td>
</tr>
<tr>
<td>The effect of the proposed development on the aquatic environment must be assessed. Recommendations must be made concerning:</td>
<td>No significant developments are proposed in the immediate area.</td>
</tr>
<tr>
<td>• what actions will occur if the expected levels of predicted impacts are exceeded</td>
<td></td>
</tr>
<tr>
<td>• further information required before the commencement of the operation</td>
<td></td>
</tr>
<tr>
<td>• monitoring required during the construction and operational phases and after construction (related to specific hypothesis)</td>
<td></td>
</tr>
<tr>
<td>• safeguards and remedial measures to be taken to reduce adverse effects, including the creation of additional habitat and or proposed habitat compensation measures (eg: monetary bond)</td>
<td></td>
</tr>
</tbody>
</table>
| Roads and Traffic Authority
| RTA does not oppose future development of Eglinton given its distance from the NSW arterial road network. | No response required.                                                                            |
| RTA raised concerns regarding the expansion of Eglinton given that there is only one access road to Bathurst. There is a need to ensure that future development contributes to the upgrade of the existing road infrastructure as intersections may reach their design capacity ahead | Sections 4.15 and 5.4.                                                                           |
Authority / Issues | LES section reference / response
--- | ---
Projected design years. | Sections 4.14 and 5.4.
The project should have consideration for the need for new sites for services such as schools, shopping centres and professional services as the area will have the potential to service areas outside of the study area. | Sections 4.14 and 5.4.

**NSW Heritage Office**
The LES should consider the heritage significance of the area and address the impacts that expansion of the village may have on this significance. The assessment should include natural areas and places of Aboriginal, historic or archaeological significance. This should include consideration of wider heritage impacts in the area surrounding the site. | Section 4.10.
Non-Aboriginal heritage items within the study area should be identified by way of a field survey. This should include any buildings, works, relics, gardens, landscapes, views, trees or places. The assessment should include a statement of significance for all items and address the potential impact of the village expansion on the significance. The assessment should be undertaken in accordance with the NSW Heritage Manual. | Section 4.10.
The LES should address any impacts on places, items or relics of significance to Aboriginal people. Adequate community consultation should take place regarding assessment of significance, likely impact and appropriate management measures. | Section 4.10.
The NSW Heritage Act 1977 requires an excavation permit to be obtained from the Heritage Council, or an exception endorsed by the Heritage Council if disturbance to a site with known or potential archaeological relics is proposed. If any unexpected archaeological relics are uncovered during excavations, work should cease and a permit or exception notification endorsement sought. | Section 4.10.
If approval is required under the Heritage Act 1977, due to the listing of an item or place on the State Heritage Register or being subject to an Interim Heritage Order, the Heritage Council’s approval must be sought prior to approval being issued by a consent authority under the EPA Act. | Section 4.10.

**NSW Rural Fire Service**
Correspondence was received which highlighted that the study area is not identified as bush fire prone land on the Bathurst Regional Bush Fire Prone Land Map. Accordingly NSW Rural Fire Service have no issues in relation to the LES. | Section 4.8.

**Civil Aviation Authority**
The Civil Aviation Authority advised that consultation should be carried out with Bathurst Regional Council on any height restrictions that may be imposed by the obstacle limitation surface of the Bathurst Airport. | Section 4.11.3.

**Country Energy**
Country Energy provided advice on the electricity infrastructure in the vicinity of the study area. | No response required.

**Telstra Australia**
No comments received. | No response required.

**Agility**
No comments received. | No response required.

**NSW Fire Brigades**
No comments received. | No response required.

**NSW Police Department**
No comments received. | No response required.

**NSW Ambulance Service**
No comments received. | No response required.
3.3 Consultation with landowners and stakeholder groups
Private landowners within the study area and stakeholder groups were invited to meet with the study team during the early stages of the project to express their views on the future development of the area. The study team met with a number of private landowners and with Eglinton Public School representatives. The discussions were treated as private and confidential and are therefore not documented within this report. The issues discussed within these meetings have been considered together with the broader community consultation outcomes.

3.4 Consultation with the local community
A community meeting and separate information day were held at different stages of the project to provide the opportunity for the local Eglinton community to have input into the LES process. This was considered a vital part of the study process given the community concern about future expansion of the village highlighted in the Village of Eglinton Residential Expansion Study 1997. In addition the community were invited through a series of community information sheets to provide written or verbal comments outside of the formal consultation activities. These consultation activities are outlined below.

3.4.1 Community meeting
An initial community meeting was held at the Eglinton War Memorial Hall on Wednesday 14 September 2005 to provide an opportunity for the local Eglinton community to express its views on the future development of the area. This meeting was conducted early on in the study process to ensure that community issues and aspirations could be considered together with the technical investigations.

28 people attended the meeting and provided input into the study through group discussions and responses to questions put forward by the study team. The questions were designed to provide the study team with a better understanding of community attitudes to living in Eglinton and possible future expansion of the Eglinton village. The questions were:

Question 1
Why did you choose to live in Eglinton?

Question 2
What are the things you like about Eglinton?

Question 3
What are the things you don't like about Eglinton?

Question 4
What things would you like to change about Eglinton?

Question 5
Would you like to see further development in the Eglinton area? Why?

Question 6
Do you think the whole area should be developed or should there be a limit to further development? Why?

Question 7
If development does proceed, would you like to see lot sizes similar to existing lots (about 900-1000 square metres), larger lots (2000 square metres or more), or some combination of these? Why?

Question 8
Do you think there is a need for more local facilities (such as shops and open space/recreation areas) as part of any village expansion?
The completed group responses to these questions are included in Appendix C. The key messages from the meeting were:

- The Eglinton community values the small and friendly village atmosphere and the sense of community.
- The Eglinton primary school is a cornerstone of the community and attracts people to Eglinton.
- Residents like the rural aspect of the village and being close but separate to Bathurst.
- People do not like that Eglinton is getting bigger and have concerns about traffic congestion and the lack of infrastructure such as footpaths.
- Eglinton residents would like to see better sporting and recreational facilities for children, better landscaped parks and streets, and more walking and bicycle paths.
- Most people indicated they would not like to see further development in Eglinton. The main concerns are loss of the village atmosphere and rural feel, increased traffic and crime, and pressure on infrastructure and services.
- Residents felt that if development was to proceed then the extent of development should be limited and that lot sizes should be larger than the existing village lots to maintain the rural feel of the area and limit population increase. There was a view that new housing should be limited to single storey development.
- Most people felt there was a need for more open space and recreational facilities and an expanded primary school as part of any village expansion. There were mixed views on the need for commercial facilities within Eglinton.

### 3.4.2 Community information day

A community information day was held on Saturday 29 October 2005 from 9am and 4pm at the Eglinton War Memorial Hall. The purpose of this consultation was to provide the local community with an opportunity to view and provide feedback on draft development options formulated for the study area. The final versions of the development options are presented in section 5.

About 90 people attended during the course of the day. Those who attended were invited to provide feedback and raise any issues about the development options displayed. People were asked to indicate their preferred development option by placing a red sticker on the option or options they would most like to see proceed. The numbers recorded for each option were:

- No Growth Scenario: 27
- Low Growth Scenario: 20
- Moderate Growth Scenario – Option 1: 5
- Moderate Growth Scenario – Option 2: 6
- High Growth Scenario – Option 1: 10
- High Growth Scenario – Option 2: 24

The number of people that indicated a preference for the high growth scenario options was surprising and did not seem to be consistent with the messages derived from other consultation activities. High Growth Scenario – Option 2 included provision for rural-residential development surrounding an expanded urban village. The high number supporting this option could reflect the fact that rural-residential development opportunities across Bathurst are limited and there is anecdotal pent-up demand for this form of development.

People were also asked to write comments about the options on sticky notes and place them on the plans to which they applied. The comments received are documented below. Where the comment applied to a specific development option then that option is noted next to the comment.
<table>
<thead>
<tr>
<th>Comment</th>
<th>Development scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure and services</strong></td>
<td></td>
</tr>
<tr>
<td>As long as the services are maintained with growth.</td>
<td></td>
</tr>
<tr>
<td>All services must be upgraded and grow with the residential growth.</td>
<td></td>
</tr>
<tr>
<td>Please no hotel or bottle shop – we don’t need the vandalism that comes with them.</td>
<td></td>
</tr>
<tr>
<td>We need shops and a hotel bottle shop.</td>
<td></td>
</tr>
<tr>
<td>Commercial development should be considered at the outset eg:</td>
<td></td>
</tr>
<tr>
<td>additional shopping, food and beverage outlets etc.</td>
<td></td>
</tr>
<tr>
<td>Prefer high growth, any expansion requires planning properly, it will require more services and it should be well provided.</td>
<td>High Growth</td>
</tr>
<tr>
<td>Please finish the existing village first – footpaths, kerbs and guttering etc.</td>
<td></td>
</tr>
<tr>
<td>Very concerned about the schooling area. If expansion must be then the bigger areas are playground.</td>
<td></td>
</tr>
<tr>
<td>Who is going to educate Eglinton kids with anticipated growth of high growth options.</td>
<td>High Growth</td>
</tr>
<tr>
<td>Need more shops and a petrol garage on corner of Duramana Road and Freemantle Road.</td>
<td></td>
</tr>
<tr>
<td>Shops need to have zones set aside for it.</td>
<td></td>
</tr>
<tr>
<td>Underground power preferred.</td>
<td></td>
</tr>
<tr>
<td>No new shopping malls, service stations, pubs – will increase crime rates.</td>
<td></td>
</tr>
<tr>
<td>Services must be maintained.</td>
<td></td>
</tr>
<tr>
<td>Underground power preferred.</td>
<td></td>
</tr>
<tr>
<td>The infrastructure requirements would be enormous in any other than the low growth proposals.</td>
<td></td>
</tr>
<tr>
<td>I like it just the way it is – yet with proposed plans I like the recreation border / cycleway idea.</td>
<td></td>
</tr>
<tr>
<td>I would be strongly against any pubs etc.</td>
<td></td>
</tr>
<tr>
<td>No expansion until all essential services upgraded including water, schools etc.</td>
<td></td>
</tr>
<tr>
<td>Underground electricity for all of Eglinton.</td>
<td></td>
</tr>
<tr>
<td>More park lands needed if expanding.</td>
<td></td>
</tr>
<tr>
<td>Need to accommodate expansion of retail village as per Trinity Heights style still best option. Pressure for growth in Eglinton is high.</td>
<td></td>
</tr>
<tr>
<td>No new shops! No petrol Station! No pubs! If you want these then move into Bathurst. Leave us alone.</td>
<td></td>
</tr>
<tr>
<td>No more shops, petrol, pubs etc. If it extends I like the few 2000sqm lots and then further rural lots.</td>
<td></td>
</tr>
<tr>
<td>If Eglinton is to be developed at all consideration has to be given to larger shopping facilities similar to Windradyne and expansion of the school or a separate school at Riverview and leave ours not much bigger than it is. Too much progress will do more harm than good.</td>
<td></td>
</tr>
<tr>
<td><strong>Village character and atmosphere</strong></td>
<td></td>
</tr>
<tr>
<td>Any other option except no growth or low growth would spoil the village atmosphere</td>
<td>No Growth/Low Growth</td>
</tr>
<tr>
<td>Would prefer no growth as I feel the expansion would make the village lose any sort of community feel.</td>
<td>No Growth</td>
</tr>
<tr>
<td>This is a special place, don’t ruin it. Farming land makes it special with so much unspoilt area.</td>
<td>No Growth</td>
</tr>
<tr>
<td>Expanding Eglinton will spoil the country atmosphere of the area and changes the area's population's original reason for living in the area. Leave it as a village.</td>
<td>No Growth</td>
</tr>
<tr>
<td>No change, it’s a village leave it as it is.</td>
<td>No Growth</td>
</tr>
<tr>
<td>We have been here for over 150 years, why change the safe and friendly atmosphere. My children are safe and happy, leave it alone.</td>
<td>No Growth</td>
</tr>
<tr>
<td>I love Eglinton being a village. Why spoil it.</td>
<td>No Growth</td>
</tr>
<tr>
<td>Expansion to Eglinton will change the whole feel. I moved to the area for the quiet village feel and the school. It will be a shame to see it change.</td>
<td>No Growth</td>
</tr>
<tr>
<td>Read the book about Eglinton coming out soon. It was built on</td>
<td>No Growth</td>
</tr>
</tbody>
</table>
**Comment** | **Development scenario**
--- | ---
Community effort (bridges, halls etc). We want it to remain that small country village and not be taken up by Bathurst. | No Growth
Eglinton is a village, leave it as it is. | No Growth

**Development form**

<table>
<thead>
<tr>
<th>Comment</th>
<th>Development scenario</th>
</tr>
</thead>
</table>
| Limited amount of growth but keep numbers of units to a bare minimum. | Low Growth
| Maybe residential 1000sqm around existing village then 2000sqm outside of that. | No Growth
| No dual occupancy. | No Growth
| Larger blocks good – keeps the village atmosphere. | No Growth
| Single storey and no dual occupancy. | No Growth
| No dual occupancy. | No Growth
| I would not be happy with cluster housing of any kind or dual occupancy. Blocks must be ¼ acre at least. | No Growth
| Don’t want to see dual occupancy flats or the like. As it is utilities need to be upgraded. Would not like to see lots of small house blocks. Minimum growth if any. | No Growth
| No dual occupancy or units as this will affect our village. Council has a problem at the moment keeping grass down around village at present size. | No Growth
| I just hope that the high growth scenario is planned properly before anything is commenced. | High Growth
| Obviously council is intent upon expansion of some degree to Eglinton. We have learned that council usually do what they want. Why does Eglinton need to be expanded? If it does then lots should be larger to keep the rural community aspect of Eglinton. Not high density with increased traffic. | High Growth

**Other**

<table>
<thead>
<tr>
<th>Comment</th>
<th>Development scenario</th>
</tr>
</thead>
</table>
| This is the much preferred option | No Growth
| Leave Eglinton as it is – no growth or low growth. | No Growth
| Go to other unused agricultural land – leave Eglinton as it is already overdeveloped. | No Growth
| I prefer no growth so much is available along the Peel Road, Kelso area. | No Growth
| The growth of the area isn’t always good for the community. It creates problems with more vandalism, crimes, speeding cars, overcrowding. Leave Eglinton alone. | No Growth
| The reality of population growth in population of Bathurst Regional Council will cause the other more moderate growth models to prove an inadequate response. Therefore, option 3B should be developed with other satellite growth centres developed with large green buffer zones between. Rather than a continuation of grid planning of road, contemporary planning would lead to green suburbs and better outcomes for each property. | High Growth

The issues raised consistently in the sticky notes collected included:

- The need for additional commercial facilities for the village. Many people felt that a separate area should be set aside for commercial development. However a number of people were also opposed to increased commercial development within Eglinton.
- Opposition to dual occupancy development in the existing village or any expansion area was expressed.
- Many people indicated that they would not like to see any further development in Eglinton or that any expansion should be kept to a minimum. In particular people felt that development would impact on the village character.

### 3.4.3 Community information sheets

A series of three community information sheets were prepared and distributed to Eglinton residents over the course of the study. These were intended to inform the local community about the planning and environmental investigations being undertaken as part of the LES and...
about opportunities for public involvement in the study process. A copy of the three information sheets is included in Appendix D.

3.4.4 Written submissions

Four additional written submissions were received during the course of the study. Three were from local residents and one was from the National Trust of Australia.

These submissions are included in Appendix E. The main issues raised included:

- Additional space would need to be set aside for the Eglinton Primary School if growth of the village is to proceed.
- Consideration should be given to larger size lots to retain the rural character.
- Flood mitigation works would need to be carried out along the northern bank of Macquarie River and the western bank of Saltram Creek, particularly given these areas were subject to flooding in 1998.
- No further growth of Eglinton would be the preferable outcome, however if development is to proceed it should be limited to the Low Growth scenario or at the very most the Moderate Growth scenario – Option 1. Any development beyond the selected options should not be allowed including re-subdivision of larger lots.
- The 0.5 hectare area that the Department of Education and Training have required for future expansion of the school would not be sufficient. This is particularly the case given that the schools access to the village green area may in the future be restricted due to the competing community demands resulting from growth.
- Space should be set aside for commercial facilities if expansion is to proceed.
- The community values and friendly village atmosphere and sense of community is highly valued by residents.
- The community appreciates the rural feel of Eglinton while being close to the services available in Bathurst.
- The community has concerns about Eglinton expanding particularly with regard to traffic congestion, lack of infrastructure, pressure on existing services and increased crime.
- The expansion area has heritage value in terms of its historic and continuing agricultural uses.
- Urban sprawl of Bathurst (and Eglinton) needs to be addressed to ensure that the heritage value of agricultural lands is not lost and that a sustainable outcome is achieved.

3.5 Conclusion

The consultation undertaken identified a number of important issues that have been considered as part of the technical investigations and in the formulation of the development options for the study area presented.

Some of the community held a strong view that further expansion of the village was not required and was undesirable for several reasons. However others felt that some minor expansion of the village could be acceptable provided that the village character is not compromised and infrastructure and traffic issues are addressed. Fewer people considered a major expansion of the village to be appropriate. These views tend to be supported by the various comments made about the development options presented and the number of people who preferred the No Growth or Low Growth options.

The number of people that indicated a preference for the High Growth scenario options is somewhat out of odds with many views. The fact that the highest growth option included provision for rural-residential development surrounding an expanded urban village may explain these views. The selection of this option could reflect the fact that rural-residential development opportunities across Bathurst are limited and there is anecdotal evidence of pent-up demand for this form of development.
4. Planning and environmental issues

4.1 Introduction
This section describes the existing natural and human environment within the study area and considers the planning and environmental issues associated with the residential development of land within the study area. The intent of this section is to establish the suitability of the study area for residential development and to identify development constraints and opportunities as a platform for the formulation of possible development options for the area.

4.2 Landform
The Eglinton study area slopes gently from approximately 684 metres AHD in the north-west corner to approximately 646 metres AHD at the southern and south-eastern boundary near the Macquarie River floodplain and Saltram Creek (Figure 4.1). A number of high points occur to the north and north-west of the study area at approximately 700 metres AHD. The landform of the study area does not constrain potential urban development.

4.3 Geology and soils

4.3.1 Geology
The Bathurst Region LGA lies in central western NSW in the eastern part of the Lachlan Ford Belt (Pogson and Watkins 1998). The area around Bathurst comprises carboniferous rocks that are predominantly granite.

The majority of the Eglinton study area is located within the Bathurst granite geological group that comprises coarse-grained porphyritic biotite granite. Small areas within the south and south-east of the study area close to the Macquarie River and Saltram Creek comprise recent alluvial deposits of mostly sand and gravel and minor clay (Figure 4.2).

4.3.2 Soil landscapes
The Bathurst 1:250 000 soil landscape mapping (Kovac and Lawrie 1990) indicates that the soils within and around the study area comprise two soil landscapes as shown in Figure 4.3 and described below.

- Raglan soil landscape. The Raglan soil landscape is the predominant landscape within the study area. It occurs on the northern portion of the existing village and study area and also extends toward the south-west of the study area. The landscape comprises the gently undulating to undulating rises of the Bathurst plains and typically overlies Bathurst granite. Red solodic soils are the dominant soils with yellow solodic soils commonly found on lower slopes and in drainage depressions.

  The topsoil of red solodic soils comprises reddish or dark brown sandy loam to loam. The subsoil comprises reddish brown light to heavy clay with moderate to strong structure overlying dull yellowish brown medium to heavy clay with strong structure. Red solodic soils are typically moderately well drained, slowly permeable, have a high water holding capacity, moderate soil salinity and low erosion hazard. These soils have a high shrink swell potential which relates to changes in volume with changes in moisture content and which can give rise to problems for earth structures and foundations of buildings.

  The topsoil of yellow solodic soils comprises brown to brownish black loamy sand to sandy loam with weak structure or single-grained. The subsoil comprises dull yellowish brown to greyish brown mottled sandy clay loam to heavy clay with moderate to strong structure. Yellow solodic soils are typically imperfectly to poorly drained, slowly
permeable, have a high water holding capacity, moderate soil salinity and moderate erosion hazard. They also have a high shrink swell potential.

- **Macquarie soil landscape.** The Macquarie soil landscape occurs within the southern portion of the existing village and within the south-east and south-west of the study area. The landscape occurs on the alluvial plains and terraces of the Macquarie River. Prairie soils are the dominant soils on the floodplain. Other soils include earthy loams, siliceous sands and loams, wiesenboden, podzolic soils and black earths. Terraces have a variety of soils including red podzolic soils and red earths on the upper levels with yellow podzolic soils and yellow solodic soils on the middle and lower levels.

Prairie soils are typically moderately well drained, moderately permeable, have high water holding capacity, low soil salinity, low erosion hazard and moderate shrink well hazard. Earthy loams are typically imperfectly to moderately well drained, moderately permeable, have high water holding capacity, low soil salinity, low erosion hazard and moderate shrink swell potential.

A search of Natural Resource Atlas Online GIS System (DIPNR 2005b) groundwater borehole register indicates the northern parts of the study area consist of topsoil overlying clay which overlies decomposed granite and then solid granite.

Discussions with landowners in the Eglinton village area suggest that some structural damage has resulted from the local soil conditions. There would need to be further consideration of potential impact of the high shrink swell capacity of the Raglan soil landscapes on road and building foundations associated with development within the study area. The soil characteristics of the area are not considered to constrain urban development within the area with appropriate foundation design and erosion and sediment controls during construction.

4.3.3 **Acid sulfate soils**

Acid sulfate soil mapping for the area (DIPNR 2005a) indicates that no areas of acid sulfate soil risk occur within the Bathurst LGA.

4.3.4 **Soil salinity**

Soil salinity hazard mapping published by the Department of Natural Resources (1999) indicates that the study area is not subject to any known salinity hazard. There is other anecdotal evidence that supports this conclusion:

- Extensive site inspections were carried out as part of the LES and there was no visual evidence of soil salinity within or in the vicinity of the study area.
- No salinity issues have been reported in the existing village or by landowners within the study area.
- The water table within the study area has been measured at depths ranging between 16m and 19.8m below the ground surface (DIPNR 2005b).
- The soil types within the study area are considered to have moderate to low incidence of soil salinity.
- Ground water bore drill log records within the study area indicate that the water is not significantly affected by salinity.

On the basis of this information it is considered that salinity issues are unlikely to constrain urban development within the study area and can be managed through the implementation of appropriate stormwater management measures.
4.4 Land contamination

A preliminary contamination assessment (Connell Wagner 2005) known as a Phase 1 Environmental Site Assessment (ESA) was undertaken for the study area to identify potential contamination from past land uses within the study area or the surrounding area. This section presents a precis of the findings and recommendations of the assessment undertaken. The complete assessment report is provided at Appendix F.

4.4.1 Scope

The assessment was prepared in accordance with the DEC Guidelines for Consultants Reporting on Contaminated Sites (1997) and under the Contaminated Land Management Act 1997. The scope of the assessment involved:

- a review of local geology, soil and hydrogeology records
- a contaminated land search through the DEC Contaminated Site Register
- a review of any other relevant contaminated site registers
- a review of historical aerial photographs for the site and surrounding area to determine possible contaminating activities on and around the site
- an historical land title search
- consideration of legislative requirements and relevant assessment guidelines
- interviews with selected landowners regarding previous activities within the study area
- a qualitative risk assessment to assess the potential of encountering existing site contamination within the study area during development
- identification of potential impacts resulting from the disturbance of contaminated soil
- recommendations for any works to be carried out prior to urban development

A complete site walkover was not considered feasible and as such some potentially contaminated sites or processes may not have been identified in this preliminary contamination assessment.

4.4.2 Findings

A number of potentially contaminating activities and potential contaminated areas were identified within the study area and the surrounding area.

A preliminary qualitative risk assessment was undertaken based on available information at the time of the assessment. This assessment concluded that the overall likelihood of encountering contamination if development were to proceed was considered to be moderate to high due to the potential sources of contamination identified within the study area and the proposed future land use of the area. A number of potentially contaminating processes and sites were identified and are described in Table 4.1. The location of these sites is shown in Figure 4.4.

<table>
<thead>
<tr>
<th>Areas of contamination</th>
<th>Potential contamination hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos shed</td>
<td>Exposure to asbestos containing material.</td>
</tr>
<tr>
<td>Fire Station</td>
<td>Exposure to petroleum hydrocarbons (petrol, diesel), BTEX, lead, PAH, AFFF and BFFF.</td>
</tr>
<tr>
<td>Water storage dams</td>
<td>Exposure to unknown contaminants present in fill.</td>
</tr>
<tr>
<td>Old groundwater well site</td>
<td>Unknown</td>
</tr>
<tr>
<td>Water storage system including troughs and wells</td>
<td>Unknown</td>
</tr>
<tr>
<td>Horse training tracks</td>
<td>Exposure to unknown contaminants present in fill.</td>
</tr>
<tr>
<td>Sheep and cattle dip areas</td>
<td>Exposure to arsenic, organochlorines, organophosphates,</td>
</tr>
</tbody>
</table>
### Areas of contamination | Potential contamination hazard
--- | ---
Farm and other machinery storage areas | Exposure to petroleum hydrocarbons (petrol, diesel), BTEX, lead and PAH.
Abandoned farm machinery areas | Exposure to petroleum hydrocarbons (petrol, diesel), BTEX, lead and PAH.
AM radio transmission towers | Exposure to unknown contaminants present in fill.
Crop land where hand spraying of herbicides and pesticides has been employed. | Exposure to chemicals associated with herbicide and pesticide use.

#### 4.4.3 Recommendations

Based on the findings and conclusions the following recommendations are made to address land contamination issues within the study area:

- An intrusive soil investigation (Phase 2 ESA) be undertaken at the potential source areas proposed to be developed for residential land uses in accordance with the relevant NSW contaminated land guidelines. This should be undertaken prior to preparation of a draft local environmental plan.

- The intrusive soil investigation should include but not be limited to the following areas:
  - sheep dip and cattle dip areas
  - crop land (subject to hand spraying of herbicides and pesticides)
  - buildings potentially constructed of asbestos containing materials
  - machinery and chemical storage areas where contamination is noted on the site
  - fill areas where the source of material is unknown
  - groundwater wells

- The specific requirements for any further investigation, remediation or management of any contamination excavated within the identified areas would be recommended in the Phase 2 investigations report.

- A soil and groundwater management plan should be prepared as part of any development application or construction environmental management plan for site development. This would include but not be limited to safeguard measures, containment procedures, investigation guidelines and a contingency plan. Should any contamination be identified during site construction activities, a detailed investigation would be required to identify the nature and extent of contamination.

- Excavated material would need to be managed and handled in a manner appropriate to the type of material. All excavated material would need to be appropriately sampled, classified and stockpiled in accordance with the Environmental Guidelines: Classification and Management of Liquid and Non-liquid waste (NSW EPA 1999) prior to off-site disposal or reuse or treatment of material on site. It is recommended that the sample data collected during the Phase 2 ESA be used, in part, to classify waste material prior to any proposed excavation works being undertaken. However, supplementary waste classification sampling may also be necessary.

- The inspection and removal of asbestos materials should be undertaken by a suitably qualified asbestos licensed specialist/removalist.
4.5  Ground water
A ground water bore search was carried out via the DIPNR Natural Resource Atlas Online GIS System (DIPNR 2005b) on 16 August 2005. The search identified six boreholes within the study area and another four within close proximity. Predominantly the ground water holes are for domestic and livestock purposes. Drill log information indicates that water bearing zones start at between 16 to 19.8m below the ground surface. The records also indicated that the water is not significantly affected by salinity.

The depth of the water table means that urban development within the study area would not encounter ground water or cause potential environmental impacts associated with ground water disturbance.

4.6  Surface water hydrology and water quality
4.6.1  Surface drainage
The study area drains directly to the Macquarie River via a combination of defined and non-defined overland flow paths. The joining of the Fish and Campbell Rivers near Bathurst forms the Macquarie River. The Turon, Cudgegong, Bell, Little and Talbragar rivers join the Macquarie River as it travels north west. Near the township of Warren, the Macquarie River becomes a complex system of effluent creeks, wetlands and floodplains connecting the Macquarie, Barwon and Bogan rivers. The Macquarie Marshes consists of about 40 000 hectares of core wetland with up to 220 000 hectares of land subject to inundation during major floods.

The study area can be divided into four sub-catchments (Figure 4.5) as described below:

Saltram Creek
The Saltram Creek catchment area is predominantly agricultural and extends beyond the Bathurst Regional Council boundary. The lower reaches of Saltram Creek receive part of the runoff from the residential area of Eglinton. Saltram Creek collects runoff from 11% of the study area directly and 26% indirectly. Saltram Creek drains to the Macquarie River near Rankens Bridge. Saltram Creek flows though a culvert passing under Eleven Mile Drive 500 metres east of Hamilton Road. The capacity of this culvert was recently upgraded so it could accommodate the 20 year ARI storm. The catchment is estimated to cover an area of 3 673 hectares. The peak flow from this catchment has been estimated at 70 m³/s.

Catchment 1
The watercourse draining Catchment 1 flows from the north and joins Saltram Creek 500m upstream of the culvert under Eleven Mile Drive. The catchment is 196 hectares in size and is sparsely wooded and collects stormwater runoff from 10% of the study area. Land use in this catchment is agricultural. The catchment has an average slope of approximately 4%. The peak flow from this catchment has been estimated at 9.5 m³/s.

Catchment 2
The natural depression which drains Catchment 2 flows from the north and joins Saltram Creek at the Eleven Mile Drive culvert which collects stormwater runoff from16% of the study area. The depression acts as a collector for stormwater runoff during rainfall events. The catchment is 77 hectares in size and consists primarily of cleared agricultural land. The lower portion of the watercourse receives runoff from the residential area of Eglinton village. The catchment has an average slope of 7%. The peak flow from this catchment has been estimated at 4.9 m³/s.

Catchment 3
The watercourse draining Catchment 3 flows from the north and joins Keloshiel Creek 400 metres south of Mill Road. Keloshiel Creek ultimately discharges to the Macquarie River. The catchment size is 582 hectares and collects stormwater runoff from 63% of the study area. The catchment consists primarily of agricultural land but incorporates approximately 40% of the developed areas of Eglinton village. The watercourse is perennial and a number of dams have been constructed along its route. The route of the watercourse is not easily defined upon
reaching the Macquarie River floodplain but consists of a number of inter-joining waterholes or “gilgoys” during high flows. The catchment has an average slope of 6%. The peak flow from this catchment has been estimated at 29.7 m³/s.

### 4.6.2 Flooding

The Bathurst area has experience varying degrees of flooding during its history as a result of flooding of the Macquarie River and its tributaries.

Eglinton is located in the upper section of the Macquarie River in the foothills to the Great Dividing Range. Flooding of this region exhibits unique flooding characteristics when compared to other NSW floodplains. The floodplain has a slope of approximately 1%, which results in comparatively high velocities of floodwaters.

The village of Eglinton is located some 600 metres from the main channel of the Macquarie River and some existing properties on the southern side of Logan Road can become inundated during the 1% Annual Exceedance Probability (AEP) flood. Typically development in these areas require floor levels to be 500 mm above the 1% AEP level. All proposed development has to demonstrate it will not change flows and levels elsewhere in the floodplain. Development will not be prohibited in this zone but it must be in accordance with the Bathurst LEP 1997. Generally the Eglinton village study area is above RL 650.00 which would indicate that inundation from the 1%AEP is unlikely. The village can become isolated by floodwaters, in the event of a 1%AEP flood, particularly at Rankens Bridge, which is the main route by road to the Bathurst CBD. An alternate route via Eleven Mile Drive to the town centre is available if Rankens Bridge is impassable. Rankens Bridge has been designed for a 1% AEP flow to pass beneath the deck. Figure 4.6 shows the extent of the 1% AEP flood.

Typical characteristics of the floodplain near the study area are as follows:

- peak discharge 2170 m³/s for 1% AEP flood at Rankens Bridge
- calculated water level for the 1% AEP flood at Rankens Bridge RL 646.44
- peak discharge to occur for 15 hour storm
- 1% floodplain gradient
- floodwaters of high velocity
- flood waters begin to recede after 10 hours

Table 4.2 and 4.3 show the magnitude of past floods at Denison Bridge (which crosses the Macquarie River further to the east of Eglinton) and the calculated flood levels at Rankens Bridge.

**Table 4.2: Flood magnitude at Denison Bridge**

<table>
<thead>
<tr>
<th>Date</th>
<th>Discharge (m³/s)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 1998</td>
<td>1690.3</td>
<td>1</td>
</tr>
<tr>
<td>Aug 1986</td>
<td>1488.7</td>
<td>2</td>
</tr>
<tr>
<td>Aug 1990</td>
<td>1418.2</td>
<td>3</td>
</tr>
<tr>
<td>Jun 1964</td>
<td>1400.5</td>
<td>4</td>
</tr>
<tr>
<td>July 1952</td>
<td>1393.7</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Macquarie River Bathurst August 1998 Flood Investigation by Willing & Partners

**Table 4.3: Calculated flood levels at Rankens Bridge**

<table>
<thead>
<tr>
<th>Flood</th>
<th>Calculated level (RL)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1% AEP</td>
<td>646.44</td>
<td>Macquarie River Bathurst August 1998 Flood Investigation</td>
</tr>
<tr>
<td>5% AEP</td>
<td>644.88</td>
<td>Bathurst Regional Council Flood Model completed in 2000</td>
</tr>
</tbody>
</table>
Recent upgrade works of Ben Chifley Dam where the dam wall was strengthened and raised will also reduce peak flows in the Macquarie River. The flood mitigation effects have not been modelled at this stage.

Saltram Creek is a tributary that joins the Macquarie River near Rankens Bridge. The creek flows in a southerly direction passing through the study area along its eastern boundary.

Previously flooding has occurred where Saltram Creek passes under Eleven Mile Drive. Recently the culvert under Eleven Mile Drive has been upgraded to accommodate the 1 in 20 ARI flow alleviating this problem.

The peak flows of Saltram Creek will occur between the culvert under Eleven Mile Drive and the Macquarie River. Preliminary assessment of the characteristics of Saltram Creek indicates that the peak flow due to the 100 year ARI 6 hour duration storm can be contained within its banks and therefore not cause flooding of the study area. This assessment also reveals the peak flows in Saltram Creek and Macquarie River will occur at different times.

Flooding of the Macquarie River will cause flooding of Saltram Creek. The Bathurst Regional Council 1%AEP Flood Map indicates flooding will occur of Saltram Creek between Rankens Bridge and Eleven Mile Drive to a level of approximately RL646.44.

Investigation of the 1:25000 series topographical maps for Peel and Bathurst has identified a number of depressions that could become watercourses in high rainfall events. The catchment for these watercourses is relatively small and significant flooding impacts are not expected.

The constraints to development of the study area are as follows:

- The portion of the study area to the east of the existing village and south of Eleven Mile Drive will be affected by the 1% AEP flood as indicated in Figure 4.6.
- Existing properties to the south of Logan Road are potentially flood affected.
- The portion of the study area to the west of the existing village adjacent to the southern boundary may also be affected by the 1%AEP flood although this is not believed to be a significant amount of land.
- The 5% AEP flood will cause disruptions to Eleven Mile Drive and Eglinton Road.

The opportunities for the study area are as follows:

- Due to the timing of the peaks and short duration the village will not become isolated for extended periods during a 1% AEP flood.
- Flooding will effect a small portion of the study area as noted in Figure 4.6.
- Upgrade of Ben Chifley Dam will provide flood mitigation and reduce the effects of the 1% AEP flood within the study area.

4.6.3 Water quality

Tables 4.4 to 4.7 have been sourced from the Bathurst Regional Council Stormwater Management Plan (2004) which provides water quality results for a monitoring program initiated in September 1994.

Results from the following three testing points have been included: the Water Filtration Plant; Rankens Bridge and Apex Park. The Water Filtration Plant site represents water quality upstream of Bathurst and Apex Park represents water quality downstream of Bathurst. The results from Rankens Bridge have also been included as it is the closest site to the study area.

Based on the information provided in the tables below it can be concluded that existing land use and urban development within Bathurst has minimal impact on the water quality of the Macquarie River.
Table 4.4: Water Filtration Plant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Faecal Coliforms</th>
<th>Total Phosphorus</th>
<th>Total Nitrogen</th>
<th>Dissolved Oxygen</th>
<th>NFR</th>
<th>pH</th>
<th>Temperature</th>
<th>Conductivity</th>
<th>Turbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td>CFU/100 ml</td>
<td>mg/L</td>
<td>mg/L</td>
<td>mg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>187</td>
<td>0.32</td>
<td>2.24</td>
<td>8.78</td>
<td>68.54</td>
<td>7.74</td>
<td>14.2</td>
<td>0.20</td>
<td>30.39</td>
</tr>
<tr>
<td>Std Dev</td>
<td>191</td>
<td>0.51</td>
<td>1.78</td>
<td>2.26</td>
<td>80.63</td>
<td>0.3</td>
<td>47.7</td>
<td>0.05</td>
<td>36.93</td>
</tr>
<tr>
<td>Median</td>
<td>144</td>
<td>0.06</td>
<td>1.76</td>
<td>8.9</td>
<td>32.4</td>
<td>7.69</td>
<td>14.9</td>
<td>0.182</td>
<td>13.5</td>
</tr>
<tr>
<td>Max</td>
<td>830</td>
<td>2.10</td>
<td>7.56</td>
<td>14.20</td>
<td>387</td>
<td>8.52</td>
<td>24.0</td>
<td>0.32</td>
<td>122</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3.66</td>
<td>0</td>
<td>6.89</td>
<td>6.3</td>
<td>0.13</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Source: Stormwater Management Plan for the City of Bathurst

Table 4.5: Rankens Bridge

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Faecal Coliforms</th>
<th>Total Phosphorus</th>
<th>Total Nitrogen</th>
<th>Dissolved Oxygen</th>
<th>NFR</th>
<th>pH</th>
<th>Temperature</th>
<th>Conductivity</th>
<th>Turbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td>CFU/100 ml</td>
<td>mg/L</td>
<td>mg/L</td>
<td>mg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>826</td>
<td>0.73</td>
<td>3.63</td>
<td>8.96</td>
<td>65.74</td>
<td>7.71</td>
<td>15.10</td>
<td>0.26</td>
<td>35.22</td>
</tr>
<tr>
<td>Std Dev</td>
<td>1072</td>
<td>0.79</td>
<td>3.02</td>
<td>2.7</td>
<td>79.46</td>
<td>0.40</td>
<td>5.32</td>
<td>0.10</td>
<td>40.19</td>
</tr>
<tr>
<td>Median</td>
<td>375</td>
<td>0.385</td>
<td>3.08</td>
<td>8.75</td>
<td>12.8</td>
<td>7.64</td>
<td>15.3</td>
<td>0.222</td>
<td>20</td>
</tr>
<tr>
<td>Max</td>
<td>5520</td>
<td>3.04</td>
<td>14</td>
<td>14.5</td>
<td>282.0</td>
<td>9.07</td>
<td>28.0</td>
<td>0.50</td>
<td>136</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>0</td>
<td>2.4</td>
<td>0</td>
<td>6.91</td>
<td>6.3</td>
<td>0.14</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Stormwater Management Plan for the City of Bathurst

Table 4.6: Apex Park

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Faecal Coliforms</th>
<th>Total Phosphorus</th>
<th>Total Nitrogen</th>
<th>Dissolved Oxygen</th>
<th>NFR</th>
<th>pH</th>
<th>Temperature</th>
<th>Conductivity</th>
<th>Turbidity</th>
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<tbody>
<tr>
<td>Units</td>
<td>CFU/100 ml</td>
<td>mg/L</td>
<td>mg/L</td>
<td>mg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>744.4</td>
<td>0.64</td>
<td>3.91</td>
<td>8.81</td>
<td>69.97</td>
<td>7.73</td>
<td>14.74</td>
<td>0.26</td>
<td>33.5</td>
</tr>
<tr>
<td>Std Dev</td>
<td>1133</td>
<td>0.69</td>
<td>3.96</td>
<td>2.43</td>
<td>82.77</td>
<td>0.35</td>
<td>4.91</td>
<td>0.09</td>
<td>38.57</td>
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<tr>
<td>Median</td>
<td>315</td>
<td>0.38</td>
<td>3.04</td>
<td>9.1</td>
<td>18.4</td>
<td>7.73</td>
<td>15.3</td>
<td>0.245</td>
<td>16.5</td>
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<tr>
<td>Max</td>
<td>6960</td>
<td>3.50</td>
<td>27.02</td>
<td>15.2</td>
<td>277.0</td>
<td>8.49</td>
<td>28.7</td>
<td>0.5</td>
<td>134</td>
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<tr>
<td>Min</td>
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<td>0</td>
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<td>0</td>
<td>7.05</td>
<td>7.5</td>
<td>0.14</td>
<td>2.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Stormwater Management Plan for the City of Bathurst

Table 4.7: ANZECC recommended guidelines

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Faecal Coliforms</th>
<th>Total Phosphorus</th>
<th>Total Nitrogen</th>
<th>Dissolved Oxygen</th>
<th>NFR</th>
<th>pH</th>
<th>Temperature</th>
<th>Conductivity</th>
<th>Turbidity</th>
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<tbody>
<tr>
<td>Units</td>
<td>CFU/100 ml</td>
<td>mg/L</td>
<td>mg/L</td>
<td>mg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>Median &lt;150</td>
<td>Site Specific</td>
<td>Site Specific</td>
<td>&gt; 6</td>
<td>68.54</td>
<td>6.5-9.0</td>
<td>N/A</td>
<td>&lt;1.5</td>
<td>&lt;10% Change from seasonal mean concentration</td>
</tr>
</tbody>
</table>

Source Stormwater Management Plan for the City of Bathurst

The following measures are recommended to ensure no adverse impacts on the water quality within the Macquarie River or Saltram Creek from further urban development within the study area:

- Water sensitive design principles should be applied to stormwater design.
- Appropriate erosion and sediment controls and nutrient controls should be adopted.
- Nutrient control is required to manage runoff from upstream rural properties.
- Natural channels for trunk drainage should be adopted.

4.6.4 Stormwater management

The stormwater drainage system for the Eglinton village is a combination of roadside table drains and pits, pipes that drain to the Macquarie River. The system has been designed using the major-minor drainage system philosophy which is extensively used by local governments throughout Australia. The road pit and pipe network has been designed for the 1 in 10 year ARI and then roadways are utilised as the major drainage system for larger rainfall events.
A local concept of the “gilgoy” is used particularly where long pipelines would be required to discharge stormwater to the Macquarie River. A gilgoy is a sandy depression with high infiltration rates which can dispose of stormwater up to a 10 year ARI event. Typically during larger storm events gilgoys become saturated and infiltration capacities are severely limited. Local experience shows that the gilgoy can remain full of water for several days. This method of disposal is innovative and is in line with water sensitive urban design principles but unfortunately its capacity is limited. Once the gilgoys become inundated they will spill to a lower gilgoy. Ultimately all gilgoys will link to form a watercourse.

The drainage system in Eglinton has been designed for the 10 year ARI storm. The inlets of kerb inlet pits have found to be undersized ie do not allow the 10 year ARI flows to enter the system. An upgrade program is currently in place to enlarge all kerb inlet pits so the 10 year ARI storm is captured. This program is 50% complete. Council has advised the existing drainage system has no spare capacity within the drainage network.

Local flooding has been experienced in the north west corner where a new residential area drains to a table drain along Duramana Road. The flooding can be attributed to the way a property owner ploughed their field. The paddock was ploughed in such a manner that all stormwater runoff was directed to Alexander Street. In November 2005 Eglinton experienced a number of major storm events. Based on advice from council officers these events may have been 50 year ARI storm events (however this has not been substantiated). Localised flooding of properties was recorded along Park Street.

Currently on-site detention is not utilised to reduce peak flows and council does not see a need to incorporate it into the system. No treatment measures of stormwater such as gross pollutant traps are employed at present. Further treatment can be considered unnecessary as the Bathurst Regional Council Stormwater Management Plan (2004) states that the water in the Macquarie River is of a high quality after a major storm as there is no increase in the level of pollutants in the water.

Recent subdivisions and developments have required site-specific stormwater drainage solutions. Typically this means that stormwater is discharged to a local minor watercourse or table drain as the downstream infrastructure does not exist. Ironically several new developments have been required to prepare a detailed drainage system but there has been no council system to connect to so it has discharged freely to these watercourses or table drains.

Discussions with council indicate that the village has no spare capacity within the existing stormwater drainage system in Eglinton and any future development would need to drain around the existing village.

Any future stormwater drainage system would need to be designed within the following parameters:

- The peak discharge from the developed study area occurs within the first two hours of the 100 year rainfall event. By designing such a system peak stormwater flows from the study area will have reached the Macquarie River well before the flood peak hence avoiding backing up of the drainage system and causing minor flooding.
- A traditional major-minor system drainage methodology be adopted.
- Natural depressions will become drainage channels during large storm events. Typically this will involve construction of grassed lined channels in these areas with low flow pipes under to accommodate minor storms.
- Consideration to be given to the nutrient levels of the stormwater. Catchments include farmlands and rural residential lots where fertiliser usage will be much greater than urban catchments.
Drainage systems for future development would need to by-pass the existing village network.

Application of water sensitive urban design principles would bring tangible benefits to the environment and maintain the existing water quality of the Macquarie River.

Careful design of drainage systems to promote removal of nutrients and sediments prior to discharge without the need for structures such as gross pollutant traps and sediment basins.

Multiple use. Major drainage systems to also be recreational areas.

The recommendations for stormwater system design are:

- Adopt the major-minor design philosophy for stormwater drainage design.
- Pit and pipe system to be designed for 10 year ARI storm.
- Major system to include roadways and channels that will be designed for 100 year ARI storm.
- Minimise reliance on gilgoys for stormwater drainage.
- All drainage systems for new development should not drain to the existing Eglinton system.
- Drainage system is to be designed so peak flows from study area occur before peak flow occurs in the Macquarie River.
- Where necessary make provision for the new drainage system to accommodate flows from the Eglinton system.
- Provide limits to amount of impervious area on each lot.
- Application of water sensitive design principles to stormwater design.
- Adoption of “natural” type channels for trunk drainage.

The major potential impact from development at Eglinton will be to water quality of the Macquarie River. It can be seen from Table 4.5 and 4.7 that existing urban development within Bathurst has minimal impact on the Macquarie River. Therefore by adopting current industry practice for stormwater quality and the above recommendations the objectives of the Macquarie-Bogan Interim Environmental Objectives can be met.

4.6.5 Erosion and sediment control

The study area consists of highly erodible granite clays that are susceptible to erosion during development of land. Erosion and sediment management plans would be required to be in place during construction in accordance with council guidelines and Landcom Soils and Construction Volume 1 4th Edition (2004). Erosion and sediment controls in accordance with the above documentation should also be applied to new and existing rural properties and their operations upstream of the study area.

4.7 Ecology

An ecological assessment of the study area has been undertaken. The assessment considered the ecological constraints and opportunities to urban development within the study area. The assessment involved a database and literature review as well as on-site investigations. This section presents a precis of the investigations and recommendations. The complete assessment report is provided at Appendix G.

4.7.1 Flora

The Bathurst City Council Vegetation Management Plan (VMP 2003) identifies most of the study area as being predominantly endemic native vegetation and rural areas have been characterised by this vegetation theme even though they may be currently grazed or cropped.

A small area of remnant vegetation along the northern boundary of the study area has been mapped by the VMP as a highly degraded remnant of the Box Gum Woodland Endangered Ecological Community (EEC). The mapping undertaken for the VMP has used tree presence to
determine remnant vegetation. However this EEC can exist as modified grassland or solely in the seed bank. Therefore, a larger portion of the study area may actually be part of this EEC than that mapped by the VMP.

Vegetation identified within the study area during the site investigations consisted of improved pasture grasslands, remnant Box-Gum Woodland, degraded riparian vegetation, exotic windbreak plantings and residential gardens. No threatened flora species were identified within the study area. An assessment of the likelihood of occurrence of threatened flora species listed on the Threatened Species Conservation Act 1995 or the Environment Protection and Biodiversity Conservation Act 1999 was carried out. It was considered that the Basalt Pepper-cress could possibly occur within the site with marginal habitat occurring within treed areas. It was not considered likely that any other threatened flora species would occur within the study area.

The vegetation communities identified within the study area are shown in Figure 4.7 and discussed below.

**Pasture grasslands**

Pasture grasslands were the dominant vegetation community identified within the study area. During site investigations pasture areas were typically dominated by *Phalaris* (*aquatica* or *minor*) with other exotic grasses such as *Poa annua* (Winter Grass), *Panicum* sp. (Panic), *Eleusine tristachya* (Crabgrass) comprising most of the ground cover. Scattered *Juncus* sp. (Common Rush) and pasture weed species such as *Hypochaeris radicata* (Catsear) also contributed to the groundcover. Approximately five native *Bursaria spinosa spinosa* (Tick Bush) shrubs are scattered across the eastern part of the study area. Pastures in the east of the study area have been heavily grazed, particularly near dams and under any remaining shrubs. As a result these areas have bare ground comprising almost 5% of the ground cover.

**Box Gum Woodland**

Field surveys identified small remnants of treed Box Gum Grassy Woodland within and adjacent to the study area. These results correlate with Box Gum Woodland EEC mapping in the Bathurst VMP, which was based on the occurrence of over-storey (tree) species.

Whilst the improved pasture grassland discussed above is currently dominated by exotics, prior to clearing for agricultural purposes it would have constituted Box Gum Woodland. It is possible that the grassland may retain some species representative of the woodland community but which were undetected either because of seasonality or because they exist only within the soil seed bank.

Scattered Box-Gum Woodland trees such as Yellow Box (*Eucalyptus melliodora*) that occur across the study area, for example along the northern boundary (Figure 4.7) are all that remain of the over-storey of the Box-Gum Woodland community.

Under guidelines set out by the National Parks and Wildlife Service density of trees is not relevant to the existence of the EEC (NPWS undated). In fact, the Final Determination for the EEC specifically includes treeless areas in the EEC “as a result of past clearing or thinning.” In areas subject to past disturbance the mid-layer may contain large numbers of regenerating trees or in some locations the tree over-storey may be entirely absent and only a herbaceous understorey is present.

The existence of Box Gum Grassy Woodland is considered to be the main constraint to future development of the study area. Whilst the Box Gum Grassy Woodland within the study area is considered to be a relatively poor example, its conservation value is considered to be high as is discussed below.
FIGURE 4.7
VEGETATION COMMUNITIES WITHIN STUDY AREA

- Remnant box-gum woodland
- Improved Pasture Grasslands
- Native Trees (to be retained)
- Residential Garden
- Exotic Windbreak Plantings
- Cropped Fields
- Other Uses
- Dam
- Riparian
- Bursaria spinuosa
- Weeping Willows
The conservation value of a remnant, whatever its condition, will vary according to the locality. For example, whilst Box-Gum Woodland persisting as isolated paddock trees may be of limited conservation value in some areas, in highly modified agricultural landscapes they may be all that remain and thus their loss would be significant. In this regard, the remnant Box Gum Grassy Woodland within the study area is considered to be highly significant, with the EEC now occurring as small, isolated remnants in the Bathurst LGA, an area which has been extensively cleared for agricultural purposes. Such remnants and isolated trees are likely to be providing an important link across the landscape, acting as “stepping stones” for fauna, particularly woodland birds.

**Riparian vegetation**

The riparian zone of Saltram Creek is severely degraded and is characterised by *Salix babylonica* (Weeping Willow) with pasture grassland species occurring up to the gravel creek bed. A small bed of *Phragmites australis* (Common Reed) occurs near the Eleven Mile Drive crossing in an area approximately 20 metre square. At the time of the field survey, Saltram Creek was dry, a factor that is likely to have affected the species assemblage detected during the survey.

Dams within the study area were generally turbid, with the sparse emergent plants comprising *Juncus* sp. In addition, the fringing improved pasture grassland was heavily grazed.

### 4.7.2 Fauna

Fauna habitats within the study area are quite degraded with the major habitat types consisting of remnant vegetation such as trees, shrubs and ornamental garden plantings, grasslands, and aquatic habitats consisting of creek lines and dams. No hollow-bearing trees were observed on-site, although some mature trees in the north of the study area may contain some cryptic hollows.

The diversity of fauna species observed during site investigations was low, with common bird species such as the Australian Magpie, Willie Wagtail, Yellow Thornbill and Superb Blue Fairy-wren and introduced grazing mammal species such as cattle, sheep and Brown Hare being observed. These observations tend to reflect the poor fauna habitat quality of the study area.

Remnant trees, shrubs and ornamental garden plantings are likely to be important resources for fauna species occupying the area, particularly birds species, since little other habitat exists in the local area.

No evidence of habitat degradation due to rabbit grazing/digging/burrowing was recorded during the field survey. No evidence of predation by foxes was recorded.

No threatened flora species were detected on-site during the field survey. An assessment of the likelihood of occurrence of threatened fauna species listed under the *Threatened Species Conservation Act 1995* or the *Environment Protection and Biodiversity Conservation Act 1999* was carried out. It was not considered likely that any threatened fauna species would occur within the study area.

### 4.7.3 Wildlife and vegetation corridors

The study area does not form part of a local wildlife or bushland corridor. Less than one per cent of the original over-storey within the study area remains intact. The study area has little, if any, connectivity with more extensive vegetation remnants in the local area, such as those to the north-east. However, small vegetation remnants and isolated native trees and shrubs (such as *Bursaria spinosa spinosa*) provide important “stepping-stones” for woodland birds, as well as increased dispersal potential for eucalypts.
Native riparian vegetation along Saltram Creek has been cleared and replaced with the introduced Weeping Willow (*Salix babylonica*), altering the natural hydrological and ecological function of the creek system.

4.7.4 **Recommendations**

The main ecological constraint to future development within the study area is that posed by remnant vegetation, in particular the Box Gum Grassy Woodland Endangered Ecological Community. In order to protect and enhance the remnant Box Gum Grassy Woodland within the study area it is recommended that:

- A 100 metre wide corridor linking remnant Box-Gum Woodland and isolated woodland trees along the northern boundary of the study area with remnant Box Gum Woodland to the north-west is fenced off and appropriately managed.

- A conservation zoning over the 100 metre wide corridor is established and the area set aside as a reserve to be rehabilitated and managed by council.

- Assisted regeneration of grassy woodland within the 100 metre wide corridor is undertaken.

- A 40 metre wide riparian corridor along both sides of Saltram Creek is established and rehabilitated by eradicating Weeping Willow (*Salix babylonica*) and replanting with River She Oak (*Casuarina cunninghamiana*) and other suitable indigenous native species.

- Developing and implementing a management plan for the remnant Box Gum Grassy Woodland corridor. Issues to be addressed in the plan should include weed management, appropriate revegetation techniques, and use of endemic native species, including over-storey (tree) and groundcover species.

Establishing the woodland and riparian corridors as described above will serve to:

- Protect an occurrence of an Endangered Ecological Community, namely Box-Gum Grassy Woodland.

- Increase the extent and ensure the ecological sustainability and wildlife corridor function of fragmented remnants in the local area.

- Facilitate the connectivity of gene pools of native plants and animals.

- Provide connectivity between vegetation remnants and the riverine system.

- Increase habitat area for native fauna.

- Protect and enhance remnant vegetation for the conservation of threatened fauna species known to occur in the Bathurst LGA, particularly the Regent Honeyeater.

Buffers and corridors and areas of native vegetation to be retained are shown in Figure 4.8. A width of 100 metres has been recommended for the Box Gum Woodland corridor so as to establish a minimum corridor area of 10 hectares. A re-birding program being undertaken by Greening Australia recognises that to reoccupy an area birds need a minimum of 10 to 20 hectares of native vegetation with a dense understorey (which in this case would comprise a dense grassy understorey) and perhaps 100 hectares to settle and breed (ECOS 2002). Woodland birds are vital in maintaining healthy woodlands and productive agriculture. They act as controllers of insect populations on trees and also in crops and pastures. This can be crucial in maintaining a sustainable landscape. For example, trees provide shelter for stock, act as
FIGURE 4.8
VEGETATION REMNANTS, BUFFERS AND CORRIDORS TO BE RETAINED
windbreaks, and in many areas are vital for lowering salty water tables. A diversity of woodland birds is important in keeping insect numbers on trees under control and preventing dieback.

The 40 metre wide riparian buffer along Saltram Creek has been recommended in accordance with the NSW Government Draft Environmental Outcomes Assessment Methodology (DIPNR 2005c).

### 4.8 Bushfire hazard

Consultation with the NSW Rural Fire Service and examination of the Bathurst Regional Bushfire Prone Land Map has confirmed that the study area is not considered bushfire prone land and constitutes low bushfire hazard.

The topography of the study area is gently undulating and contains large areas of grassland vegetation with few scattered trees (less than 5%) bordering some fence lines through the site. The study area is not adjoining any large tracts of vegetation. The surrounding vegetation consisting primarily of introduced grasses with heavily grazed areas and pockets of improved pastures on privately owned land to the east and west of the study area. There is also a small patch of Box Gum Woodland to the north of the study area. This vegetation is heavily degraded and the understorey has been heavily grazed. As noted in Planning for Bushfire Protection (NSW Rural Fire Service 2001) areas being predominantly grasslands can be managed and as such are not considered being bushfire prone.

Planning for Bushfire Protection encourages councils to include objectives and criteria within a local environmental plan to ensure that developments are adequately protected from bushfire and that impacts from protection measures do not cause unreasonable environmental damage. Relevant objectives and criteria adapted from Planning for Bushfire Protection are summarised in Table 4.8 with a corresponding assessment of the study area.

**Table 4.8: Bushfire planning principles and the proposed development**

<table>
<thead>
<tr>
<th>Development principle</th>
<th>Proposed development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid ridge tops</td>
<td>The proposed village expansion can meet this principle (no ridge tops occur within the study area).</td>
</tr>
<tr>
<td>Avoid steep slopes, particularly upper slopes and narrow ridge crests</td>
<td>The proposed village expansion can meet this principle (no steep slopes occur within the study area).</td>
</tr>
</tbody>
</table>
| Avoid locations where adequate asset protection zones cannot be provided within the property or subdivision boundary | The proposed village expansion is able to meet this principle in all areas as:  
  * the area is located on flat to undulating lands less than 18 degrees in slope  
  * the size of the proposal has the potential to allow for adequate asset protection zones |
| Locate dwellings where vehicular access from two directions can be provided away from identified hazardous areas | This can be addressed at the concept design stage.                                                                                                 |
| Avoid building at the top of narrow gullies which are natural chimneys                  | The proposed village expansion can meet this principle.                                                                                             |
| Avoid building on slopes with a northerly to westerly aspect as these slopes are more prone to bushfires | The proposed village expansion can meet this principle.                                                                                             |
| Build on level ground wherever possible                                                | This is a development control issue that can be addressed during the design phase.                                                                   |
| Where buildings must be constructed on sloping land, they should be built on cut-in benches | This is a development control issue that can be addressed during the design phase.                                                                   |
### Development principle | Proposed development
--- | ---
rather than elevated or above fill. | This is a development control issue that can be addressed during the design phase.
Avoid raised floors in preference to concrete slabs | This is a development control issue that can be addressed during the design phase.
Locate the habitable buildings near the property entrance for easier access/egress | This is a development control issue that can be addressed during the design phase.
Keep services underground, particularly electricity | This is a development control issue that can be addressed during the design phase.
Locate water storage on site and near buildings | This is a development control issue that can be addressed during the design phase.
Protection measures may not necessarily be compatible with zoning. In these circumstances the asset protection zones should be retained within the compatible zone. | The proposed village expansion is able to meet this principle if the asset protection zones are located within the proposed development area.
Whether the development will place an increased demand for emergency services | The scale of the proposed village expansion and its location adjacent to large areas of grassland vegetation indicates that it has the potential to place an increased demand on emergency services.
Adversely affect other bushfire protection strategies or place other developments at risk. | The proposal is likely to require firefighting assets in an emergency situation.
Whether bushfire protection measures will adversely affect the environment. | The proposed village expansion can meet this principle.

Asset protection zones (APZ) ensure that a progressive reduction of bushfire fuels occurs between the bushfire hazard and any habitable structures. The study area has been identified as having low bushfire hazard however there is the potential for bushfires to occur depending on fuel levels, climatic conditions, and adjacent land uses. Planning for Bushfire Protection indicates the APZ should incorporate an Outer Protection Area (OPA) and an Inner Protection Area (IPA) which should include a perimeter road. Based on the slope (less than 5°) and the vegetation characteristics of the study area (grassland) a minimum APZ of 20 metres (managed understorey or grasses) is recommended. This should be incorporated within the development area.

### 4.9 Visual environment

The visual landscape surrounding the Eglinton village has an open rural feel with grazing occurring within most of the study area and its surrounds. Views from the study area and from the outskirts of the village are to low hills toward the north and more rugged mountains in the distance. There are also views from the study area and its surrounds across the village and toward Saltram Creek and Macquarie River. The best views are available from the more elevated northern parts of the study area.

The visual environment within the Eglinton village is typical of that of a small rural village. Development has been relatively gradual over the past 60 years and as such housing styles and construction vary widely with no particular style being dominant. Development within the village is almost entirely low-density single-storey detached housing. Local streets are relatively wide and are predominantly formed roads with grassed shoulders that contribute to the rural feel of the area. The streetscapes within the village are enhanced by a large number of well-established trees along the grassed shoulders and within private lots. The central village green area is a dominant feature within the village and also contributes to the open and spacious feel.

The future development of the study area should incorporate urban design and landscaping themes that are consistent with the open rural characteristics of the existing village and should consider the interface between the village and surrounding rural areas.
4.10 Cultural heritage

Charles Dearling Archaeological and Cultural Heritage Consultants (2005) undertook a cultural heritage study and archaeological assessment of the study area. This assessment considered the European and Aboriginal heritage constraints to development. The findings of the study are summarised below and the complete report is included in Appendix H.

4.10.1 European heritage

Desktop study

The desktop study for European heritage involved searches of a number of government databases. These searches identified that there are no listed European heritage sites within the study area however a number of sites were identified in the surrounding area.

Register of the National Estate

Two sites were identified as being in the Eglinton area:

- **Kellosheil Creek Bridge.** A segmented masonry arch road bridge believed to be constructed by George Rankens in the 1800s. Located 1.4 kilometres west of the village.
- **Blackdown Homestead Complex.** This homestead is one of the oldest in the district and dates from the 1820-1830 period.

State Heritage Register

No sites within the study area were listed on the State Heritage Register.

State Heritage Inventory

Five sites were identified as being within the Eglinton area:

- **Blackdown Homestead – 90 Eleven Mile Drive**
- **Blackdown Mill**
- **Kellosheil – 20 Mill Lane**
- **St Lukes Anglican Church**

Bathurst LEP

Eight items in the Eglinton area were found to be listed on Schedule 3 of the Bathurst LEP. These are summarised in Table 4.9.

<table>
<thead>
<tr>
<th>Item no</th>
<th>Item name</th>
<th>Lot/DP</th>
<th>Street address</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Westbourne</td>
<td>Lot 6 DP594198</td>
<td>192 Mill Lane, Eglinton</td>
</tr>
<tr>
<td>19</td>
<td>Kellosheil</td>
<td>Lot Pt 4 DP 16832</td>
<td>20 Mill Lane, Eglinton</td>
</tr>
<tr>
<td>20</td>
<td>St Lukes Anglican Church</td>
<td>Lot Pt 72 DP 755779</td>
<td>27 Alexander Street, Eglinton</td>
</tr>
<tr>
<td>21</td>
<td>Late Victorian homestead</td>
<td>Lot 55 DP829571</td>
<td>35 Loren Street, Eglinton</td>
</tr>
<tr>
<td>22</td>
<td>Alloway Bank</td>
<td>Lot 1 DP855150</td>
<td>135 Thomas Street, Eglinton</td>
</tr>
<tr>
<td>23</td>
<td>Cangoura</td>
<td>Lot 1 DP745859</td>
<td>310 Eleven Mile Drive, Eglinton</td>
</tr>
<tr>
<td>27</td>
<td>Former Blackdown Mill</td>
<td>Lot 22 DP 804072</td>
<td>158 Eleven Mile Drive, Eglinton</td>
</tr>
<tr>
<td>28</td>
<td>Blackdown</td>
<td>Lot 22 DP 804072</td>
<td>90 Eleven Mile Drive, Eglinton</td>
</tr>
</tbody>
</table>

Field investigations

Field investigations were also carried out for the study area and a number of European cultural heritage items were identified. These comprised three standing structures/ruins and three items
of movable European heritage. The location of these sites is shown on Figure 4.9. The details of these items are listed below:

**Site 1 – Drill and cultivator**
This site consists of a single farm implement which has been identified as a Sunshine Suntyne Grain and Fertiliser Drill and Spring Tyne Cultivator which is a seed drill developed by a NSW farmer Raimond Squire in 1916. The manufacturing rights were sold to H.V. McKay who manufactured the machine at the Sunshine Harvester Works in Victoria.

Assessed on appearance the machine dates from the late 1940s to early 1950s. The machine is assessed to be in reasonably good condition and has many items of the original tool kit present. The items include spare cogs that allowed changes in the depth and speed of drilling to be made.

The recommended management option is to negotiate with owners for either purchase or donation of the movable heritage item and its removal into a secure area such as a local museum or heritage area for conservation.

**Site 2 – Sunshine Header**
The Sunshine Header Harvester was invented over a number of years by Headlie Taylor of Henty NSW. The manufacturing rights were subsequently sold to the H.V. McKay of Sunshine Harvester Works in Victoria. The machines were made in various models up until at least the mid 1950s.

The version of the machine at the site is showing weathering but is otherwise in good condition and according to the owner is still in working order. It was also noted that many of the original tools and spare fittings for the machine are present.

The recommended management option is to negotiate with owners for either purchase or donation of the movable heritage item and its removal into a secure area such as a local museum or heritage area for conservation.

**Site 3 – Water supply and storage system**
This site comprises two concrete lined brick water tanks/troughs connected to a nearby well by cast iron pipes. The bricks used in the construction of the tanks are rough but machine made. The well head and some of the piping has been modernised and a third plastic open storage tank has been established.

It is considered likely that the site was originally constructed during the 1950s. The site is assessed as being in good condition but highly modified since first built.

The recommended management option is to carry out archival recording then allow destruction of the site.

**Site 4 – Old shed and assorted machinery**
This site consists of an old farm shed, a Sunshine Header and assorted pieces of farm machinery and junk spread about in front of the shed. The shed is constructed from timber with corrugated sheeting on the walls and roof. The shed is in poor condition with large sections of the roof missing. Closer examination of the site was not possible due to extensive trip hazards in the form of large pieces of metal and large logs lying in the grass.

It is recommended that further research be carried out to accurately determine the significance and the appropriate management option. As part of the assessment the vegetation would need to be cleared and rubbish removed.
Site 5 – Old well
This site comprises an old well that once existed on the site but has since collapsed and been filled in. The site was identified on the advice of the landowner Mr Barry Cox. The site now appears as a depression in the ground located on the eastern boundary of the property near Hamilton Road.

The recommended management option is to do nothing and let the item deteriorate beyond recovery.

Site 6 – Sheep dip complex
Site 6 is located within Lot 15 DP 983884 near its boundary with Eleven Mile Road. The site comprises a concrete sheep dip, concrete base around the dip, footings of a probable shed adjacent to the dip, a 5m x 5m square depression located just to the south east, and a number of exotic tree plantings. However only the sheep dip trough is readily identifiable as to its purpose.

The concrete lined trough is dug into the ground and is considered to have been constructed during the 1950s. The site is in relatively poor condition.

The recommended management option is to carry out archival recording then allow destruction of the site.

Significance assessment
The significance of the sites identified within the study area has been assessed based on a set of criteria defined by the NSW Heritage Office and the former Department of Urban Affairs and Planning. This assessment of significance is summarised in Table 4.10.

Table 4.10: Significance levels for European cultural heritage items within the study area

<table>
<thead>
<tr>
<th>Site no.</th>
<th>Site name</th>
<th>Local significance</th>
<th>Regional significance</th>
<th>State significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suntyne Drill and Cultivator</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Sunshine Header</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Water storage and supply system</td>
<td>Low</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>4</td>
<td>Shed and assorted machinery*</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>5</td>
<td>Old well</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>Sheep dip complex</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
</tbody>
</table>

* This rating would need to be reassessed once closer inspection can be made of the machinery at the site. The structure is assessed as having no cultural heritage significance due to its poor condition.

Recommendations
The following recommendations are made relating to European heritage within the study area:

- There are no long-term archaeological constraints within the study area to the future expansion of the Eglinton village.
- Prior to any expansion of the Eglinton village an archival recording of sites 3 and 5 should be carried out. A reassessment should also be carried out for site 4. Prior to the reassessment the site should be cleared of vegetation and rubbish.
- Negotiation should be carried out between the local council and the relevant landowner for the conservation of the movable heritage items at sites 1 and 2 and possibly 4.

4.10.2 Aboriginal heritage
Desktop study
The desktop study for Aboriginal cultural heritage involved a search of the Australian Heritage Information Management System (AHIMS). AHIMS is a database of recorded Aboriginal sites within NSW and is maintained by the Department of Environment and Conservation.
The search encompassed an area of 5 kilometres from the study area boundaries. Eight sites were identified within the search area. The closest recorded sites to the study area and which were considered could impact on the findings of Aboriginal cultural heritage material within the study area are as follows:

- Site No 44-3-54 – an open artefact scatter located about 1km north west of the study area.
- Site No 44-3-37 – an open artefact scatter located about 2km east of the study area.

Field investigations
Field investigations were also carried out for the study area during which one Aboriginal site was recorded. The location of the site is shown on Figure 4.9 and is described below:

**Site 1 – Isolated find**
The isolated find was located in a mid slope context above a major drainage line which forms part of the Saltram Creek catchment. The exposure in which the find was located was formed by the junction of a number of stock tracks that converge near the corner of the paddock.

The exposure containing the site was approximately 5 metres by 1 metre in size (discounting the stock tracks) with archaeological visibility within the exposure being 95%. Outside the exposure visibility dropped to less than 2% due to the grass covering the ground. The soil in the vicinity of the site consisted of a thin layer of coarse sand overlying a compacted clayey sandy material. The area of the site is well drained.

The site is considered to have a moderate to low potential to be larger (both spatially and in the number of artefacts) and as having low potential to have in-situ sub-surface artefacts.

Significance assessment
The single Aboriginal artefact recorded is assessed as having no cultural heritage value based on archaeological significance. The type of artefact and the type of site are extremely common throughout NSW and Australia. The only value that the artefact has is very minor when used at a regional level to determine the level of Aboriginal exploitation of that region. That the artefact has been recorded fulfils this minor role.

Consultation
Eglinton village falls within the boundaries of the Bathurst Local Aboriginal Land Council (LALC). The Bathurst LALC was contacted prior to the field surveys taking place to inform them of the study and to invite them to participate in the surveys. During the surveys the Bathurst LALC was represented by Warwick Peckham who is a coordinator and site manager for the Bathurst LALC.

Warwick Peckham confirmed that he was happy with the conduct of the survey and the results obtained. He also agreed that in the case of site development it would be suitable to obtain a consent to destroy permit from DEC for the one site identified in the survey. He also noted that during construction care should be taken in the vicinity of the identified site in case further heritage material is uncovered at which stage the Bathurst LALC should be informed.

Recommendations
The following recommendations are made relating to Aboriginal heritage within the study area:

- There are no long-term Aboriginal archaeological constraints to the expansion of Eglinton within the study area.
- No future archaeological research with regard to Aboriginal cultural heritage issues is required. A consent to destroy application for the single Aboriginal site identified should be made to the DEC.
4.11 Land use and development

4.11.1 Existing land use

The study area is currently agricultural land used predominantly for grazing with some cropping and market gardens. The Eglinton Bush Fire Brigade site and AM radio transmission towers are also located within the study area both to the west of the village. The land has been almost entirely cleared of vegetation and has been developed for agricultural land uses since before the 1950s. The land directly adjoining the study area is also agricultural land predominantly used for grazing with the exception of land to the east of the study area close to Saltram Creek which is used for cropping and market gardens.

The land within the Eglinton village has been almost fully developed for low-density residential land uses. A primary school and local recreation area comprising playing fields, tennis courts and a community hall are located along Alexander Street within the village. A local convenience shop is located within the village at 21 Park Street.

To the south of the Eglinton village is a small area of rural-residential land comprising six lots. About two kilometres from the south-west corner of the study area is the Pipers Field Airport which is used predominantly for gliders associated with the Bathurst Soaring Club.

4.11.2 Agricultural capability and potential impact on agriculture

Agricultural capability classification

The agricultural capability of land within Bathurst is defined by a five-class system which is described as follows:

- **Class 1**: Arable land suitable for intensive cultivation where constraints to sustained high levels of agricultural production are minor or absent.

- **Class 2**: Arable land suitable for regular cultivation for crops but not suited to continuous cultivation. It has a moderate to high suitability for agriculture but edaphic (soil factors) or environmental constraints reduce the overall level of production and may limit the cropping phase to a rotation with sown pastures.

- **Class 3**: Grazing land or land well suited to pasture improvement. It may be cultivated or cropped in rotation with pasture. The overall level of production is moderate as a result of edaphic or environmental constraints. Erosion hazard or soil structural breakdown limit the frequency of ground disturbance, and conservation or drainage works may be required.

- **Class 4**: Land suitable for grazing but not for cultivation. Agriculture is based on native pastures or improved pastures established using minimum tillage techniques. Production may be high seasonally but the overall level of production is low as a result of a number of major constraints, both environmental and edaphic.

- **Class 5**: Land unsuitable for agriculture or at best suited only to light grazing. Agricultural production is very low or zero as a result of severe constraints, including economic factors, which preclude improvement.

The land within the study area is mostly within Class 2 with some small areas of land along the boundaries of the study area within Class 3 as shown on Figure 4.10. Based on these classifications land within Eglinton village is considered to have moderate to high agricultural capability.

Agricultural productivity

The agricultural potential of the land within the study area is compromised for three reasons. The first is its close proximity to an established urban area and the restrictions on agricultural
activities that this imposes. The second reason is the relatively small size of lots which does not enable an economic scale of agricultural operations. The third reason is the fragmented ownership pattern that means amalgamation of lots to achieve a viable scale of operations is not feasible.

As a result of these factors the land within the study area does not have high agricultural productivity despite its moderate-high agricultural capability classification. This is reflected in the limited current agricultural use of properties within the study area as highlighted in Table 4.11 and Figure 4.11. Table 4.11 and Figure 4.11 provide a qualitative rating of the current agricultural productivity of the properties within the study area based on current use and the size and location of the landholdings.

Table 4.11: Current agricultural productivity

<table>
<thead>
<tr>
<th>Lot and DP</th>
<th>Current agricultural productivity</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 10 DP872964</td>
<td>Nil</td>
<td>Current use is a Fire Station.</td>
</tr>
<tr>
<td>Lot 11 DP872964 and Lot 2 DP16823</td>
<td>Low</td>
<td>Used for low intensity cropping of lucerne and oats.</td>
</tr>
<tr>
<td>Lot 991 DP777674</td>
<td>Nil</td>
<td>Current use is residential. The lot is too small for agricultural production.</td>
</tr>
<tr>
<td>Lot 992 DP777674</td>
<td>Nil</td>
<td>Current use is residential. The lot is too small for agricultural production.</td>
</tr>
<tr>
<td>Lots 2 and 3 DP786760</td>
<td>Low</td>
<td>AM transmission towers located on site and some very low intensity grazing.</td>
</tr>
<tr>
<td>Lot 11 DP825612</td>
<td>Moderate</td>
<td>Part of the site used for market gardens and cropping.</td>
</tr>
<tr>
<td>Lot 12 DP825612</td>
<td>Low</td>
<td>Current use as a horse stud and low intensity cropping of lucerne and oats.</td>
</tr>
<tr>
<td>Lot 100 DP710096</td>
<td>Nil</td>
<td>Current use is residential.</td>
</tr>
<tr>
<td>Lots 1-8 DP795012</td>
<td>Moderate</td>
<td>Used for cropping of lucerne and oats.</td>
</tr>
<tr>
<td>Lot 31 1064156 and Lot 2 DP740403</td>
<td>Moderate</td>
<td>Used for cropping of lucerne and oats.</td>
</tr>
<tr>
<td>Lot 32 D1064156</td>
<td>Nil</td>
<td>Current use is residential. The lot is too small for agricultural production.</td>
</tr>
<tr>
<td>Lot 3-15 / 30 / 33 DP983884 and Lot 1 DP 1038366</td>
<td>Low</td>
<td>Low intensity grazing occurs on the site.</td>
</tr>
<tr>
<td>Lot 10 DP1077306</td>
<td>Nil</td>
<td>Current use is residential. The lot is too small for agricultural production.</td>
</tr>
<tr>
<td>Lot 11 DP1077306</td>
<td>Nil</td>
<td>Current use is residential. The lot is too small for agricultural production.</td>
</tr>
<tr>
<td>Lot 1 DP786472</td>
<td>Nil</td>
<td>Current use is residential. The lot is too small for agricultural production.</td>
</tr>
<tr>
<td>Lot 2 DP786472</td>
<td>Low</td>
<td>Low intensity grazing occurs on the site. This lot is not suitable for agricultural production due to its size and proximity to the Eglinton village.</td>
</tr>
<tr>
<td>Lot 1 DP1047811</td>
<td>Low</td>
<td>Low intensity grazing occurs on the site. This lot is not suitable for agricultural production due to its size and proximity to the Eglinton village.</td>
</tr>
</tbody>
</table>

The current agricultural productivity of the land within the study area is low to moderate at best. The land within the study area along the eastern edge of the village extending to Saltram Creek is alienated and is considered to have limited future value as agricultural land. The agricultural productivity of the land within the outer western and northern parts of the study area and also the rural land surrounding the study area could be improved with better management of urban-rural land use conflicts associated with proximity to the village. Village expansion provides an opportunity to incorporate suitable land use buffers to manage these conflicts and increase the
agricultural productivity of the surrounding area. This issue is discussed further in section 4.11.3.

**Potential impact of village expansion on agriculture**

The above highlights that the current agricultural productivity of the land within the study area is limited due to land fragmentation and proximity to the Eglinton village. This suggests that the potential impact of village expansion on agriculture would be minor.

The impact on agriculture associated with the urban development of the study area also needs to consider agricultural capability in a broader regional context. Figure 4.12 shows that large areas of land within the Bathurst region are Class 1 or 2 agricultural lands. This highlights that the loss of a small amount of fragmented agricultural land surrounding Eglinton would have minimal impact on agriculture in the broader regional context.

The potential impact of village expansion on the rural lands and agriculture within and surrounding the study area can be further assessed against the relevant objectives and strategies contained within the *Rural Lands Policy* (DUAP 2000) and the *Policy for Sustainable Agriculture in NSW* (Department of Primary Industries 1998). These documents provide the NSW Government policy framework for the consideration of land use change and development proposals within rural and agricultural lands.

The *Rural Lands Policy* has been prepared to assist councils in the preparation of draft LEPs applying to rural land and to facilitate integrated land use and sustainable resource management. The document sets out objectives that have been considered in Table 4.12 below.

**Table 4.12: Consideration of objectives under the Rural Lands Policy**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rural land resources</strong></td>
<td></td>
</tr>
<tr>
<td>To minimise loss or fragmentation of agricultural land or holdings.</td>
<td>The agricultural land surrounding Eglinton is already considerably fragmented to the extent that most is no longer viable for agricultural production. A well planned expansion of the village would not result in significant further detrimental fragmentation.</td>
</tr>
<tr>
<td>To minimise land use conflicts and environmental impacts.</td>
<td>Land use conflicts are currently experienced at the rural-urban interface surrounding Eglinton. A small expansion of the village would create an opportunity to manage existing land use conflicts through appropriate buffers. The expansion of Eglinton would not result in any other environmental impacts that cannot be managed.</td>
</tr>
<tr>
<td>To maintain and promote agricultural activities and uses and to provide opportunities for a greater variety of agricultural uses in the future.</td>
<td>Implementation of appropriate land use buffers around an expanded village could provide opportunities for a greater variety of agricultural uses on surrounding land both within and outside the study area.</td>
</tr>
<tr>
<td>To protect the productive capacity of agricultural land.</td>
<td>The land within the study area is considered to have low agricultural productivity despite its high capability. Implementation of appropriate land use buffers around an expanded village would reduce existing rural-urban land use conflicts and provide opportunities for increased production on the remaining land.</td>
</tr>
</tbody>
</table>
### Table: Objectives and Comment

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>To protect and maintain the scenic and landscape values of rural land.</td>
<td>Expansion of Eglinton would impact on the scenic and landscape values of the study area. However it is considered that a well planned expansion would not have a significant detrimental impact on these values. The establishment of vegetated buffer zones around the village would create a positive visual distinction between urban and rural. In the absence of a development plan for expansion there is potential for future ad hoc land rezoning to occur which could result in unplanned village sprawl and far greater impact on the scenic and landscape values of the surrounding rural land.</td>
</tr>
<tr>
<td>To protect and restore the natural resource base on which agriculture and other land uses depend.</td>
<td>Expansion of Eglinton would result in loss of high quality agricultural land resources. However it is considered that a minor expansion can be justified given the extent of high quality agricultural land across the wider Bathurst region. In addition provision of appropriate land use buffers would result in better protection of the surrounding agricultural land.</td>
</tr>
<tr>
<td><strong>Settlement</strong></td>
<td></td>
</tr>
<tr>
<td>To ensure supply of new housing relates to demand.</td>
<td>An expansion of Eglinton would need to have consideration for residential land supply and demand. This has been addressed in detail in section 4.12.</td>
</tr>
<tr>
<td>To plan for rural residential development in the context of a rural release or settlement strategy.</td>
<td>There is the potential to accommodate rural residential development within the study area however there may be more appropriate locations for this form of development. A rural release strategy is being developed as part of the Draft Bathurst Region Rural Strategy and is outside the scope of this LES.</td>
</tr>
<tr>
<td>To maximise use of existing infrastructure in the provision of urban and rural residential lots.</td>
<td>An expansion of Eglinton would utilise the existing infrastructure that services the village.</td>
</tr>
<tr>
<td>To conserve or use land in a way that will not prejudice future urban purposes.</td>
<td>This is not considered relevant to this LES.</td>
</tr>
<tr>
<td>To minimise impact on the existing and potential productivity of agricultural land.</td>
<td>The land within the study area is considered to have low agricultural productivity despite its high capability. Implementation of appropriate land use buffers around an expanded village would reduce existing rural-urban land use conflicts and provide opportunities for increased production on the remaining land.</td>
</tr>
<tr>
<td>To minimise land use conflicts and environmental impacts.</td>
<td>The land within the study area is considered to have low agricultural productivity despite its high capability. Implementation of appropriate land use buffers around an expanded village would reduce existing rural-urban land use conflicts and provide opportunities for increased production on the remaining land.</td>
</tr>
<tr>
<td>To protect and maintain scenic landscape values.</td>
<td>Expansion of Eglinton would impact on the scenic and landscape values of the study area. However it is considered that a well planned expansion would not have a significant detrimental impact on these values. The establishment of vegetated buffer zones around the village would create a positive visual distinction between urban and rural. In the absence of a development plan for expansion there is potential for future ad hoc land rezoning to occur which could result in unplanned village sprawl and far greater impact on the scenic and landscape values of the surrounding rural land.</td>
</tr>
<tr>
<td>To provide for a variety of urban and rural living opportunities.</td>
<td>Eglinton and the other two villages provide an alternative low density residential environment to other residential areas around Bathurst. An expansion of Eglinton would provide a continued supply of this form of urban living. There is also potential to accommodate a variety of rural living opportunities within the study area with a range of rural residential lot sizes.</td>
</tr>
<tr>
<td>To ensure settlement relates to the physical, social and service catchments.</td>
<td>This is not considered relevant to this LES.</td>
</tr>
</tbody>
</table>
Objectives | Comment
--- | ---
To ensure coordination on a regional level and between adjoining local government areas. | This is not considered relevant to this LES.

The Policy for Sustainable Agriculture in NSW (Department of Primary Industries 1998) has been prepared to promote a coordinated approach to achieving an ecologically and economically sustainable agricultural sector in NSW. The policy sets out objectives and strategies for a range of issues. The strategies considered relevant to the Eglinton village expansion are addressed in Table 4.13 below.

**Table 4.13: Consideration of strategies under the Policy for Sustainable Agriculture**

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land management</strong></td>
<td></td>
</tr>
<tr>
<td>Maintain effective barriers to the importation and spread of weeds and pest animals.</td>
<td>This is outside the scope of this LES.</td>
</tr>
<tr>
<td><strong>Integrated management</strong></td>
<td></td>
</tr>
<tr>
<td>Ensure the equitable and efficient allocation of land and other natural resources between agriculture and other sectors of the community.</td>
<td>An expansion of Eglinton would need to balance the loss of agricultural land against the demand for expansion. The current level of agricultural production is low for most of the study area. The expansion of the village provides an opportunity to improve the agricultural productivity of surrounding land through provision of appropriate buffers to address land use conflicts. This would be considered consistent with this objective.</td>
</tr>
<tr>
<td>Ensure land use planning is undertaken in association with agriculture to avoid conflict that may jeopardise agricultural sustainability.</td>
<td>Land use conflicts are currently experienced at the rural-urban interface surrounding Eglinton. An expansion of the village would create an opportunity to plan for appropriate land use buffers to avoid conflict that jeopardises the agricultural sustainability of surrounding rural lands.</td>
</tr>
<tr>
<td>Develop and adopt agricultural activities and planning strategies that minimise impacts on community amenity from noise, dust and odour.</td>
<td>Negative impacts are currently imposed on the amenity of Eglinton by surrounding rural and agricultural activities. The predominant impacts are dust generation and to a lesser extent noise and chemical spray drift. An expansion of the village would create an opportunity to plan for appropriate land use buffers to minimise these impacts on the urban area.</td>
</tr>
</tbody>
</table>

An expansion of the Eglinton village would result in the loss of agricultural land. This land is classified as having moderate to high agricultural capability however the current agricultural productivity of the land within the study area is limited due to land fragmentation and proximity to the Eglinton village. The agricultural land in the study area represents a small proportion of the total area of land within the wider Bathurst region classified as Class 1 or 2 agricultural lands. The loss of this agricultural land would therefore not have a significant impact on agriculture within the Bathurst region and a modest and well planned village expansion would not compromise the objectives and strategies set out in the Rural Lands Policy and the Policy for Sustainable Agriculture in NSW. The extent of village expansion should nevertheless be appropriate to the anticipated demand for residential land within Eglinton and planning for the area should give careful consideration to the interface between rural and urban uses. These issues are discussed further within sections 4.11.3 and section 4.12 below.
4.11.3 Land use conflicts

There are several land uses within and surrounding the study area with the potential to conflict with future residential development within the study area. These are discussed below.

Airports and airfields

Bathurst Airport
Bathurst Airport is located approximately 11 kilometres to the south east of the study area. The study area is within range of the Bathurst Airport Obstacle Limitation Surface (OLS). However discussions with Bathurst Regional Council have indicated that at Eglinton the OLS is at least 150 metres above ground level. This does not therefore represent a constraint on future development within the study area.

Pipers Airfield
Pipers Airfield is a private airstrip located about 500 metres from the south-west corner of the study area and approximately 1.5 kilometres from the south-west corner of the existing village. The airfield has been used by the Bathurst Soaring Club for about 30 years and provides a local tourist attraction.

The Bathurst Soaring Club has provided information regarding the use of the airfield and the potential impacts on land within the study area. A copy of the advice received from the Bathurst Soaring Club including a sketch of flight paths is included in Appendix I.

The club predominantly operates gliders launched by powered tug aircraft and to a lesser extent some powered gliders, general aviation powered aircraft and ultralight powered aircraft. The club operates at weekends and on public holidays as well as occasional weekdays and blocks of full weeks for special events. Operations occur during the hours of sunrise to sunset. The airfield is used more intensively during summer when up to 100 runway movements would occur per day split fairly evenly between powered and unpowered aircraft. Activity decreases during winter.

The airfield has five runways with Runway 3 and Runway 21 the most used. Runway 21 has a take-off and landing path that passes over the study area. Runway 3 has a take-off and landing path directed away from the study area. Approximately 90% of take offs and 25% of landings occur on Runway 21. The take-off and landing path from Runway 21 moves north-east from the airfield and enters the study area to the north of Fremantle Road. Aircraft then travel to the south-east over the study area towards the Eglinton village. The path then turns to the south-west just south of Wellington Street approximately 200 metres from the existing village boundary. On take-off aircraft ascend to approximately 1000 feet following this flight path then depart in the desired direction while continuing to climb. On landing aircraft will descend to approximately 1000 feet then follow this path back to the airfield.

The Bathurst Soaring Club has advised that the rural land between Eglinton village and the airfield provides a good noise buffer and noise has not been a significant issue. Urban expansion to the west of the existing village would expose future residents to periodic airfield noise and flight noise with residents directly under the flight path where aircraft are lower than 1000 feet.

The intermittent and restricted use of the airfield means that this issue is not considered an absolute constraint to urban expansion to the west of the village. However potential noise impact on future residents under the take-off and landing path of Runway 21 would need to be considered further and could require acoustic house design measures to minimise disturbance to residents.
AM radio transmission towers

Two AM radio transmission towers are located within the study area just to the east of Eglinton village and are currently used by local radio station 2BS. The towers are each approximately 103 metres in height. Discussions have been held with the Australian Communication and Media Authority and with the Australian Radiation Protection and Nuclear Safety Agency. These revealed that there are no specific standards or guidelines for public safety related to exposure to AM radio emissions and no specific separation distances between AM radio towers and residential development.

2BS has indicated that approval from the federal government is being sought for an FM radio license. This would enable them to relocate to an existing tower on Mount Ovens. 2BS has also indicated that the existing towers would be relocated to another site outside the study area in the event that the current site is identified for future urban development.

In the interim development should be excluded within the drop zone of the towers. This means no development can occur within a 103 metre radius from the base of the towers until the towers are removed from the area.

Rural-urban land use conflicts

There is potential for land use conflicts between residential and rural land uses to be exacerbated with further expansion of the Eglinton village. Urban development could constrain agricultural activities within the surrounding area and agricultural activities also could impact on the amenity of future urban areas. There is a need to consider requirements for land use buffers or edge treatments to reduce potential conflicts between rural and urban land uses.

The land within and surrounding the study area is predominantly used for small-scale agriculture and hobby farming. This comprises largely grazing activities in addition to some cropping (mainly lucerne and oats) and some small areas of vegetable production. Aerial crop spraying is not carried out within the study area or the immediate surrounding areas however hand spraying of crops is common.

Physical separation through provision of buffer areas between agricultural and residential land uses is a legitimate planning tool to reduce potential conflicts and complaints. It is recognised however that buffers alone are unlikely to eliminate impacts completely and as such other mechanisms may be appropriate such as notification on titles to alert future residents of nearby agricultural activities.

The Queensland Department of Natural Resources has prepared Planning Guidelines: Separating Agricultural and Residential Land Uses (DNR 1997) which is recognised as a best practice approach to separating agricultural and urban land uses through buffer design. The NSW Department of Primary Industries has also developed less detailed guidelines on land use buffers (DPI 2004). The NSW guidelines are based on the Queensland planning guidelines and the buffer requirements are the same. The NSW guidelines recognise that the Queensland planning guidelines are the most detailed and relevant guidelines for the purposes of planning and designing buffers to reduce conflict between agricultural land use and residential or rural-residential areas.

The Queensland planning guidelines establish minimum buffer widths for various issues with and without vegetated buffer elements. Buffer elements would usually comprise a vegetation strip with minimum width of 20 metres with 10 metre firebreaks either side. The appropriate height and density of vegetation requires detailed site assessment.

A summary of the recommended buffer widths set out in the Queensland planning guidelines is provided in Table 4.14.
The most significant conflicts associated with the agricultural uses within and surrounding the study area would be expected to be dust generation and some potential chemical spray drift. Noise and odour are considered lesser issues.

Based on the above recommended buffer widths a minimum 40 metre buffer incorporating a 20 metre vegetative buffer element would be adequate to minimise land use conflicts between residential and rural land uses associated with future development of the study area.

### 4.12 Demographic and residential land assessment

#### 4.12.1 Demographic profile

Bathurst Regional Council was formed in May 2004 and comprises the former Bathurst City Council and approximately 80% of the former Evans Shire Council. The amalgamation of the two areas occurred after the 2001 census and therefore there is no census data available for the Bathurst Regional Council area. Most of the demographic data presented below is therefore for the former Bathurst City Council area. This data has been sourced from the Bathurst Region Statistical Profile (Bathurst Regional Council 2005) which is predominantly based on data from the Australian Bureau of Statistics. There is no more detailed demographic data available for Eglinton or other urban areas within Bathurst.

#### Population

The estimated resident population of the former Bathurst City LGA at June 2004 was 31 564. For the Bathurst Regional LGA this figure has been estimated at 34 720. The former Bathurst City Council area experienced an average population growth rate of 1.0% over the 10-year period from 1993-2003. At June 2003 Bathurst was the fastest growing inland centre in NSW.

The current population of Eglinton is 1609 compared to the other villages of Perthville with 400 and Raglan with 1079 (ABS 2001). At the 1996 Census these figures were as follows: Eglinton – 1215; Perthville – 393; and Raglan – 991. It should be noted that these figures are based on collector districts so do not necessarily reflect the village boundaries.

The 2001 population projection data published by DIPNR (2004) is based on an annual average growth rate of 0.9% and estimates the population of the Bathurst City LGA would increase from 30 620 in 2001 to 40 120 in 2031. This projection is considerably lower than the 1994 projections which estimated that the population of the Bathurst City LGA would increase from 27 818 in 1991 to 45 800 in 2021. Based on the 1994 figures the population was expected to reach 33 800 by 2001. This estimate exceeds the actual 2001 population by 3 200.

#### Age structure

The former Bathurst City LGA has a younger population than the NSW average. In 2001 the population peaked in the 15-19 age group which forms 10.5% of the population. For NSW the population peaked in the 35-39 age group. In 2001 40.9% of the Bathurst City LGA population was under 24 years of age. The high proportion of the population within this age group is primarily due to the fact that Bathurst is a centre for education and has four secondary boarding.
schools as well as Charles Sturt University. Only 14.7% of the population fell in the over 60 age bracket compared to the NSW average of 17.2%.

**Household composition**

In 2001 households within the Bathurst City LGA were predominantly either couple families with dependant children (35.0%) or couple families without children (34.4%). In 2001 73% of the existing housing stock comprised separate houses. The occupancy rate for detached dwellings was 2.8 persons and for all dwellings was 2.6 persons.

### 4.12.2 Low density residential land supply and demand

The *Draft Bathurst Region Urban Strategy – Issues Discussion Paper* (Bathurst Regional Council 2005b) sets out the land availability for existing zoned land which is yet to be developed and future growth areas that have been identified in strategic documents.

The discussion paper identifies Windradyne and Macquarie Plains as the main areas of available existing low-density residential land. Future growth areas identified are west of Sawpit Creek and east of Macquarie Plains plus the Eglinton surrounds.

In this discussion paper supply figures have been based on a lot yield of 7.5 lots per hectare. This figure has been developed by council and is based on an average lot size of approximately 800-900 square metres and takes into account provision for roads and open space. The discussion paper does not provide figures for vacant lots or potential infill development. Discussions with Bathurst Regional Council have indicated that the number of vacant lots and infill development sites would be negligible for Windradyne and Macquarie Plains. The number of vacant lots and potential infill development sites within the three villages of Eglinton, Raglan and Perthville has been estimated based on the development plans within the Residential Subdivision DCP and aerial photos of existing development within these areas.

The findings of the discussion paper as well as an analysis of the land availability within the villages forms the basis of the low density residential land supply analysis presented in Table 4.15 below.

<table>
<thead>
<tr>
<th>Approved vacant lots</th>
<th>Infill potential (lots)</th>
<th>Zoned land not yet approved (lots)</th>
<th>Land identified but not zoned (lots)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eglinton village</td>
<td>63</td>
<td>68</td>
<td>0</td>
<td>131</td>
</tr>
<tr>
<td>Raglan village</td>
<td>0</td>
<td>156</td>
<td>0</td>
<td>156</td>
</tr>
<tr>
<td>Perthville village</td>
<td>0</td>
<td>148</td>
<td>0</td>
<td>148</td>
</tr>
<tr>
<td>Macquarie Plains/Windradyne</td>
<td>0</td>
<td>0</td>
<td>3000</td>
<td>0</td>
</tr>
<tr>
<td>West of Sawpit Creek</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3000</td>
</tr>
<tr>
<td>East of Macquarie Plains</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1350</td>
</tr>
<tr>
<td>Eglinton surrounds</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2625</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
<td><strong>372</strong></td>
<td><strong>3000</strong></td>
<td><strong>10 410</strong></td>
</tr>
</tbody>
</table>

Discussions with Bathurst Regional Council indicate that on average 230 houses are approved per annum. Using this figure as the demand rate for low-density residential lots there is an estimated existing supply of zoned land available across Bathurst for the next 15 years. Including land that has been identified but is not zoned for residential development this figure is 45 years. This figure includes provision for a substantial expansion of the Eglinton village. The figure is reduced to 34 years with the exclusion of further expansion within Eglinton.
Based on the occupancy rate of 2.8 persons per household the land zoned for low-density residential development could support a new population of about 8,918. Including the land identified but not zoned for residential development a population of 29,148 could be accommodated. This figure is reduced to around 21,798 with the exclusion of further expansion within Eglinton. This still caters for almost a doubling of the current population within Bathurst.

The most recent population projections estimate that the population of Bathurst will increase by around 8,556 people between 2004 and 2031. Based on these projections land that is already zoned for residential development would be able to accommodate expected population growth to 2031.

Based on advice from council officers it is understood that the above land supply estimates may overestimate the amount of land available for development. This is because some landowners of residential zoned land within the Macquarie Plains area and the land identified for future residential development west of Sawpit Creek have indicated that they are unwilling to develop their land at this stage. This includes 75 hectares of zoned undeveloped land within the Macquarie Plains area and 400 hectares of land identified for development west of Sawpit Creek. The exclusion of these areas would reduce the estimated lot potential of zoned undeveloped land from 3,435 lots to 2,873 lots and the lot potential of areas identified for future development from 6,975 lots to 3,975 lots. This in turn would reduce residential land supply from a 15 year supply to a 12 year supply of zoned undeveloped land and from a 45 year supply to a 29 year supply of zoned land and land identified for future residential development combined. Based on the occupancy rate of 2.8 persons per household the reduced amount of land zoned for residential development could support an additional population of about 8,044. This figure is only slightly less than the projected 8,556 population increase for Bathurst to 2031 and suggests there is sufficient zoned land to cater for expected population growth over the next 20-25 years.

There is however anecdotal evidence based on discussions with local real estate agents and through the consultation undertaken that there is continued localised demand for residential lots in Eglinton despite the ample supply of residential land across Bathurst. There are several possible reasons for this demand but the principal reason is considered to be because Eglinton provides an alternative residential environment to the suburban areas of Bathurst but is still close to the facilities and services provided within Bathurst.

Phone discussions with local real estate agents about the housing market within Eglinton and the other villages highlighted these points:

- Eglinton has considerable pent up demand for residential land. Demand is predominantly from young families and first home-buyers. This is in part due to the positive reputation of the Eglinton Public School.
- The last land to be released in Eglinton comprised 20 lots all of which were sold within 14 days.
- The pent up demand in Eglinton is not necessarily pushing up property prices. The price of the 20 lots released recently were comparable to other low density residential land prices within Bathurst. The fact that prices had not gone up could be because Eglinton attracts young families and first homebuyers who are generally unwilling to pay higher prices.
- 50 low density residential lots would be needed to satisfy the pent up demand in Eglinton. Beyond that Eglinton could support 10-15 residential lots per year. There is considered to be potential demand for an additional 150-200 residential lots within Eglinton to cater for demand over the next 5-10 years.
- Some pent up demand for residential land is experienced in Raglan. However demand is not as high as in Eglinton. This is for a number of reasons including amenity issues relating to its proximity to both the airport and industrial areas as well as the lower demand experienced for places at the Raglan Public School.
Perthville experiences much lower demand with land currently selling but at a much slower rate than is experienced in the other villages. The lower demand is predominantly due to its distance from Bathurst which is considerably greater than for Eglinton or Raglan.

The above suggests that for a number of reasons there is high localised demand for additional residential lots within Eglinton.

There is limited further development potential within Eglinton without further expansion. The existing and proposed supply of residential land across Bathurst indicated above highlights that there is no strategic planning imperative for further expansion of Eglinton or the other villages to cater for population growth within Bathurst for the next 25-30 years. However there is anecdotal evidence that there is continued local demand for residential lots within Eglinton as an alternative residential environment close to Bathurst. This provides some grounds for consideration of a modest expansion to the Eglinton village area to provide a wider choice of residential living environments within Bathurst.

The other villages in the Bathurst area (Perthville and Raglan) provide a similar residential environment to that of Eglinton and could be considered for residential expansion to meet demand for this alternative residential environment. Eglinton however is considered to be the most suitable location for such an expansion to occur due to the development constraints associated with the land surrounding Perthville and Raglan. Major augmentation to the water and sewer system would be required to enable further expansion of Perthville. Such augmentation would be significantly more expensive than for Eglinton due to the considerable distance from Bathurst. The land surrounding Raglan also has constraints to further development due to its proximity to the airport to the north and the railway line to the south. Furthermore the expansion of Raglan would not have any lesser impact on agricultural land compared with expansion of Eglinton as rural land surrounding the Raglan village has the same agricultural land capability classification as land surrounding Eglinton.

4.12.3 Rural residential land supply and demand

Bathurst City Council prepared a Draft Rural Strategy in 2004 however the strategy was never considered or adopted by council. The strategy outlines the supply and demand of rural residential development. The following assessment is based on information presented within the Draft Rural Strategy and additional information obtained through conversations with Bathurst Regional Council.

Existing and proposed rural residential areas within the Bathurst LGA are described below:

- Wallaroi Estate is located off White Rock Road to the south east of Bathurst. The current average lot size is 7,622 square metres. Lots are connected to reticulated water but rely on on-site effluent disposal. The Wallaroi area is fully developed.

- Blue Ridge Estate is located between White Rock Road and O'Connell Road. The site has recently been the subject of development consent to create 85 new rural residential allotments with an average area of approximately 4,867 square metres. The estate will be connected to both reticulated water and sewer services. The estate has already sold 67 lots within less than 6 months.

- Wentworth Estate is located off the Mitchell Highway (Orange Road) on the western side of Bathurst. The current average lot size is 1.2 hectares and the estate is connected to reticulated water but relies on on-site effluent disposal.

- Eglinton has a relatively small area of rural residential land between the village and the Macquarie River. This area contains only six lots located within the floodplain.
• Robin Hill is located south of Bathurst on both sides of the Mid Western Highway and is to the south east of Wentworth Estate. The existing average lot size is 1.76 hectares. The estate is connected to reticulated water but relies on on-site effluent disposal.

• Warabindi/Coolibah/Eskdale areas. A LES was prepared in 1999 to investigate the suitability of the land for rural residential development. A rezoning has not proceeded as the desired lot yield was not viable without connection to the reticulated sewer system. Bathurst Regional Council has indicated that the area has the potential for 50 x 4 000 square metre rural residential lots.

• White Rock Road is an area of land adjacent to the Blue Ridge Estate for which a LES is currently being prepared to examine its suitability for rural residential development. The land has a potential lot yield of 29 rural residential lots of 4 000 square metres each to be connected to reticulated water and sewerage systems.

• Scots School is an area of approximately 11.2 hectares and has a potential lot yield of 24 lots. At this stage the owners have indicated that they have no plans to develop or sell the land for rural residential development. Accordingly this area has not been included in the supply figures below.

The information provided in the Draft Rural Strategy and obtained through conversations with Bathurst Regional Council indicates that there are a total of about 287 potential rural-residential lots within the Bathurst LGA. The supply analysis is provided in Table 4.16 below.

### Table 4.16: Existing and proposed supply of rural-residential land

<table>
<thead>
<tr>
<th></th>
<th>Existing vacant lots</th>
<th>Approved lots yet to be created</th>
<th>Zoned land not yet approved (lots)</th>
<th>Land identified but not zoned (lots)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wallaroi</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Blue Ridge</td>
<td>0</td>
<td>85</td>
<td>0</td>
<td>0</td>
<td>85</td>
</tr>
<tr>
<td>Wentworth Estate</td>
<td>36</td>
<td>22</td>
<td>36</td>
<td>0</td>
<td>94</td>
</tr>
<tr>
<td>Eglinton</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Robin Hill</td>
<td>3</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Warabindi/Coolibah/Eskdale</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>White Rock Road</td>
<td>0</td>
<td>0</td>
<td>29</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>107</strong></td>
<td><strong>61</strong></td>
<td><strong>79</strong></td>
<td><strong>287</strong></td>
</tr>
</tbody>
</table>

Rural residential development in Bathurst has traditionally comprised lots of 1 hectare or greater connected to electricity and reticulated water services but reliant on on-site effluent disposal systems. More recently council has granted consent for subdivision of lots between 4 000 square metres and 1 hectare connected to the reticulated sewerage system, including at White Rock Road and Blue Ridge Estate. This style of rural-residential development has also been proposed at Warabindi/Coolibah/Eskdale.

Between 1990 and 2003 demand for rural residential allotments has averaged about 14 lots per year compared with some 22 lots being released each year (Bathurst Regional Council 2004). These figures do not give an indication of the demand for smaller rural residential lots connected to the reticulated sewerage system which have only recently been released onto the market.

In the Draft Rural Strategy (Bathurst City Council 2004) demand for rural residential lots has been estimated at 33 lots per year. This figure takes into account the potential demand for smaller rural residential lots and the impacts of real estate booms as witnessed at Blue Ridge Estate.
Based on a demand of 33 lots per year there is an existing supply of zoned rural residential land for the next 6 years. Including land that has not been zoned but has been identified for future rural residential development this figure is about 9 years.

There is also anecdotal evidence from conversations with local real estate agents suggests that there is considerable pent up demand for rural residential lots within the Bathurst area. There is also considered to be a potential market for rural residential lots within the Eglinton area.

The above assessment suggests there is a short to medium term supply of rural residential land across Bathurst. Based on current demand a further 360 rural residential lots would be required to provide a 20-year land supply. There is a need for council to consider the possible identification of additional suitable land for this form of development to cater for longer-term needs. This should be undertaken as part of the LGA-wide strategic planning being undertaken for the Bathurst LEP review.

The most appropriate locations for further rural-residential development from a strategic planning perspective would be land that is close to established urban areas and that can be serviced with reticulated water and sewer. The land surrounding Eglinton would be a suitable location for such development and could be considered as part of an expansion to the village. The extent of rural residential development would however need to balance demand for this form of development with the environmental consequences of a larger development footprint, the resultant loss of Class 2 agricultural land and the economic consequences of such low density residential development on land suitable for urban development.

4.13 Land tenure and ownership
Most of the land within the study area is privately owned land under freehold title with the exception of the Bathurst Bush Fire Brigade site and the existing road reserves owned by Bathurst Regional Council.

The land within the study area is fragmented and comprises 41 lots with 17 separate owners as detailed earlier in section 1.2.

Based on a review of information available from the National Native Title Tribunal web site there are no native title claims over the study area.

4.14 Human services
4.14.1 Health
There are no health services located within Eglinton however access to a range of health services is available within Bathurst. This includes Bathurst Base Hospital and St Vincents Private Hospital as well as a range of other community health care facilities. An expansion of the Eglinton village can be accommodated within the planned capacity of existing health facilities within Bathurst.

4.14.2 Education
Primary education
Eglinton is serviced by the Eglinton Public School. The school provides primary school education from Kindergarten to Year 6. There is currently 325 students enrolled in the school and 10 full time teaching places. The school currently has three demountable buildings on the site and in its current form is at full capacity. However advice from the Department of Education and Training (DET) has indicated that the school could increase capacity within its current footprint with additional demontable buildings or construction of new permanent buildings and that the limit to increased capacity is dependent on the form and layout of such buildings.
The school is located on a 2.54 hectare site. The standard site area for a primary school in NSW is 3 hectares. The DET has advised that an additional 0.46 hectares of land to the rear of the existing school site would be sufficient to cater for future population growth within Eglinton.

DET has also advised that new primary schools are not considered unless at least 1,500 new lots are proposed within an area. However a new school would not be considered to cater for an expansion to Eglinton given that uptake rates would not be expected to be high and development would occur over an extended period of time. A new school site is therefore not required to be set aside within Eglinton.

Secondary education
Bathurst has two high schools: Bathurst and Kelso. Kelso High School was recently closed following fire damage. Demountables have been constructed on the site and the school is now operational. The community is being consulted by DET to decide whether the school will be rebuilt on the existing Kelso site or a new site will be chosen.

Kelso High School currently has capacity for 17 additional teaching spaces and Bathurst High School has capacity for five additional teaching spaces. The student-teacher ratio is 1:30. Kelso and Bathurst High Schools therefore have capacity for another 510 students and 150 students respectively.

DET has advised that the capacity of the existing high schools within Bathurst would be able to cater for an expansion within Eglinton.

Tertiary education
Eglinton residents have access to a range of tertiary education facilities available in Bathurst. These include Charles Sturt University and the Bathurst College of TAFE. The tertiary education needs of future development within Eglinton would continue to be met by these facilities in Bathurst or by facilities in Sydney or other regional centres.

4.14.3 Community facilities
A broad range of community services and facilities are located close to Eglinton within Bathurst. These include a cultural and entertainment facilities and a range of regional recreation and sports facilities.

Local facilities located within Eglinton include a community hall (Eglinton War Memorial Hall) and an 8.4 hectare outdoor recreation area incorporating playing fields and tennis courts. This area services the current Eglinton population and together with the school is the community focus of the area. Based on the historic state government standard of 2.83 hectares of open space per 1,000 persons (Bathurst 2005b) the existing open space provision within Eglinton would be sufficient for a total population of about 3,000 people.

This area would be expected to meet the local recreational needs of future development within Eglinton and has the potential to be upgraded and redeveloped to accommodate improved or additional recreational facilities should this be required. In this regard council could consider the preparation of a management plan for the area. If additional open space is provided as part of a village expansion then diversity of available open space should be considered eg passive open space would complement the existing active recreation facilities.

4.14.4 Retail facilities
There is an established local store (Eglinton Store) located at 21 Park Street opposite the recreation area within Eglinton. This provides a range of convenience goods and hot food similar to a suburban corner store. The higher order retail needs of Eglinton residents are met within Bathurst.
A retail strategy was prepared for the former Bathurst City Council (Ratio Consultants 1999). The strategy sets out the following guidelines for location of new convenience retail facilities that are relevant to the future expansion of Eglinton:

- New convenience stores should be co-located with service stations or other services, recreation or community facilities.
- Council should give preference to future convenience stores that are located at main road junctions (existing or future) or on route to the villages.

These recommendations would suggest that no additional convenience retail facilities should be located within the villages. However significant expansion of Eglinton could generate the need for additional local retail facilities and the creation of a village retail centre would be desirable to facilitate a more self-contained and sustainable community. The close proximity to Bathurst means that the viability of additional retail facilities would be an issue. A small number of convenience shops could be viable however this would depend on the extent of further development and the associated population increase.

The appropriate location of additional retail facilities would also depend on the location and extent of further development. A central location that is within walking distance of most residential properties within the village would be most appropriate. In this regard an expansion to the existing store site or a location within or next to the recreation area would be ideal.

4.15 Transport and access

A traffic and transport assessment report (Connell Wagner 2005) on the existing Eglinton village and possible future development options has been undertaken. This section presents a precis of the assessment of the existing transport and access conditions within Eglinton contained within the traffic and transport assessment report. The complete report is provided at Appendix J.

The traffic and transport assessment also includes a detailed assessment of the impacts on transport and access of each of the development options described in section 5.3 of this LES report and provides recommendations for traffic management measures required for each option. A summary of the findings of this assessment and the recommendations are included in section 5.4 of this LES report which provides a comparative assessment of the development options.

4.15.1 Existing road network

All streets situated within the built-up area of Eglinton are two-lane two-way roads with parking allowed along both sides of the road. All intersections are priority-controlled intersections except for the Logan Street/Hamilton Street intersection which is controlled by a roundabout. All roads located within Eglinton are signposted with a 50km/hr speed limit.

The key intersections located within the study area are:

- Hamilton Street/Logan Street/Hobson Close
- Hamilton Street/Wellington Street/Eleven Mile Drive
- Alexander Street/Logan Street
- Alexander Street/Wellington Street
- Wellington Street/Duramana Road

These key intersections are unsignalised.

4.15.2 Key access routes

There are two key access routes that provide access between Eglinton and the Great Western Highway (the main arterial route that provides access to Bathurst and Sydney). These routes are described below:
Route 1: Eglinton Road and Durham Street

This route is a two-way two-lane road with parking allowed both sides of the road. The section between the Great Western Highway and Esrom Street has a posted speed limit of 50 km/hr. The road section west of Esrom Street through to Rankens Bridge has a posted speed limit of 60 km/hr. Most of the traffic generated by any proposed development in Eglinton would be expected to use this route since it provides the most direct access to the Bathurst CBD for commuting traffic as well as providing access to a number of amenities for Eglinton residents.

Route 2: Eleven Mile Drive and Gilmour Street

This route is a two-way two-lane road with parking allowed between Sofala Road and the Great Western Highway. The road section between Hamilton Street (in Eglinton) and a point west of the Tyers Park Racecourse (on Eleven Mile Drive) has a posted speed limit of 80 km/hr. Between the Tyers Park Racecourse and Hereford Street (on Gilmour Street) the posted speed limit reduces to 60 km/hr. South of Hereford Street through to the Great Western Highway the posted speed limit reduces further to 50 km/hr. This route bypasses Bathurst CBD to access Sydney and the Blue Mountains from Eglinton. This route would be used by some residents of any proposed development to access the eastern side of Bathurst and Kelso as well as for long distance trips to those locations east of Bathurst.

4.15.3 Existing traffic volumes

Intersection surveys were undertaken on Wednesday 21 September 2005 at the following intersections to provide information on the current morning and afternoon peak hour traffic volumes using the road network within Eglinton:

- Hamilton Street/Logan Street/Hobson Close
- Hamilton Street/Wellington Street/Eleven Mile Drive
- Alexander Street/Logan Street
- Alexander Street/Wellington Street
- Wellington Road/Duramana Road
- Durham Street/Stewart Street

In addition estimated average daily traffic volumes were derived from the results of peak hour intersection surveys using the results of mid-block surveys undertaken by Bathurst Regional Council at Rankens Bridge and on Logan Road. Table 4.17 presents the existing peak hour traffic volumes and estimated average daily traffic volumes at selected mid-block locations within Eglinton and Bathurst.

Table 4.17: Existing midblock traffic volumes – 2005

<table>
<thead>
<tr>
<th>Location</th>
<th>Direction</th>
<th>Peak Hour Traffic Volumes (veh/hr)</th>
<th>Estimated Average Daily Traffic Volume (veh/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak</td>
<td>PM Peak</td>
</tr>
<tr>
<td>Eglinton Rd – at Rankens</td>
<td>NB</td>
<td>134</td>
<td>397</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>370</td>
<td>212</td>
</tr>
<tr>
<td>Logan St – West of Hamilton St</td>
<td>EB</td>
<td>130</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>52</td>
<td>105</td>
</tr>
<tr>
<td>Hamilton St - North of Logan St</td>
<td>NB</td>
<td>84</td>
<td>303</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>237</td>
<td>158</td>
</tr>
<tr>
<td>Eleven Mile Dr – East of Hamilton St</td>
<td>EB</td>
<td>73</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>39</td>
<td>78</td>
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</tbody>
</table>
### Peak Hour Traffic Volumes (veh/hr)

<table>
<thead>
<tr>
<th>Location</th>
<th>Direction</th>
<th>AM Peak</th>
<th>PM Peak</th>
<th>Estimated Average Daily Traffic Volume (veh/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wellington St – West of Hamilton St</td>
<td>EB</td>
<td>161</td>
<td>86</td>
<td>2079</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>42</td>
<td>173</td>
<td></td>
</tr>
<tr>
<td>Cox lane - North of Wellington Street</td>
<td>NB</td>
<td>9</td>
<td>46</td>
<td>567</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>50</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Alexander St – North of Logan St</td>
<td>NB</td>
<td>50</td>
<td>69</td>
<td>1089</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>84</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Alexander St – South of Wellington St</td>
<td>NB</td>
<td>38</td>
<td>43</td>
<td>761</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>59</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Logan St – West of Alexander St</td>
<td>EB</td>
<td>8</td>
<td>11</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>3</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Wellington St – East of Duramana Rd</td>
<td>EB</td>
<td>163</td>
<td>87</td>
<td>2075</td>
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<tr>
<td></td>
<td>WB</td>
<td>34</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Duramana Rd – North of Freemantle Rd</td>
<td>NB</td>
<td>21</td>
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<td>1013</td>
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<tr>
<td></td>
<td>SB</td>
<td>73</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Freemantle Rd – West of Duramana Rd</td>
<td>EB</td>
<td>93</td>
<td>39</td>
<td>1071</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>14</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Durham St – West of Stewart St</td>
<td>EB</td>
<td>588</td>
<td>445</td>
<td>8865</td>
</tr>
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<td></td>
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<td>Durham St – East of Stewart St</td>
<td>EB</td>
<td>951</td>
<td>774</td>
<td>16043</td>
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<tr>
<td></td>
<td>WB</td>
<td>600</td>
<td>1240</td>
<td></td>
</tr>
</tbody>
</table>

The following observations can be made from the analysis of traffic volume data:

- Rankens Bridge currently carries approximately 5,000 vehicles/day.
- The average daily traffic volume west of Durham Street is approximately 10,400 vehicles/day.
- All streets situated within Eglinton currently carry less than 3,000 vehicles/day except on Hamilton Street where the average daily traffic volume is approximately 3,500 vehicles/day.

### 4.15.4 Existing performance of road sections

The existing performance of mid-block sections was assessed based on the level of service criteria set out for an urban road in the Roads and Traffic Authority Guide to Traffic Generating Developments (2002). This gives a Rankens of A through to E. A Rankens of A or B is good while C is satisfactory and D and E are unsatisfactory. The level of service criteria is set out in Table 4.18 below.
Table 4.18: Level of service criteria for urban road peak hour flows per direction

<table>
<thead>
<tr>
<th>Level of service (LOS)</th>
<th>One lane (veh/hr)</th>
<th>Two lanes (veh/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>200</td>
<td>900</td>
</tr>
<tr>
<td>B</td>
<td>380</td>
<td>1400</td>
</tr>
<tr>
<td>C</td>
<td>600</td>
<td>1800</td>
</tr>
<tr>
<td>D</td>
<td>900</td>
<td>2200</td>
</tr>
<tr>
<td>E</td>
<td>1400</td>
<td>2800</td>
</tr>
</tbody>
</table>

The results of the assessment of level of service for Eglinton road sections are set out in Table 4.19.

Table 4.19: Results of level of service assessment

<table>
<thead>
<tr>
<th>Location</th>
<th>Maximum Peak Hour Traffic Volume in One Direction (veh/hr)</th>
<th>Level of Service (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eglinton Rd – at Rankens Bridge</td>
<td>397</td>
<td>B</td>
</tr>
<tr>
<td>Logan St – West of Hamilton St</td>
<td>130</td>
<td>A</td>
</tr>
<tr>
<td>Hamilton St – North of Logan St</td>
<td>296</td>
<td>B</td>
</tr>
<tr>
<td>Eleven Mile Dr – East of Hamilton St</td>
<td>78</td>
<td>A</td>
</tr>
<tr>
<td>Wellington St – West of Hamilton St</td>
<td>173</td>
<td>A</td>
</tr>
<tr>
<td>Cox lane - North of Wellington Street</td>
<td>50</td>
<td>A</td>
</tr>
<tr>
<td>Alexander St – North of Logan St</td>
<td>81</td>
<td>A</td>
</tr>
<tr>
<td>Alexander St – South of Wellington St</td>
<td>59</td>
<td>A</td>
</tr>
<tr>
<td>Logan St – West of Alexander St</td>
<td>14</td>
<td>A</td>
</tr>
<tr>
<td>Wellington St – East of Duramana Rd</td>
<td>163</td>
<td>A</td>
</tr>
<tr>
<td>Duramana Rd – North of Freemantle Rd</td>
<td>90</td>
<td>A</td>
</tr>
<tr>
<td>Freemantle Rd – West of Duramana Rd</td>
<td>93</td>
<td>A</td>
</tr>
<tr>
<td>Durham St – West of Stewart St</td>
<td>682</td>
<td>D</td>
</tr>
<tr>
<td>Durham St – East of Stewart St</td>
<td>1240</td>
<td>B</td>
</tr>
</tbody>
</table>

Based on Table 4.19 the performance of the existing road network within Eglinton is good (LOS A or B) however the performance of Durham Street west of Stewart Street is unsatisfactory (LOS D or worse). However no upgrades are required for Durham Street west of Stewart Street at this stage for these reasons:

- The performance of the urban road network is mainly governed by intersections and the performance of the Durham Street/Stewart Street intersection is good.
- Maximum peak hour traffic volume (682 veh/hr) does not exceed the typical capacity of the single travel lane (900 veh/hr) in an urban environment based on the AUSTROADS Guide to Traffic Engineering Practice Part 2 – Roadway Capacity (1998).

4.15.5 Existing performance of intersections

The existing performance of key intersections within the study area has been assessed using the SIDRA intersection analysis software. The results of the analysis are summarised in Table 4.20.
Table 4.20: Existing intersection performance

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>AM Peak</th>
<th></th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>DS</td>
<td>LOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay</td>
<td>(sec/veh)</td>
<td></td>
</tr>
<tr>
<td>Hamilton St/Logan St/Hobson Cl</td>
<td>Roundabout</td>
<td>12.5</td>
<td>0.17</td>
<td>A</td>
</tr>
<tr>
<td>Hamilton St/Wellington St/ Eleven Mile Dr</td>
<td>Priority</td>
<td>11.1</td>
<td>0.10</td>
<td>A</td>
</tr>
<tr>
<td>Alexander St/Logan St</td>
<td>Priority</td>
<td>12.0</td>
<td>0.05</td>
<td>A</td>
</tr>
<tr>
<td>Alexander St/Wellington St</td>
<td>Priority</td>
<td>11.5</td>
<td>0.09</td>
<td>A</td>
</tr>
<tr>
<td>Wellington St/Duramana Rd</td>
<td>Priority</td>
<td>10.0</td>
<td>0.08</td>
<td>A</td>
</tr>
<tr>
<td>Durham St/Stewart St</td>
<td>Traffic Signal</td>
<td>18.0</td>
<td>0.62</td>
<td>B</td>
</tr>
</tbody>
</table>

Note: DS Degree of Saturation

LOS Level of Service

Table 4.20 indicates that the existing performance of all major intersections is good (LOS A or B). Since the performance of the existing road sections with priority intersections is good there are sufficient gaps available for traffic to enter into the traffic stream travelling along the road network.

4.15.6 Public transport

A private bus operator (Jones Bros) provides a bus service for the Eglinton area from Bathurst. The details of the bus service (Route No 523) are given below:

- The bus route includes Eglinton Road – Logan Street – Alexander Street – Wellington Street and Hamilton Street within Eglinton.
- A total of nine bus services during weekdays and six bus services during Saturdays are timetabled. This bus service does not operate either on Sundays or public holidays.

The traffic and transport assessment undertaken as part of this LES (Connell Wagner 2005) provides recommendations for expansion of the existing bus network for each of the development options identified in section 5.3 of this LES report. These recommendations are presented in section 5.4 of this LES report which provides a comparative assessment of the development options. The complete transport and traffic assessment report is provided at Appendix J.

4.15.7 Bicycle and pedestrian facilities

Off-road bicycle paths are not yet provided within the Eglinton village apart from some gravel connections through the recreation area, from the end of Lamont Place to Park Street and from the end of Taylor Street to Cottonwood Drive. However an off-road cycle path was constructed as part of the Bathurst Local Area Bike Plan (Bathurst City Council 1993) which provides access between Eglinton along Eglinton Road and Durham Street to Esrom Street just north of the centre of Bathurst. The route from the city centre along this cycle path through Eglinton and along Eleven Mile Drive to Kelso forms a key cycle route within the Bathurst area. Expansion of Eglinton village provides an opportunity not only to create better connections from the village to this cycle route but also to improve the connectivity in this cycle route where it passes through Eglinton. This improvement to the Bathurst cycle network would provide benefits to Eglinton residents and the wider Bathurst community.

Footpaths are not currently provided within Eglinton however a number of upgrades to the pedestrian network have been recommended under the Bathurst City Council Strategic Access Plan (Bathurst City Council 2000) as medium or high priority works. These upgrades include the provision of footpaths along the following road sections:
• Alexander Street between Wellington Street and Park Street
• Hamilton Street between Logan Street and Park Street
• Hamilton Street between Park Street and Wellington Street
• Park Street between Alexander Street and Hamilton Street (currently being constructed)
• Wellington Street between Hamilton Street and Alexander Street

4.16 Utilities

4.16.1 Water

Water for Bathurst is drawn from the Macquarie River upstream of the Bathurst township then treated and reticulated throughout the district. Previous studies have identified that the water treatment plant would be able to accommodate future demands from an Eglinton expansion. The water treatment plant has a capacity of 60 ML/day (Bathurst City Council 1994). Council has indicated that, on peak summer days, Bathurst is drawing between 42 to 44 ML/day which has been consistent for the past five years.

Discussions with council revealed that the summer peak demand is lower than design figures would indicate. This can be attributed to Bathurst having a transient population and during the summer period a significant portion of the population leaves the region. In support of this it has been identified that 40% of dwellings are rental properties with the majority providing housing for university students.

The existing Eglinton village has a town water supply which is a single line feed from the No 8 Reservoir in Nightmarch Parade. The water is conveyed via a trunk main ranging in size from DN450 to DN250. The water supply system for Eglinton was designed for a peak demand of 2ML and a peak instantaneous demand of 57L/s which is considered to be adequate (Bathurst Regional Council 1997). A previous investigation undertaken by council measured flow rates and pressures in the village and has concluded the system is adequate for the current tenement of approximately 550 lots but has no reserve capacity.

Potable water is reticulated through the village via a 7.3 kilometre network of pipes ranging in size from DN200 to DN100. An issue raised in the community consultation process was that available water pressure has been decreasing as development of the area has proceeded. Investigations by council have found that water pressure is within acceptable limits.

The above mentioned trunk main also supplies the developing areas of Windradyne Heights and Stewart. Investigations have been undertaken by council to rezone (change the water reservoir zone) these areas and reduce the demand on the Eglinton supply main. This could not occur until additional trunk mains have been constructed. Council has advised that such works will not be undertaken for another 15 years.

Security of supply to Eglinton also needs to be considered. At present the village relies on a single DN250 main which runs under the Macquarie River adjacent to the old Rankens Bridge (since removed). If this portion of the main fails Eglinton will have no water supply. Currently council is investigating options to resolve this issue. Recent investigations have focused on duplication of the existing water main.

Discussions with council indicate that upgrading the water reticulation system to accommodate future demand from Eglinton would be quite complex due to the current system layout. Council has identified that extensive modelling is required to anticipate performance. In addition to rezoning of developing areas, additional reservoirs would be required to provide adequate reserve storage and service peak day demand. Further modelling of the entire Bathurst reticulation system would be required before a suitable upgrade system could be proposed.
Detailed recommendations for upgrades of water infrastructure that would be required to service each of the development options identified in this report are included in section 5.4.

4.16.2 Sewer
The Bathurst wastewater treatment plant is located at the end of Macquarie Street upstream of Eglinton and on the banks of the Macquarie River. The plant has been recently upgraded to serve an equivalent population (EP) of 55,000 to adequately accommodate future growth in the Bathurst region.

Sewage from Eglinton village is drained by a gravity system to a sewage pumping station (SPS) located near Rankens Bridge. From this location sewage is pumped to a pumping station near All Saints College and then flows by rising main and gravity to the wastewater treatment plant. The sewerage system was designed for an average dry weather flow of 7 litres/second and a peak wet weather flow of 31 litres/second based on a maximum population of 1,520 (Bathurst City Council 1997). Considering that the population of Eglinton is approximately 1,609 it can be concluded that the system is operating at its maximum design capacity.

Detailed recommendations for upgrades of sewer infrastructure that would be required to service each of the development options identified in this report are included in section 5.4.

4.16.3 Electricity
Country Energy have advised that the current infrastructure supplying Eglinton with power is adequate but does not have spare capacity to accommodate future development.

Country Energy plans to construct a new 11kV feeder from the Stewart Zone Substation within the next three years to accommodate demand from the Wentworth Estate, Avonlea, Riverview Heights and Eglinton areas. The new feeder main could accommodate future demands from the study area. Country Energy would typically provide the feeder main to the development area. Developers of the land under the Country Energy Capital Contribution Policy would fund the new distribution system required within the study area.

Located within the study area is a 132 kV transmission line running through the northern portion of the study area. The transmission line is within an easement 30.48 metres in width. Country Energy has advised that no structures can be located within the easement.

Country Energy will also investigate the practicality of constructing all new infrastructure underground.

Detailed recommendations for upgrades of electricity infrastructure that would be required to service each of the development options identified in this report are included in section 5.4.

4.16.4 Telecommunications
Telstra has indicated that the existing communications network within the study area is currently at 50% capacity. Telstra has 2000 lines available to service Eglinton of which 1000 are not utilised. In addition 130 lines are available for connection at the corner of Hamilton Street and Wellington Street. Assuming two lines per residential lot this would indicate that an additional 570 lots could be serviced by the current system.

Detailed recommendations for upgrades of telecommunications infrastructure that would be required to service each of the development options identified in this report are included in section 5.4.

4.16.5 Gas
Agility has advised that a DN110 gas main which services the village via Rankens Bridge was constructed in 2003. Current estimates show this main has limited capacity and could service...
an additional 150 residential properties. Another DN110 gas main is located at the corner of Gilmore Road and Eleven Mile Drive which is directly connected to a regulator. Current estimates by Agility indicate the main could service an additional 600 residential properties. Agility would need to carry out major infrastructure works to provide natural gas to service the remainder of the study area. A new main would need to be constructed from Gilmore Street along Eleven Mile Drive to connect with the existing supply.

Detailed recommendations for upgrades of gas infrastructure that would be required to service each of the development options identified in this report are included in section 5.4.

4.17 Conclusion

Most of the study area is considered to be suitable for urban development for residential purposes based on the investigations undertaken and there are no significant constraints to development within the study area.

In the event that council decides to pursue further development within Eglinton the planning and environmental assessment undertaken has highlighted a number of issues that require further investigation before development can proceed or consideration in the design and construction of future development. These issues are summarised below.

- **Soils.** The potential impact of the high shrink-swell capacity of the Raglan soil landscape needs to be considered in the design of road and building foundations and appropriate erosion and sediment controls implemented during construction.

- **Land contamination.** A number of potentially contaminating activities and potential contaminated areas were identified within the study area and the overall likelihood of encountering contamination is considered to be moderate to high. An intrusive soil investigation should be undertaken at the potential source areas proposed to be developed prior to rezoning.

- **Surface water, hydrology and water quality.** Flooding will only effect a small portion of the study area. An area to the east of the existing village and north of Eleven Mile Drive as well as a very small area to the west of the existing village along the southern boundary of the study area have been identified as being effected by the 1% AEP flood. The 5% AEP flood will cause disruptions to Eleven Mile Drive. Rankens Bridge is designed to withstand the 1% AEP flood however in the event that the bridge is overtopped the village would not become isolated for extended periods.

- **Stormwater management.** The existing stormwater system for Eglinton has no spare capacity and any future development would need to drain around the existing village.

- **Ecology.** A 100 metre wide corridor linking remnant Box Gum Woodland and isolated woodland trees along the northern boundary of the study area with remnant Box Gum Woodland to the north-west should be set aside as a conservation area and rehabilitated under a management plan for the area. A 40 metre wide riparian zone should be established along both sides of Saltram Creek to protect the natural hydrological and ecological functions of the creek system.

- **Bushfire hazard.** A minimum asset protection zone of 20 metres from the outer edge of development is recommended based on the slope and vegetation characteristics of the study area. This asset protection zone should be incorporated within the development area.

- **European heritage.** An archival recording of two European heritage sites identified within the study area and a reassessment of a third site should be carried out before development proceeds. Negotiations should be carried out with relevant landowners for the conservation of moveable heritage items identified.
• **Aboriginal heritage.** A consent to destroy application for the single Aboriginal site identified within the study area should be made to the Department of Environment and Conservation.

• **Piper Airfield.** Potential noise impact on future residents under the take-off and landing path of Runway 21 would need to be considered further and could require acoustic house design measures to minimise disturbance to residents within the area west of the existing village.

• **2BS radio transmission towers.** No development can occur within a 103 metre radius from the base of the two existing towers (the drop zone) until the towers are removed from the area.

• **Rural-urban land use separation.** A minimum 40 metre buffer with a 20 metre vegetative buffer treatment should be provided around the edge of proposed development to separate rural and urban land uses and minimise potential land use conflicts.

• **Human services.** An expansion to the village should provide for a 0.5 hectare extension to the existing primary school site to cater for future population growth. The provision for the future development of additional convenience shops within Eglinton should be considered depending on the extent of further development.

• **Utilities.** The water treatment plant for Bathurst has adequate capacity for expansion of the Eglinton village however the trunk main which supplies water to Eglinton would need to be upgraded to service additional growth. Security of the supply to Eglinton would also need to be addressed as currently the village relies on a single main. The Bathurst sewerage waste water treatment plant has recently been upgraded and can accommodate growth of Bathurst to a population of 55,000 however the sewerage system connecting to Eglinton is currently operating at capacity and would need to be upgraded to allow for expansion of the village. The electricity infrastructure to Eglinton does not have capacity for expansion of the village however Country Energy plans to construct a new 11kV feeder from the Stewart Zone Substation within the next three years which could accommodate future demands from the study area. A 132 kV transmission line runs through the northern portion of the study area within an easement 30.48 metres in width. No buildings would be able to be constructed within this easement. It is estimated that an additional 570 lots could be serviced by the current communications network provided by Telstra. The existing gas main that services Eglinton has capacity for an additional 150 residential dwellings. A gas main is also located on the corner of Eleven Mile Drive and Gilmore Road in Kelso which could service a further 600 residential dwellings.
5. Development options

5.1 Introduction
This section presents development options for the study area based on development principles derived from the assessment of planning and environmental issues and the community consultation process. These options represent a range of possible growth scenarios for the Eglinton area from a No Growth scenario through to a High Growth scenario. A strategic level comparative assessment of the development options is then presented to enable the potential impacts of the alternative development options to be understood. The intent is to provide council with sufficient information to make informed decisions on the appropriate extent and form of future development within the study area.

5.2 Development principles
The development principles for the study area derived from the assessment of planning and environmental issues and the community consultation process. These are outlined below:

Urban form
- Future development should be an extension to the existing village and should be integrated with existing development.
- Future development should extend the existing grid pattern of development within the existing village.
- Lot sizes should be similar to or larger than existing lot sizes within the existing village ie 900 square metres or larger.
- Road reserve widths should be the same as or similar to road reserves within the existing village. A modified grid road network should be adopted.

Environment and conservation
- A 40 metre riparian zone should be established along both sides of Saltram Creek and zoned for environmental protection.
- A 100 metre wide corridor linking remnant Box Gum Woodland and isolated woodland trees along the northern boundary of the study area with remnant Box Gum Woodland to the north west should be retained and zoned for environmental protection.
- The drainage channels that run north-south through the study area should be retained within formed swales measuring 14 metres in width. These swales could be combined with agricultural buffers and asset protection zones and form part of the open space system.
- Flood prone land along Saltram Creek should be set aside for open space / environmental protection and incorporate within the riparian zone.

Bushfire protection
- A 20 metre wide asset protection zone should be established along the perimeter of development to manage bushfire hazard. This should be combined with agricultural buffers and open space areas.

Rural-urban land use buffers
- A 40 metre wide buffer to minimise conflicts between residential and rural land uses should be established around the perimeter of development and should include a 20 metre wide vegetative buffer treatment. This buffer should be combined with the asset protection zone and open space areas and also has the potential to provide a growth boundary to contain village development.

Human services
- 0.5 hectares of land should be set aside for future expansion of the Eglinton Public School to the west of the existing school site.
A small commercial site should be identified for possible future convenience shops where significant village expansion is proposed. The site should be located so that it is within walking distance of most residents.

5.3 Growth scenarios and development options

There are numerous possible responses to the planning and environmental issues identified and the development principles established for the area. These can be categorised into four basic growth scenarios:

- No Growth – no further development
- Low Growth – minor expansion of the village area to the east and west
- Moderate Growth – moderate expansion of the village area further north
- High Growth – more extensive development across the area

Five separate development options for the study area have been developed across the Low Growth to High Growth scenarios. These options are presented on Figures 5.1 to 5.5 and are described below under each growth scenario.

5.3.1 No Growth scenario

This scenario would see no further expansion of the Eglinton village and no urban development within the study area.

5.3.2 Low Growth scenario

One Low Growth scenario option has been developed and is presented on Figure 5.1. This proposes a minor extension on the eastern and western sides of the village between Logan Street and Freemantle Road. The salient features of this development option are:

- Village expansion limited to south of Wellington Street with the balance of the area retained for rural uses.
- Predominantly larger lot residential development with potential for future subdivision. The predominant lot size is 2000 square metres.
- An eastern growth boundary formed by Saltram Creek.
- A western growth boundary formed by the formalisation of a natural drainage channel.
- A 0.5 hectare expansion area for Eglinton Public School.
- A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
- A minimum 40 metre riparian zone along Saltram Creek.
- A new cycle path along the open space / environmental protection corridor to form a circuit around the village.
- The potential for future redevelopment of existing battleaxe lots along Alexander Street through the provision of road frontage.

This development option would provide an additional 146 residential lots within Eglinton and accommodate an estimated additional population of about 409 people. This is estimated to provide about a 7 year supply of residential land and would therefore meet short to medium term demand. A detailed development summary for this option is presented in Table 5.1 below.
Table 5.1: Low Growth scenario development summary

<table>
<thead>
<tr>
<th>Land use</th>
<th>Area (ha)</th>
<th>Proportion of study area (%)</th>
<th>Estimate additional lots</th>
<th>Estimated additional population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (1000m²)</td>
<td>1.2</td>
<td>&lt; 1</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Residential (2000m²)</td>
<td>28.0</td>
<td>7.7</td>
<td>134</td>
<td>375</td>
</tr>
<tr>
<td>Recreation / Environmental protection</td>
<td>11.8</td>
<td>3.3</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>School</td>
<td>0.5</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Existing fire station</td>
<td>0.4</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rural</td>
<td>307.2</td>
<td>85.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Roads</td>
<td>12.3</td>
<td>3.4</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>361.5</td>
<td>100</td>
<td>146</td>
<td>409</td>
</tr>
</tbody>
</table>

5.3.3 Moderate Growth scenarios

Two Moderate Growth scenario options have been developed and are presented on Figures 5.2 and 5.3. These options are described below.

Option 1

Option 1 proposes a minor extension on the eastern and western sides of the village between Logan Street and Freemantle Road. This is the same expansion area proposed under the Low Growth scenario option however this option proposes 1000 square metre lots rather than 2000 square metre lots. The salient features of this development option are:

- Village expansion limited to south of Wellington Street with the balance of the area retained for rural uses.
- 1000 square metre lots consistent with existing development within the village.
- An eastern growth boundary formed by Saltram Creek.
- A western growth boundary formed by the formalisation of a natural drainage channel.
- A 0.5 hectare expansion area for Eglinton Public School.
- A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
- A minimum 40 metre riparian zone along Saltram Creek.
- Road frontage to public open space
- A new cycle path along open space / environmental protection corridor to form a circuit around the village.
- The potential for future redevelopment of existing battleaxe lots along Alexander Street through the provision of road frontage.

This development option would provide an additional 278 residential lots within Eglinton and accommodate an estimated additional population of about 778 people. This is estimated to provide about a 14 year supply of residential land and would therefore meet medium term demand. A detailed development summary for this option is presented in Table 5.2 below.
Table 5.2: Medium Growth scenario – Option 1 development summary

<table>
<thead>
<tr>
<th>Land use</th>
<th>Area (ha)</th>
<th>Proportion of study area (%)</th>
<th>Estimate additional lots</th>
<th>Estimated additional population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (1000m²)</td>
<td>29.3</td>
<td>8.1</td>
<td>278</td>
<td>778</td>
</tr>
<tr>
<td>Recreation / Environmental protection</td>
<td>11.8</td>
<td>3.3</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>School</td>
<td>0.5</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Existing fire station</td>
<td>0.4</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rural</td>
<td>307.2</td>
<td>85.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Roads</td>
<td>12.3</td>
<td>3.4</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>361.5</td>
<td>100</td>
<td>278</td>
<td>778</td>
</tr>
</tbody>
</table>

Option 2

Option 2 proposes a more extensive expansion to the north of Wellington Street in addition to the eastern and western sides of the village. This option proposes 1000 square metre lots south of Wellington Street and large 2000 square metre lots to the north of Wellington Street. The salient features of this development option are:

- Village expansion extended north of Wellington Street.
- 1000 square metre lots south of Wellington Street and larger lots north of Wellington Street.
- An eastern growth boundary formed by Saltram Creek and tributary.
- A western growth boundary formed by formalisation of a natural drainage channel.
- A northern growth boundary formed by an open space corridor connecting drainage channels to the west and east.
- A 0.5 hectare expansion area for Eglinton Public School.
- A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
- A minimum 40 metre riparian zone along Saltram Creek.
- A new cycle path along the open space / environmental protection corridor to form a circuit around the village.

This development option would provide an additional 409 residential lots within Eglinton and accommodate an estimated additional population of about 1,145 people. This is estimated to provide about a 20 year supply of residential land and would therefore meet long term demand. A detailed development summary for this option is presented in Table 5.3 below.

Table 5.3: Medium Growth scenario – Option 2 development summary

<table>
<thead>
<tr>
<th>Land use</th>
<th>Area (ha)</th>
<th>Proportion of study area (%)</th>
<th>Estimate additional lots</th>
<th>Estimated additional population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (1000m²)</td>
<td>31.8</td>
<td>8.8</td>
<td>300</td>
<td>840</td>
</tr>
<tr>
<td>Residential (2000m²)</td>
<td>24.7</td>
<td>6.8</td>
<td>109</td>
<td>305</td>
</tr>
<tr>
<td>Recreation / Environmental protection</td>
<td>21.8</td>
<td>6.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>School</td>
<td>0.5</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Commercial</td>
<td>0.3</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Existing fire station</td>
<td>0.4</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rural</td>
<td>263.0</td>
<td>72.7</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Roads</td>
<td>19.0</td>
<td>5.3</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>361.5</td>
<td>100</td>
<td>409</td>
<td>1,145</td>
</tr>
</tbody>
</table>
5.3.4 **High Growth scenario**

Two High Growth scenario options have been developed and are presented on Figures 5.4 and 5.5. These options are described below.

**Option 1**

Option 1 proposes a extension on the eastern and western sides of the village between Logan Street and Freemantle Road and north of Wellington Street. This is the same expansion area proposed under the Moderate Growth scenario Option 1 however this option proposes 1000 square metre lots across the entire area. The salient features of this development option are:

- Village expansion extended north of Wellington Street.
- 1000 square metre lots consistent with existing development.
- An eastern growth boundary formed by Saltram Creek and tributary.
- A western growth boundary formed by the formalisation of a natural drainage channel.
- A northern growth boundary formed by an open space corridor connecting drainage channels to the west and east.
- A 0.5 hectare expansion area for Eglinton Public School.
- A minimum 50 metre buffer between rural and residential uses including a 20 metre vegetative buffer element.
- A minimum 40 metre riparian zone along Saltram Creek.
- A new cycle path along the open space / environmental protection corridor to form a circuit around the village.

This development option would provide an additional 519 residential lots within Eglinton and accommodate an estimated additional population of about 1,453 people – a doubling of the current population. This is estimated to provide about a 26 year supply of residential land and would therefore meet long term demand. A detailed development summary for this option is presented in Table 5.4 below.

**Table 5.4: High Growth scenario – Option 1 development summary**

<table>
<thead>
<tr>
<th>Land use</th>
<th>Area (ha)</th>
<th>Proportion of study area (%)</th>
<th>Estimate additional lots</th>
<th>Estimated additional population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (1000m²)</td>
<td>56.5</td>
<td>15.6</td>
<td>519</td>
<td>1,453</td>
</tr>
<tr>
<td>Recreation / Environmental protection</td>
<td>21.8</td>
<td>6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School</td>
<td>0.5</td>
<td>&lt; 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>0.3</td>
<td>&lt; 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing fire station</td>
<td>0.4</td>
<td>&lt; 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>263.0</td>
<td>72.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roads</td>
<td>19.0</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>361.5</strong></td>
<td><strong>100</strong></td>
<td><strong>519</strong></td>
<td><strong>1,453</strong></td>
</tr>
</tbody>
</table>

**Option 2**

Option 2 proposes development across the entire study area. This option proposes the same expansion of the village as Option 1 with rural residential development over the balance of the area. The rural residential lots progress from 4000 square metre lots closer to the village to 1 hectare and 2 hectare lots further out. The salient features of this development option are:

- Urban expansion contained with rural residential development of balance of study area.
- A transition of rural residential lot sizes from 4000 square metres to 2 hectares.
- An eastern urban growth boundary formed by Saltram Creek and tributary.
- A western urban growth boundary formed by the formalisation of a natural drainage channel.
• A northern growth boundary formed by an open space corridor connecting drainage channels to the west and east.
• A 0.5 hectare expansion area for Eglinton Public School.
• A minimum 50 metre buffer between rural residential and residential uses including a 20 metre vegetative buffer element.
• A minimum 40 metre buffer between rural residential and rural land including a 20 metre vegetative buffer element to be incorporated within lots.
• A minimum 40 metre riparian zone along Saltram Creek
• A new cycle path along open space / environmental protection corridor to form a circuit around the village.
• The protection of the Box-Gum Woodland endangered ecological community to the north of the study area with a 100 metre corridor to be fenced regenerated.

This development option would provide an additional 729 residential lots within Eglinton and accommodate an estimated additional population of about 2,041 people – more than a doubling of the current population. This is estimated to provide about a 36 year supply of residential land and would therefore meet long term demand. A detailed development summary for this option is presented in Table 5.5 below.

Table 5.5: High Growth scenario – Option 2 development summary

<table>
<thead>
<tr>
<th>Land use</th>
<th>Area (ha)</th>
<th>Proportion of study area (%)</th>
<th>Estimate additional lots</th>
<th>Estimated additional population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (1000sqm)</td>
<td>56.5</td>
<td>15.6</td>
<td>519</td>
<td>1,453</td>
</tr>
<tr>
<td>Rural residential (4000sqm)</td>
<td>36.1</td>
<td>10.0</td>
<td>82</td>
<td>230</td>
</tr>
<tr>
<td>Rural residential (1ha)</td>
<td>78.2</td>
<td>21.6</td>
<td>77</td>
<td>216</td>
</tr>
<tr>
<td>Rural residential (2ha)</td>
<td>103.2</td>
<td>28.5</td>
<td>51</td>
<td>143</td>
</tr>
<tr>
<td>Recreation / Environmental protection</td>
<td>45.3</td>
<td>12.5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>School</td>
<td>0.5</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Commercial</td>
<td>0.3</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Existing Fire Station</td>
<td>0.4</td>
<td>&lt; 1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Roads</td>
<td>41.0</td>
<td>11.3</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>361.5</td>
<td>100</td>
<td>729</td>
<td>2,041</td>
</tr>
</tbody>
</table>

5.4 Comparative assessment

A high-level strategic assessment of the development options is presented in Table 5.6. This assessment is intended to highlight the potential impacts of the alternative development options and enables direct comparison between the options.
### Table 5.6: Comparative assessment of development options

<table>
<thead>
<tr>
<th>Landform and soils</th>
<th>No Growth (estimated 146 additional lots)</th>
<th>Moderate Growth Scenario – Option 1 (estimated 278 additional lots)</th>
<th>Moderate Growth Scenario – Option 2 (estimated 409 additional lots)</th>
<th>High Growth Scenario – Option 1 (estimated 519 additional lots)</th>
<th>High Growth Scenario – Option 2 (estimated 729 additional lots)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional impact.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land contamination</th>
<th>No Growth</th>
<th>Moderate Growth Scenario – Option 1</th>
<th>Moderate Growth Scenario – Option 2</th>
<th>High Growth Scenario – Option 1</th>
<th>High Growth Scenario – Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land contamination not an issue.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydrology and water quality</th>
<th>No Growth</th>
<th>Moderate Growth Scenario – Option 1</th>
<th>Moderate Growth Scenario – Option 2</th>
<th>High Growth Scenario – Option 1</th>
<th>High Growth Scenario – Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood:</td>
<td>No change.</td>
<td>Same as Low Growth Scenario.</td>
<td>Stormwater:</td>
<td>Flood:</td>
<td>Backwater effects would be required to be considered for the culvert under Eleven Mile Drive.</td>
</tr>
<tr>
<td>Stormwater:</td>
<td>Existing system adequate but at capacity.</td>
<td>Same as Low Growth Scenario.</td>
<td>New drainage systems would be required to manage stormwater from expansion areas having regard to the general recommendations set out in Section 4.</td>
<td>Stormwater:</td>
<td>Same as Moderate Growth Scenario – Option 2.</td>
</tr>
<tr>
<td>Water quality:</td>
<td>No change.</td>
<td>Same as Low Growth Scenario.</td>
<td>Water quality:</td>
<td>Flood:</td>
<td>Stormwater:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Same as Low Growth Scenario.</td>
<td>Same as Low Growth Scenario.</td>
<td>Backwater effects would be required to be considered for the culvert under Eleven Mile Drive.</td>
<td>Water quality:</td>
</tr>
</tbody>
</table>

| Ecological                  | No additional ecological impact. | Same as Low Growth Scenario.      | Same as Low Growth Scenario.      | Same as Low Growth Scenario.      | No significant ecological impact provided a 40 metre riparian zone is established along Saltram Creek and a small stand of Box Gum Woodland EEC to east of existing village is protected. |

| Bushfire hazard             | No additional bushfire hazard. | Same as Low Growth Scenario.      | Same as Low Growth Scenario.      | Same as Low Growth Scenario.      | Same as Low Growth Scenario. |

- **Flood:**
  - No change.
  - Stormwater: Existing system adequate but at capacity.
  - Water quality: No change.

- **Landform and soils:**
  - No significant impact. The high shrink swell capacity of the Raglan soil landscape can be managed through appropriate design of road and building foundations and appropriate erosion and sediment controls implemented during construction.

- **Land contamination:**
  - Not an issue.

- **Hydrology and water quality:**
  - Flood:
    - No change.
  - Stormwater:
    - Existing system adequate but at capacity.
  - Water quality:
    - No change.

- **Ecological:**
  - No additional ecological impact.

- **Bushfire hazard:**
  - No additional bushfire hazard.
## Low Growth Scenario

- **Visual and landscape**: No further landscape or visual impact. Small increase in footprint of the village to the south of Wellington Street will result in some loss of rural landscape. The establishment of vegetated buffer zones around the village to the south of Wellington Street will create a visual distinction between urban and rural.
- **Cultural heritage**: No additional cultural heritage impact.
- **Land use**: No increase in land use conflicts however existing conflicts between residential and rural land would remain. No additional loss of agricultural land. There is potential for future ad hoc land rezoning to occur which could result in unplanned village sprawl.
- **Human services**: No additional impact on human services.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Estimated additional population</th>
<th>Potential for additional retail facilities</th>
<th>Retail development area</th>
<th>School site expansion required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Growth Scenario</td>
<td>409</td>
<td>Minor increase would not generate demand for additional retail facilities.</td>
<td>0.5 hectare school site expansion required.</td>
<td></td>
</tr>
</tbody>
</table>

## Moderate Growth Scenario – Option 1

- **Visual and landscape**: Same as Low Growth Scenario. More extensive increase in footprint of the village will result in greater loss of rural landscape. The establishment of vegetated buffer zones around the village will create a visual distinction between urban and rural.
- **Cultural heritage**: No significant cultural heritage impact provided certain movable heritage items are removed as per the recommendations in Section 4 and a consent to destroy application for the Aboriginal site identified is made to the DEC.
- **Land use**: Same as Low Growth Scenario. 
- **Human services**: Estimated additional population: 778 Minor increase would not generate demand for additional retail facilities. 0.5 hectare school site expansion required.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Estimated additional population</th>
<th>Potential for additional retail facilities</th>
<th>Retail development area</th>
<th>School site expansion required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Growth Scenario – Option 1</td>
<td>778</td>
<td>Minor increase would not generate demand for additional retail facilities.</td>
<td>0.5 hectare school site expansion required.</td>
<td></td>
</tr>
</tbody>
</table>

## Moderate Growth Scenario – Option 2

- **Visual and landscape**: Same as Low Growth Scenario. 
- **Cultural heritage**: No significant cultural heritage impact provided certain movable heritage items are removed as per the recommendations in Section 4 and a consent to destroy application for the Aboriginal site identified is made to the DEC.
- **Land use**: Same as Low Growth Scenario. 
- **Human services**: Estimated additional population: 1,145 Minor increase would not generate demand for additional retail facilities. 0.5 hectare school site expansion required.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Estimated additional population</th>
<th>Potential for additional retail facilities</th>
<th>Retail development area</th>
<th>School site expansion required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Growth Scenario – Option 2</td>
<td>1,145</td>
<td>Minor increase would not generate demand for additional retail facilities.</td>
<td>0.5 hectare school site expansion required.</td>
<td></td>
</tr>
</tbody>
</table>

## High Growth Scenario – Option 1

- **Visual and landscape**: Same as Moderate Growth Scenario – Option 1. 
- **Cultural heritage**: No significant cultural heritage impact provided certain movable heritage items are removed as per the recommendations in Section 4 and a consent to destroy application for the Aboriginal site identified is made to the DEC.
- **Land use**: Same as Low Growth Scenario. More extensive increase in footprint of the village will result in greater loss of rural landscape. The establishment of vegetated buffer zones around the village will create a visual distinction between urban and rural.
- **Human services**: Estimated additional population: 1,453 Possible need for additional retail facilities. 3000sqm set aside for retail development. 0.5 hectare school site expansion required.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Estimated additional population</th>
<th>Potential for additional retail facilities</th>
<th>Retail development area</th>
<th>School site expansion required</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Growth Scenario – Option 1</td>
<td>1,453</td>
<td>Possible need for additional retail facilities.</td>
<td>3000sqm set aside for retail development. 0.5 hectare school site expansion required.</td>
<td></td>
</tr>
</tbody>
</table>

## High Growth Scenario – Option 2

- **Visual and landscape**: This scenario will have greatest impact on the visual environment with loss of the rural landscape across the entire study area. The majority of the study area will still retain a rural feel due to the larger lot sizes proposed. The establishment of vegetated buffer zones between the urban village and the rural residential area will create a visual distinction between urban and rural and the vegetated buffer zone around the edge of rural residential development will create a definite edge to the village.
- **Cultural heritage**: No significant cultural heritage impact provided certain movable heritage items are removed as per the recommendations in Section 4 and a consent to destroy application for the Aboriginal site identified is made to the DEC.
- **Land use**: Same as to Moderate Growth Scenario – Option 2. 
- **Human services**: Estimated additional population: 2,041 Possible need for additional retail facilities. 3000sqm set aside for retail development. 0.5 hectare school site expansion required.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Estimated additional population</th>
<th>Potential for additional retail facilities</th>
<th>Retail development area</th>
<th>School site expansion required</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Growth Scenario – Option 2</td>
<td>2,041</td>
<td>Possible need for additional retail facilities.</td>
<td>3000sqm set aside for retail development. 0.5 hectare school site expansion required.</td>
<td></td>
</tr>
</tbody>
</table>

**Estimated additional population** reflects the estimated increase in population that would result from the development scenario. **Possible need for additional retail facilities** indicates the possibility of increased demand for retail facilities, and **school site expansion required** highlights the need for expansion of school facilities to accommodate the increased population.
<table>
<thead>
<tr>
<th>No Growth</th>
<th>Low Growth Scenario</th>
<th>Moderate Growth Scenario – Option 1</th>
<th>Moderate Growth Scenario – Option 2</th>
<th>High Growth Scenario – Option 1</th>
<th>High Growth Scenario – Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic</td>
<td>No additional impact on the road network within Eglinton or the surrounding road network.</td>
<td>Same as Low Growth Scenario.</td>
<td>Performance of all roads within Eglinton would be satisfactory except for Rankins Bridge however upgrades are not required for the following reasons: the performance of the road network is mainly governed by intersections and the performance of intersection within Eglinton is predicted to be good. Maximum peak hour traffic volumes would not exceed the typical capacity of the single travel lane. Good performance of intersections within Eglinton. The performance of the midblock section of Durham Street both east and west of Stewart Streets would become unsatisfactory. Saturation level at Durham Street/Stewart Street intersections may result in queuing along Durham Street and the performance of the intersection is predicted to become unsatisfactory.</td>
<td>Same as Moderate Growth Scenario – Option 2.</td>
<td>Same as High Growth Scenario – Option 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>Water: Current supply capacity is adequate. May need to consider security of supply to Eglinton. Further modelling of entire system required to determine effects of development at Windradyne, Llanarth, Abercrombie and Stewart on the Eglinton supply.</td>
<td>Water: System required to be upgraded to provide an additional Peak Hour Demand of 31 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Road and Eglinton. Beyond this upgrades would be required with the following two options available: future rezoning of Reservoir 6 may reduce demand on Eglinton trunk therefore no further upgrades required. provide 0.7 ML reservoir. Security of supply also needs to be</td>
<td>Water: System required to be upgraded to provide an additional Peak Hour Demand of 48 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Road and Eglinton. Beyond this upgrades would be required with the following two options available: future rezoning of Reservoir 6 may reduce demand on Eglinton trunk therefore no further upgrades required. provide 1.03 ML reservoir. Security of supply also needs to be</td>
<td>Water: Separate reservoir zone for Eglinton would be required incorporating new 1.44 ML storage reservoir and dedication of a 2000sqm site. System required to be upgraded to provide an additional Peak Hour Demand of 67 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Rd and Eglinton. Elevated reservoir required to provide reserve storage, peak day flow buffer and maintain zone pressure.</td>
<td>Water: Separate reservoir zone for Eglinton would be required incorporating new 1.8 ML storage reservoir and dedication of a 2000sqm site. System required to be upgraded to provide an additional Peak Hour Demand of 84 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Rd and Eglinton. Elevated reservoir required to provide reserve storage, peak day flow buffer and maintain zone pressure.</td>
</tr>
</tbody>
</table>

Utilities

Water:
- Current supply capacity is adequate. May need to consider security of supply to Eglinton.
- Further modelling of entire system required to determine effects of development at Windradyne, Llanarth, Abercrombie and Stewart on the Eglinton supply.

Sewer:
- Current system is adequate. No upgrade required.

Utilities

Water:
- System required to be upgraded to provide an additional Peak Hour Demand of 31 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Road and Eglinton. Beyond this upgrades would be required with the following two options available:
  - Future rezoning of Reservoir 6 may reduce demand on Eglinton trunk therefore no further upgrades required.
  - Provide 0.7 ML reservoir. Security of supply also needs to be

Sewer:
- Current system is adequate. No upgrade required.

Utilities

Water:
- System required to be upgraded to provide an additional Peak Hour Demand of 48 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Road and Eglinton. Beyond this upgrades would be required with the following two options available:
  - Future rezoning of Reservoir 6 may reduce demand on Eglinton trunk therefore no further upgrades required.
  - Provide 1.03 ML reservoir. Security of supply also needs to be

System required to be upgraded to provide an additional Peak Hour Demand of 67 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Rd and Eglinton. Elevated reservoir required to provide reserve storage, peak day flow buffer and maintain zone pressure.

Utilities

Water:
- System required to be upgraded to provide an additional Peak Hour Demand of 84 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Rd and Eglinton. Elevated reservoir required to provide reserve storage, peak day flow buffer and maintain zone pressure.

System required to be upgraded to provide an additional Peak Hour Demand of 110.4 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Rd and Eglinton. Elevated reservoir required to provide reserve storage, peak day flow buffer and maintain zone pressure.

Utilities

Water:
- System required to be upgraded to provide an additional Peak Hour Demand of 2000sqm site. System required to be upgraded to provide an additional Peak Hour Demand of 28.38 ML storage reservoir and dedication of a 2000sqm site. System required to be upgraded to provide an additional Peak Hour Demand of 110.4 L/s. 50 additional lots may be serviced off the existing trunk main between Bradwardine Rd and Eglinton. Elevated reservoir required to provide reserve storage, peak day flow buffer and maintain zone pressure.
<table>
<thead>
<tr>
<th>Scenario</th>
<th>No Growth</th>
<th>Low Growth Scenario</th>
<th>Moderate Growth Scenario – Option 2</th>
<th>Moderate Growth Scenario – Option 1</th>
<th>High Growth Scenario – Option 2</th>
<th>High Growth Scenario – Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power:</strong></td>
<td>Current system is adequate. No upgrade required.</td>
<td>addressed.</td>
<td>provided reserve storage, peak day flow buffer, maintain zone pressure and improve security of supply. Further modelling of entire system required to determine effects of development at Windradyne, Llanarth, Abercrombie and Stewart on the Eglinton supply.</td>
<td>addressed. Provided reservoir within study area would improve security of supply. Further modelling of entire system required to determine effects of development at Windradyne, Llanarth, Abercrombie and Stewart on the Eglinton supply.</td>
<td>Provision of reservoir within study area would improve security of supply. Further modelling of entire system required to determine effects of development at Windradyne, Llanarth, Abercrombie and Stewart on the Eglinton supply.</td>
<td>Provision of reservoir within study area would improve security of supply. Further modelling of entire system required to determine effects of development at Windradyne, Llanarth, Abercrombie and Stewart on the Eglinton supply.</td>
</tr>
<tr>
<td><strong>Gas:</strong></td>
<td>Current supply is adequate. No upgrade required.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Telecommunications:</strong></td>
<td>Network at 50% supply. No upgrade required.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Community expectations**

- **Preferred option based on community consultation outcomes.**
  - Strong support for minor expansion of larger lots.
  - Minimal support for this option.
  - Minimal support for this option.
  - Minimal support for this option.
  - Some support for this option but concerns about impacts on village character and on infrastructure and services.

**Strategic planning considerations**

- **No further population growth accommodated within Eglinton.** Not consistent with strategic planning considerations.
- **Minor expansion justified to meet some localised pent-up demand.** Estimated to provide an 8 year supply of residential lots.
- **Minor expansion justified to meet some localised pent-up demand and provide an alternative residential environment.** Estimated to provide a 15 year supply of residential lots.
- **This option would almost double the current population and provide an estimated 20 year supply of residential lots.** Not justified given current and potential supply of residential land across Bathurst.
- **This option would double the current population and provide an estimated 25 year supply of residential lots.** Not justified given current and potential supply of residential land across Bathurst.
- **Major expansion of village that would more than double current population and provide an estimated 40 year supply of residential lots.** Not justified given current and potential supply of residential land across Bathurst however provides opportunities to meet medium to long term demand for rural residential lots.
5.5 Development staging

The staging of development will depend on the development option progressed. The main factors that need to be considered in determining the appropriate staging of development for the option selected are:

- The economic extension of utilities to service new lots. This would dictate that development progress from the south-eastern corner in a westward direction south of Wellington Street and then from east to west north of Wellington Street.

- The logical extension to the existing urban area. This would dictate that the first stages of development occur close to the existing village with development further from the village in later stages.

- The appropriate number of lots to release within each stage. In this regard each stage should provide a 10 year supply of residential lots. This would mean that each stage should accommodate about 150-200 lots.

Development staging plans that demonstrate the application of these factors have been prepared for the Moderate Growth Scenario – Option 2 and High Growth Scenario – Option 1 development options as examples (Figure 5.6).

The sequence of five development options presented can also be considered as a long term staging plan for the ultimate development of the study area with each option being a separate stage. This is because each development option builds on the previous with a logical progression from the Low Growth to High Growth scenarios.

5.6 Implementation

The existing zoning of the study area under the Bathurst LEP and the proposed zoning of the study area under the Draft Bathurst Region (Interim) LEP do not provide for further expansion of the existing Eglinton village. An LEP amendment would be required to enable the residential development of the area and facilitate the implementation of the selected development option. The rezoning of land within the study area is expected to be undertaken as part of a comprehensive review of the planning controls across the Bathurst local government area to be completed over the next few years. The extent of zoning change required will depend on the development option progressed. However it is recommended that rezoning be restricted at this stage to an area that accommodates a 10 year supply of residential lots.

The implementation of the development option selected will also require:

- The preparation of a DCP for the area or appropriate amendments to the current DCP that is based on the selected development option and sets out the development and design controls for the area.

- The preparation of a specific development contributions plan for the area or appropriate amendments to the existing section 94 contributions plans to fund the timely provision of public amenities and services to cater for increased demand within the area.

5.7 Conclusion

This section has presented and assessed several development options for the study area that range from no development to significant expansion of the Eglinton village. Bathurst Regional Council must determine the appropriate extent and form of future development within the area based on the options presented. The ultimate decision needs to consider the technical issues identified and the messages from the consultation process undertaken. Below is a summary of the major advantages and disadvantages which have been identified with each option.
No Growth Scenario

The major advantage of the No Growth scenario is that it is most consistent with community expectations with the consultation process showing that it is the option most favoured by the Eglinton community. In addition no upgrades would be required to services or utilities. The option would not result in loss of agricultural land or changes to the visual environment or village character. The major disadvantage of the option is that demand for additional lots in Eglinton would not be met. In addition if no further growth of Eglinton proceeds then existing land use conflicts between residential and rural residential land would remain. There is also the danger that in the absence of a development plan for expansion development pressure could result in ad hoc rezoning and poorly managed village sprawl.

Low Growth Scenario

This option also provides the advantage that it is relatively consistent with community expectations for Eglinton and would result in minimal change to the landscape and character of the village whilst satisfying some demand for additional lots. The option would also result in only a minor loss of agricultural land with much of this land fragmented with low productivity. The option also results in minimal impact on the surrounding road network and relatively minor requirements for upgrade of utility services. Whilst the expansion would result in some improvement to existing rural-urban land use conflicts, these conflicts would not be reduced for the northern portion of the village. The option would also result in the provision of a small amount of additional passive open space with cycle and pedestrian paths. This option would provide an estimated 7 year supply of residential land and therefore would meet short to medium term demand.

Moderate Growth Scenario – Option 1

The advantages and disadvantages for this option are relatively similar to those for the Low Growth scenario. The major points of difference are the need for more significant upgrades to sewer and water infrastructure. This option would provide an estimated 14 year supply of residential land and therefore would meet medium term demand.

Moderate Growth Scenario – Option 2

Major advantages of the Moderate Growth Scenario – Option 2 are the significant reduction in rural-urban land use conflict that would result from the implementation of a land use buffer around the urban area and the provision of a continuous cycle / pedestrian path within a passive open space corridor around the village which would connect into the wider network. In addition the land use buffer and open space corridor would form a continuous growth boundary around the village to contain village expansion.

The option has less community support than the No Growth or Low Growth scenarios and would result in more significant visual change than the three options discussed above. However it is considered that the implementation of a vegetated buffer around the village would create a positive visual distinction between the urban and rural areas. Whilst the option would result in greater loss of agricultural land it is considered that the management of rural-urban land use conflicts may enhance the production potential of the remaining agricultural land. The option would also require relatively minor upgrades to the surrounding traffic network. More significant upgrades to utility services would be required than for the previously discussed options. This option would provide an estimated 20 year supply of residential land and therefore would cater for long term demand.

High Growth Scenario – Option 1

The advantages and disadvantages for the High Growth Scenario – Option 1 are relatively similar to those for the Moderate Growth Scenario – Option 2. The major points of difference are that the High Growth Scenario – Option 1 would require much more significant upgrades to the surrounding road network to enable development and some additional upgrades to utility services. This option would provide an estimated 26 year supply of residential land and therefore would cater for long term demand.
High Growth Scenario – Option 2

Whilst the High Growth Scenario Option 2 received a considerable amount of community support it also raised a significant community concern about the extent to which it would change the character and visual environment of Eglinton. The option would also result in significantly greater impact on the surrounding road network resulting in greater need for additional upgrades to enable development and additional upgrades to utility infrastructure would also be required. The expansion would result in the loss of a much greater area of agricultural land than the other options. A major perceived benefit of this option which was identified through the consultation process was the development of rural residential lots. This option would provide an estimated 36 year supply of residential land and expansion of the village to this extent may not be appropriate at this stage.
6. Findings and conclusions

Bathurst Regional Council has identified the land surrounding the Eglinton village for possible residential expansion in several strategic planning documents prepared over the past decade. The purpose of this LES was to assess the suitability of certain rural land surrounding the existing village for residential development and consider possible options for expansion of the village. The LES process has combined technical investigations and stakeholder and community consultation.

The technical investigations have found that most of the land within the study area is suitable for urban development for residential purposes and there are no significant constraints to development within the area. There are however a number of planning and environmental issues that require further investigation before development can proceed or consideration in the design and construction of future development.

The consultation undertaken identified a number of important issues that have been considered as part of the technical investigations and in the formulation of the development options for the study area presented. Some of the community held a strong view that further expansion of the village was not required and was undesirable for several reasons. However others felt that some minor expansion of the village could be acceptable provided that the village character is not compromised and infrastructure and traffic issues are addressed. Fewer people considered a major expansion of the village to be appropriate. These views tend to be supported by the various comments made about the development options presented and the number of people who preferred the No Growth or Low Growth options.

The critical issue for Bathurst Regional Council is how much urban expansion is appropriate within Eglinton. A residential land assessment undertaken for the Bathurst area suggests that further expansion of Eglinton to cater for long-term population growth is not required given the available residential land supply within zoned areas or areas identified for future development. However council has identified Eglinton for urban expansion as part of its strategic planning for the Bathurst area. There is also anecdotal evidence that there is localised demand for residential lots within Eglinton as an alternative residential environment close to Bathurst.

The most significant issue raised consistently in the consultation activities was the maintenance of the village character of Eglinton and this does represent a valid consideration for council. An expansion to the village through additional urban development will not necessarily result in the destruction or diminution of the village character and atmosphere but the limits of change need to be considered in the evaluation.

The High Growth scenario options would result in wholesale change to the village. The No Growth option would not necessarily result in a good planning outcome given that there is demand for the alternative residential environment that Eglinton provides and some additional population could provide the potential for additional services and facilities within Eglinton. A balance between these two extremes could represent the most acceptable planning outcome for Bathurst Regional Council and the Eglinton community.

The findings of the LES suggest that the Low Growth Scenario or Moderate Growth Scenario – Option 1 development options would be the most appropriate options for an expansion of Eglinton at this stage for the following reasons:

- These options would meet provide a 7 to 14 year supply of residential land and meet short to medium term demand for residential land within Eglinton.
- A minor expansion of the village is consistent with the community expectations identified through the community consultation process.
- These options would result in only a minor loss of Class 2 agricultural land and implementation of land use buffers around urban expansion areas would better manage rural-urban land use conflict.
• Rural land between the village and Saltram Creek which is no longer viable for agricultural production would be developed.
• Minor expansion would not have significant impact on the visual environment and would not result in significant change to the village character.
• Passive open space would be provided along the eastern and western boundaries south of Wellington Street.
• Development would have only a minor impact on the road and transport network.
• Development would require only relatively minor upgrades and extensions to existing utility infrastructure.
• Provision of growth boundaries around new expansion areas would curtail potential village sprawl.

Development of one of these lower growth options at this stage would not preclude further village expansion in the future. The development of Moderate Growth Scenario – Option 2 or High Growth Scenario – Option 1 could be considered at some stage in the future and would offer a number of additional benefits including:

• A continuous land use buffer surrounding the village to manage rural-urban land use conflicts.
• A continuous open space corridor around the village with cycle / pedestrian paths connecting into the surrounding cycle network. This corridor would also form a growth boundary around the village.

A number of factors would need to be reconsidered before additional future village expansion were to proceed. In particular the community expectations for additional expansion and the demand for residential land within Eglinton would need to be reconsidered.

More extensive development of the outer parts of the study area for rural-residential purposes (such as proposed under High Growth Scenario – Option 2) is not considered appropriate at this stage. This option would cater for expected demand over a 36 year period which is clearly not required at this stage. This option would be expensive to service and would result in the loss of a considerable area of Class 2 agricultural land. There are a number of areas of Class 3 agricultural land that surround the urban areas of Bathurst which may be more suitable for rural-residential development. This broader strategic planning issue needs to be considered as part of the Bathurst Region Rural Strategy being undertaken by council.
References


Bathurst City Council (2001) Housing Strategy, City of Bathurst, Bathurst.

Bathurst City Council (2003) Vegetation Management Plan, Bathurst City Council


NSW Department of Infrastructure Planning and Natural Resources (2005c) Draft Environmental Outcomes Assessment Methodology, NSW Dept of Infrastructure, Planning and Natural Resources.


NSW Department of Primary Industries (2004) Buffers – Planning for Sustainable Agriculture, NSW Department of Primary Industries.

NSW Department of Urban Affairs and Planning (2000) Rural Lands Policy, Department of Urban Affairs and Planning, Sydney.


Queensland Department of Natural Resources (1997) Planning Guidelines: Separating Agricultural and Residential Land Uses, Department of Natural Resources, Brisbane.

Appendix A

DIPNR directions
Attn: Ms Janet Bingham

3 November 2003

Dear Janet,

Eglinton Village Expansion – Consultants Brief

I refer to your correspondence of 10 October 2003 and thank you for the opportunity to comment upon the draft brief for a consultant to undertake more detailed assessment of the potential for residential expansion in Eglinton.

The draft brief is comprehensive and details most of the issues that the Department considers necessary to identify the potential for residential expansion in this area. The Department is supportive of Council’s attempts to reconcile the inevitably competing demands for various landuses and minimise and/or manage the potential conflicts.

To assist Council with ensuring that the subject area is thoroughly investigated, the Department offers additional comments as contained in Attachment 1.

I trust these comments are of assistance and should you have any further queries please do not hesitate to contact Mr Tim Deverell on 02 6885 3200 or tim.deverell@dipnr.nsw.gov.au.

Yours sincerely

Lindsay Usher
Team Leader
Central West/Far West Region
Western NSW Branch
ATTACHMENT 1 – EGLINTON LES DRAFT BRIEF

Context
- The LES should endeavour to place any potential expansion of Eglinton in context of the wider demands for land and growth pressures in Bathurst. Should growth be supported and sustainable, then it should be demonstrated that Eglinton is an appropriate location.
- The study should extend beyond the land which is owned by landowners who are actively seeking rezoning and funding the study. The study should consider all land in the Eglinton environs, so that a subsequent strategic evaluation of the data identifies the most or least compatible land for urbanisation (if any). I.e a broader study.
- It is noted that some of Council’s existing planning documents have indicated that there is sufficient land in the Villages for 28 years (Housing Strategy, p4). How does the current proposal fit in this context?

Services and Infrastructure
- The LES should evaluate the potential impacts upon or demand for retail/shopping facilities in Eglinton and upon education and other social infrastructure. In addition, the implications upon open space (passive and active) and the demand for entertainment or recreational facilities, locally or within the wider Bathurst area should be considered.

Consultation
- It is noted that previous consultations with the community have generally indicated opposition to the growth of the Village and reduction in character that may be a negative consequence of such growth. Balancing community expectations and change will be an important component of the LES. The Department has prepared a handbook on Community Engagement which may assist. Council should already have a copy, otherwise it is available from http://www.iplan.nsw.gov.au/engagement/index.php
- The Department supports consultation with key government agencies and surrounding local government areas, up front and integrated with the preparation of the LES rather than after the completion. In this regard it is also suggested that the Civil Aviation Safety Authority be consulted.

Environmental Assessment
- The LES should undertake groundwater or hydro-geological investigations. Consider recharge and discharge areas, aquifers etc.
- Related to the above the LES should consider the likelihood of development being affected by or contributing to salinity.
- With limited access to Eglinton, the potential impacts upon residential amenity from road networks/hierarchy shall be an important consideration.
- Are there any European heritage implications?
- In addition to the nominated radio transmitting towers it appears there are electricity supply lines to the north of Eglinton. These too should be evaluated for health and environmental implications.

Urban Interface
- It is noted that the draft brief requires detailed assessment on the potential implications of this important interface. However, the Department would suggest that the LES not just consider existing agricultural and other adjoining landuses. The study should account for potential future landuses, recognising that agriculture is shifting to larger and more intensive production.
Appendix B

Written submissions from public authorities
Mr Mark Syke  
Associate  
Connell Wagner  
2 Palmer Street  
NORTH PARRAMATTA NSW 2151

Attention: Anna Johnston

EGGLINTON VILLAGE LOCAL ENVIRONMENTAL STUDY  
SECTION 62 CONSULTATION

I refer to your letter forwarded from the School Education Director Bathurst Area regarding the proposed Local Environmental Study of Egglinton Village.

Egglinton Public School is on a 2.54 hectare site and serves the local village. This school has 10 permanent teaching spaces and three demountable teaching spaces with an enrolment of 334 students.

If the Local Environmental Study proposes the rezoning of a substantial number of new residential lots there may be a future requirement to extend Egglinton school site, as the current site is 0.46 of a hectare below the current standard of three hectares.

The Department will comment further when this study is completed.

Any further correspondence regarding education properties planning matters should be directed to Mike Cush General Manager Asset Management New South Wales Department of Education and Training GPO Box 33 SYDNEY 2001.

For further enquires on this matter please contact Sandra Patterson, Demographic Planner 95618544 or sandra.patterson@det.nsw.edu.au.

Yours sincerely

Doug White  
Manager Demographic Planning  
28 September 2005.
Mark Syke  
Connell Wagner  
2 Palmer Street  
North Sydney NSW 2151

27 September 2005

Dear Mr Syke

Subject: Eglinton Village Expansion Local Environmental Study Consultation

I refer to your letter dated 16 August 2005 requesting advice on issues associated with the study area and information or knowledge relevant to the Eglinton Local Environmental Study (LES). Please be advised that this is a joint response from the newly created Department of Natural Resources (DNR) and the Department of Planning (DoP) which followed the division of the former Department of Infrastructure Planning and Natural Resources.

Planning Issues

These comments should be read in conjunction with the Departments former comments dated 3 November 2003 to the then Bathurst City Council. (Copy attached)

The request for advice from the Department of Planning indicated that the preparation of the Eglinton LES was being undertaken in accordance with section 62 EPAA. The Department would like to highlight that although the LES is being prepared there has been no formal notification from Bathurst Regional Council of any resolution to rezone land and the Department has not agreed to any such amendment at this time.

Context

The LES should endeavour to place any potential expansion of Eglinton in context of the wider demands for land and growth pressures in Bathurst. Should growth be supported and sustainable, then it should be demonstrated that Eglinton is an appropriate location.

It is noted that some of Council’s existing planning documents have indicated that there is sufficient land in the Villages for 28 years (Housing Strategy, p4). How does the current proposal fit in this context?

Services and Infrastructure

The LES should evaluate the potential impacts upon or demand for retail/shopping facilities in Eglinton and upon education and other social infrastructure. In addition, the implications upon open space (passive and active), the demand for entertainment or recreational facilities, roads and other infrastructure locally or within the wider Bathurst area should be considered.
Consultation

It is noted that previous consultations with the community have generally indicated opposition to the growth of the Village and reduction in character that may be a negative consequence of such growth. Considering community expectations and change will be an important component of the process following the LES and the LES should consider options for this issue.

Environmental Assessment

In addition to the radio transmitting towers it appears there are electricity supply lines to the north of Eglinton. These too should be evaluated for health and environmental implications.

Urban Interface

The LES should not just consider existing agricultural and other adjoining land uses which could result in land use conflicts. The study should account for existing and potential future land uses, recognising that agriculture is shifting to larger and more intensive production. The quality and significance of the loss of any agricultural land should be assessed as well.

NATURAL RESOURCE MANAGEMENT ISSUES

In relation to the proposed LES, the Department of Natural Resources (DNR) would like to provide information in terms of its legislative requirements and natural resource management issues.

Legislative Requirements

DNR is responsible for administering the following legislation which has potential implications for licensing and issue identification within the proposed LES site:

Water Act 1912 – The Water Act facilitates the use of water within surface and groundwater resources and addresses environmental issues within an assessment framework. Licensing requirements are also examined for the realignment of drainage lines.

Water Management Act 2000 - The general purpose of the Act is to provide for the protection, conservation and ecologically sustainable development of the water resources of the State. It provides for integration of the management of water sources with the management of other aspects of the environment, including the land, soil, native vegetation and fauna.

Rivers and Foreshores Improvement Act 1948 – Provides for the prevention of degradation of riparian zones and affected areas through an assessment and licensing framework for activities operating within 40 metres of a prescribed stream.

Native Vegetation Conservation Act 1997 – Provides for the conservation and management of native vegetation and to encourage the revegetation of land and rehabilitation with appropriate native vegetation. The NVC Act 1997 is proposed to be replaced in 2005 by the Native Vegetation Act 2003 which will be administered by the Central West Catchment Management Authority. Non-indigenous vegetation is also considered within the licensing requirements of the NVC Act 1997 when affected within protected land of watercourses.

Natural Resource Issues

Soils and Salinity

- Characteristics of the soils of the site for limitations in terms of erodibility, salinity and waterlogging. The Bathurst 1:250 000 Soil Landscape Sheet (Kovac et al 1990) identifies a
large portion of the site as red solodic soils which are characterised by moderate soil salinity, high erodibility in the topsoil and high structural degradation hazard.

- Salinity management has been highlighted within the NSW Salinity Strategy which directs future planning to identify the characteristics of soils, vegetation and hydrology as related to salinity. The Salinity Risk Assessment of the Central West Catchment (Humphries 2000) identified the main salinity sites within the Eglinton LES area to be concentrated at break of slope and bottom of valley locations.

- Salinity issues are strongly linked to the characteristics and processes of groundwater. An understanding of the groundwater responses during annual seasons and periods of wet and dry are essential to comprehend the local issues. Subsurface drainage has implications for road and subdivision design, in addition to the selection of appropriate landuse options. The protection of groundwater from pollution and ensuring its long term sustainability is to be considered as is provided for in the NSW State Groundwater Policy.

- Contaminated land would need to be considered as required by State Environmental Planing Policy No.55 – Remediation of Contaminated land (SEPP 55).

Biodiversity

- Modification to natural ecosystems, habitat loss and fragmentation combined with appropriate management of weeds and ecologically sustainable development are significant issues associated with urban expansion. These issues are highlighted within the objectives of the NSW Biodiversity Strategy and are supported through appropriate recommended actions.

Riparian Zones

- Directions for the management of riparian zones to prevent degradation and ensure long term sustainability of their biophysical functions is provided for in the NSW State Rivers and Estuaries Policy and supported by the RFI Act and the NVC Act.

- The Eglinton LES site is characterised by Saltram Ck, two unnamed watercourses and a linkage with the Macquarie River. Saltram Ck has characteristics of channel degradation, poor riparian vegetation and associated poor aquatic habitat. Riparian degradation has implications on water quality, adjacent landuse, ecological functioning and management requirements. Useful supporting publications for riparian restoration include the following:
  - A Rehabilitation Manual for Australian Streams Vol 1 (LWRDRC) [link]
  - A Rehabilitation Manual for Australian Streams Vol 2 (LWRDRC) [link]
  - Riparian Management Technical Guidelines (LWRDRC)

- Buffer design and management is a critical component to enable appropriate management of riparian zones. This can only be achieved following identification of the issues and associated mitigating measures.

- The hydrological characteristics of the riparian zones can have implications in terms of flooding, drainage and appropriate landuse considerations and management tools. The watercourses within the LES site in addition to any adjacent watercourses would need to be considered.
Water Management

- Stormwater disposal and its associated volume, storage, point of entry to watercourses and quality needs to be considered as described in the publication, *Soils and Construction* (Landcom 2004). Interactions with groundwater and surface water both need to be examined.


- Water requirements of the proposed landuse need to be addressed in terms of water sources, adequacy of supply and infrastructure requirements. The use and disposal on an individual site basis has links with the soil, salinity and groundwater characteristics.

- Water management should be provided for with the objectives of water use efficiency and follow best practice guidelines for water sensitive urban designs.

Sewerage Management

- Appropriate consideration is required of the necessary infrastructure and potential pollution of groundwater and surface water associated with any sewerage management system.

Should you require further information please contact Tim Baker (DNR) on telephone 6841 7531 or Tim Devereall (DoP) on 6841 7529.

Yours sincerely

[Signature]

Lindsay Usher  
Team Leader  
Landuse Planning and Strategy Unit  
Central West Region
Dear Sir,

I refer to your letter dated 16 August 2005 seeking advise on **Eglinton Village Expansion Local Environmental Study**.

Please note that, although the Environment Protection Authority (EPA) is now a part of the Department of Environment and Conservation (DEC), certain statutory functions and powers continue to be exercised in the name of the EPA.

The DEC also has responsibilities, which were formerly administered by the NPWS, under the:

- **National Parks and Wildlife Act 1974** - namely the protection and care of Aboriginal objects and places, the protection and care of native flora and fauna and the protection and management of reserves; and the
- **Threatened Species Conservation Act 1995**, which aims to conserve threatened species of flora and fauna, populations and ecological communities to promote their recovery and manage processes that threaten them.

The DEC generally focuses its assistance to Council on planning matters at the landscape and whole of council level with particular attention to studies, strategies and local environmental plans (LEP) at this scale. It is able to assist Council in these matters with guidance on relevant issues to be addressed and as well as providing direction on the relevant state policy and statutory frameworks to be applied.

In the context of the proposed Eglinton LES area the DEC is able to provide you with the following advice.

**Integration**
The LES should clearly demonstrate how the proposed settlement extension at Eglinton integrates with the settlement strategies for the whole of the Bathurst Regional Council area. The DEC is aware that Bathurst Regional Council is about to begin to develop a new Council wide landuse and settlement strategy and it is not at all clear how the Eglinton LES will relate to this broader framework.
It is essential that the LES establish a clear case for any extension of settlement in the Eglinton area. Such a case, if it does exist, should be based on the validity of the settlement opportunities within the context of managing the values of the area to achieve a clearly established long-term vision for settlement in Bathurst as well as the wider region.

**Values Based Planning.**

In preparing the LES, you are strongly encouraged to engage the community in the clear definition of the values they hold for Bathurst in general and in particular the locality of Eglinton. Engagement in this process will help the community to define and understand the issues that need to be addressed in the LES and will help build community support for the outcomes of the LES. A consistent focus and promotion of these values throughout the process will ensure that the community sees how their values shape the debates as well influencing the trade-off and offset decisions in the planning process and any Local Environmental (LEP) amendment or Development Control Plans (DCP) that may flow from that LES.

The LES should provide a clear picture of the current status and trends of the community values in relation to settlement.

The DEC strongly recommends that the LES provide map-based direction for settlement, formed around objectively stated criteria for opportunities that emerge from the process. This will involve the identification of areas and items of natural and cultural heritage value and the application of appropriate management arrangements to protect these values. Such a map-based approach should also include a clear priority statement for the protection of these areas.

**Natural and Cultural Heritage**

*Natural Heritage*

The DEC recommends recognition of biodiversity in the LES as a fundamental value to be protected and enhanced.

The DEC can also supply fauna prediction data and recorded fauna sightings data to assist. Please refer to the attached guidelines in Attachment 1 for information on accessing this data.

*Aboriginal Cultural Heritage*

It is essential that the Aboriginal heritage within the area is conserved and appropriately managed within the statutory mechanisms that currently apply, including the planning and approvals process and the *National Parks and Wildlife Act 1974*.

You may wish to enter a data license agreement with DEC to access the AHIMS (Aboriginal Heritage Information Management System), formerly known as the Sites Register database. This will allow you to determine the location of, and general information about, currently recorded sites in the area. Please refer to the attached guidelines in Attachment 2.

The DEC also suggests that you consider the publication “Aboriginal Cultural Heritage: Standards and Guidelines”. This may be purchased by contacting the DEC Cultural Heritage Division on (02) 9585 6571.

**Environmentally Sensitive Lands**

The DEC recommends that you specifically identify environmentally sensitive land within the LES area and define appropriate protection measures for them including:

- Remnant native vegetation
- Public land, particularly crown land with existing native vegetation
- All wetlands, creek lines and land within 100 metres of rivers
• Threatened species, populations, communities and their habitats
• All potential archaeological sites and Aboriginal objects and places
• All wildlife corridors, roads and reserves containing native vegetation
• All significant scenic landforms
• All flood-prone lands

The DEC also recommends the Biodiversity Planning Guide for NSW Local Government (2001) which can be accessed from the following website of the NSW Local Government Association http://www.lgov.org.au/site/policy/1000150/1000165.html. The Guide explains how to achieve biodiversity conservation objectives using existing planning processes and instruments, and includes suggested conservation mechanisms such as zoning provisions.

Other Specific Environmental Protection Issues
You should ensure that the following specific issues are addressed in the LES:

• The protection of surface and groundwater quality in relation to government endorsed, environmental objectives. The specifics of the Interim Water Quality and River Flow Objectives relevant to the Bathurst Regional Council may be accessed via; ➔ http://www.epa.nsw.gov.au/leo/MacquarieBogan/index.htm


The LES should demonstrate clearly how the proposed settlement changes at Eglinton would contribute to protecting or achieving these endorsed objectives.

• The reduction and management of waste.


• The identification and management needs of any land contamination as defined in the Planning Guidelines SEPP55 –Remediation of Land.

• The relationship of settlement pattern changes to existing land use and the management needs to address potential neighbour conflicts over such issues as noise, dust, odour and chemical use.

• The management of site and soil disturbance and associated pollution hazards during development and with expected ongoing land use.

• The management of any other pollution hazards in relation to development sites.

• The definition of flooding extent and frequency on potentially affected land in terms of environmental sensitivity.

Addressing Cumulative Impacts
For some time now the DEC has been encouraging councils to address the issue of cumulative environmental impacts in its planning and development control activities. To this end it has been suggesting that councils should include a Green Offsets approach as one of its strategies to ensure that new developments have either a neutral or beneficial impact on the environment in relation to water pollution. Attachment 3 outlines a suggested process to achieve this result. More information on the concept of Green Offsets is provided in Green offsets for sustainable
development, concept paper. EPA April 2002, and available at

Key elements to the neutral or beneficial and green offsets concepts involve:

- The calculation and clear declaration by developers of environmental impacts after the
  application of best practice, and,
- The full consideration of impacts in the context of environmental performance targets set
  for developments and against the environmental objectives that apply to the particular
  catchments.

You should find this approach particularly helpful in addressing the issue of on-site management
of wastewater and stormwater runoff. The setting of clear, objective environmental targets will give
firm direction on how to use the design guidance for this and other issues.

While specific environmental performance targets for particular developments are clearly matters
for Council to set, government endorsed Water Quality and River Flow Objectives already exist for
the Bathurst Regional Council area and have been earlier referenced in this submission. You are
strongly encouraged to use these Objectives and to frame the LES to demonstrate how the
management of any extension to settlement will contribute to achieving the objectives.

Given the current potential for development and growth in Bathurst and its surrounding region,
these concepts and objectives clearly have the potential to move planning and development
control beyond the current tendency to rely on minimising impacts in a very subjective manner to a
far more objective and transparent system. The DEC recommends that you incorporate these
concepts with their objectives and targets into the LES.

I trust you find this submission of assistance with your project and would appreciate it if you could
keep the DEC informed of its progress and of opportunities to input and assist. If you have any
further enquiries regarding this matter please contact me at the Bathurst Office of the DEC by
telephoning (02) 63327603.

Yours sincerely

Chris Marshall
Senior Regional programs Officer
Environment Protection & Regulation Division
Department of Environment and Conservation
INTRODUCTION

The Environmental Planning and Assessment Act (1979) (EP&A Act) requires that proponents of a development/activity and the Consent/Determining Authorities adequately assess the impact of a development or activity in any Environmental Impact Assessment (EIA) documents. These EIA documents include:

- Statement of Environmental Effects (SoEE), or
- Review of Environmental Factors (REF), or
- Environmental Impact Statement (EIS).

These are introductory, generic specifications of the Department of Environment and Conservation (DEC) for an adequate assessment of the impacts of a development proposal on native flora and fauna (ie including protected and threatened species). However, the DEC recognises that the scale and complexity of the project will to some extent, dictate the level of information that is required to address the questions posed below. Consequently, flora and fauna assessments need to be tailored to suit the proposal. For example, a development which is proposed on land which has already been totally (or substantially) cleared should address the issues raised below but the amount of work required to address these issues may be substantially less than if the area comprised undisturbed bushland and, therefore, of more significant wildlife habitat value. A preliminary assessment, including a desktop investigation and a preliminary site inspection, may indicate the need for a detailed survey of the site.

Aboriginal cultural heritage and archaeological sites may still be present on substantially disturbed areas and appropriate assessment of these is required. (Please refer to separate Cultural Heritage Assessment Guidelines included.)

It is up to the proponent (and later the consent and/or determining authorities after appropriate consultation) to determine the detail and comprehensiveness of assessment required to form legally defensible conclusions regarding the impact of the proposal. The scale and intensity of the proposed development should dictate the detail of investigation.

It is important that all conclusions are supported by adequate data and that these data are clearly presented in EIA documentation.
The DEC will consider the following issues when reviewing an EIA document:

1. **Concerns** - What are the DEC's concerns regarding the conservation of natural and cultural heritage in accordance with the relevant legislation? Is the proposal likely to affect natural and cultural heritage? How?

2. **Provision of Information** - Is adequate information provided for a valid assessment of the impacts?

3. **Validity of Conclusions** - Has the proponent arrived at valid conclusions as a result of the assessment of impacts?

4. **Recommended Conditions to Consent** - Should Consent or Approval be granted, what conditions (if any) are required to ensure that the project is developed, and thereafter managed in accordance with natural and cultural heritage conservation and the provisions of legislation administered by the DEC?

Thus the EIA document should fully describe the existing environment including flora and fauna, so that future impacts can be properly assessed and then reviewed (e.g. during the public participation phase).

**FLORA**

**Background**

The Australian flora comprises many endemic taxa and is therefore unique in the world.

The DEC is concerned at the extent to which vegetation has been cleared and otherwise modified in Western NSW. This high level of modification has been highlighted in the National State of the Environment Reports (1996 and 2001). Evidence strongly suggests that many plant species and communities are threatened with extinction.

Although the proposed site may be disturbed by various landuses, any remnants of native vegetation are of significant natural heritage value, including riparian and wetland areas. The area of vegetation and habitat at the proposed site may provide an area of high biological diversity, high conservation value or may not be well represented or protected elsewhere. It may also act as a corridor or migratory route for wildlife, drought refuge habitat or have other important values.

The NSW community places a high value on those areas of native vegetation that remain. The DEC is committed to the protection, appropriate management, and where necessary, rehabilitation of native vegetation. For these reasons, the DEC considers that careful planning should precede any development that involves further vegetation clearance or other significant impact within areas of remnant vegetation.
Report Requirements

The EIA documentation should include a report on the flora that includes the following:

- detailed location map and identification of the area surveyed (including the location of photographs, transects, areas of significance etc),
- at least one of the following: a land satellite image, vegetation communities map, aerial photograph, or a remnant vegetation map,
- a complete plant list (including scientific names of those plants) of all tree, shrub, ground cover and aquatic species, categorised according to country of origin (i.e., native vs exotic),
- a detailed description of vegetation structure (in terms of a scientifically accepted classification system) and spatial distribution (i.e. plant densities and patterning) on the site, including a vegetation map,
- describe the condition and integrity of the vegetation including a description of any past disturbance,
- an account of the likely original vegetation communities (pre-, or at early settlement), and an assessment of the likely regional distribution of the original communities,
- an assessment of whether the plant communities are adequately represented in conservation reserves or otherwise protected,
- an account of the hydrology of the area and how this relates to the dynamics of the vegetation communities,
- a list of known and likely threatened species as listed under Schedules 1 & 2 (Threatened Species Conservation Act 1995) which might occur at the site. The DEC database needs to be accessed and the likelihood of occurrence of threatened flora species determined,
- an assessment of the impacts of the proposal on flora, on-site and off-site (eg siltation, water availability or drainage changes) and measures to mitigate these impacts,
- an assessment of the significance of the impact of the development at both the site and at the regional scale,
- a detailed rehabilitation/management plan including a list of the plant species to be used during rehabilitation (if required),
- detail methodologies used and a list of the reference literature cited, and
- any other issues that may be considered relevant.

The above guidelines will provide some of the information necessary to conduct an ‘Eight Part Test of Significance’ required for threatened flora and fauna under Section 5a of the EP&A Act, should threatened species be likely or known to occur in the locality of the subject development proposal. Similarly, it will provide some of the information required if an application is found to be necessary under the Native Vegetation Conservation Act (1997). However the above relates mostly to the specific environmental assessment processes under the EP&A Act and does not constitute an ‘Eight Part Test of Significance’.

07/09/2005
Native Vegetation Conservation Act (1997)

The DEC wishes to stress that the proponents will need to consider the provisions of the *Native Vegetation Conservation Act (1997)* (NVC Act). If the proposal involves the clearing of native vegetation it may require the consent of the Director General of Land and Water Conservation.

The *NVC Act* also allows for Regional Vegetation Committees to create Regional Vegetation Management Plans that will set guidelines for vegetation management in each region. Please contact the Department of Land and Water Conservation if the proposed development is in one of these Regions or if you have any other queries regarding the *NVC Act*.

**FAUNA**

**Background**

Evidence suggests that Western NSW has suffered the highest extinction rate for indigenous mammals of any region in the world. Many other vertebrate species are currently threatened. One of the major reasons for such a high level of extinction has been the destruction of habitat. Native vegetation including wetland, riparian and remnant environments, are very significant areas of fauna habitat. Therefore any development in such areas should fully consider the impact on fauna and its habitat.

**Report Requirements**

The EIA document should include a report on the fauna (including protected and threatened species), that includes the following:

- detailed location map and identification of the area surveyed (including the location of photographs, transects, areas of significance etc),
- at least one of the following: a land satellite image, vegetation communities map, aerial photograph, or a remnant vegetation map,
- a complete list of all known and likely terrestrial and aquatic species (e.g. birds, mammals, reptiles and amphibians including scientific names). It is suggested that invertebrates also be considered as they form part of the food chain for many fauna species,
- those species which are protected, threatened or listed under any international agreements, as well as introduced species,
- those species known or likely to breed in the area,
- any species which have specific habitat requirements found within the project area,
- those species or populations which may be near the limit of their geographic range or are a disjunct/isolated population,
- assessment of the importance or otherwise of the location as a corridor, migratory route or drought refuge, in relation to other remnant vegetation, riparian and wetland areas or habitat in the region,
- assessment of the impacts of the proposal on all fauna and its habitat, at both the site and at the regional scale,
identification of any mitigation measures proposed to limit or ameliorate the impact of the proposal,
detailed methodologies used and a list of the reference literature cited, and,
any other issues that may be considered relevant.

SEPP No. 44 - Koala Habitat Protection

The Shire may be listed in Schedule 1 of SEPP No. 44 - Koala Habitat Protection. If so, the requirements of the SEPP regarding Koala habitat protection should be considered by the proponents.

THREATENED SPECIES OF FAUNA AND FLORA

Background

Apart from the need to consider the impact on protected species, the proponent will need to address the requirements of legislation that currently governs threatened species protection and impact assessment in NSW.

The Threatened Species Conservation Act (1995) (TSC Act) protects all threatened flora and fauna native to NSW (excluding fish and marine plants). The proponent will need to consider the provisions of this Act.

The TSC Act contains lists of threatened species, which are divided into 5 categories – those presumed extinct, endangered species, endangered populations, endangered ecological communities and vulnerable species. This Act also allows for the declaration of critical habitat, key threatening processes and the preparation of both Recovery Plans and Threat Abatement Plans. These listings and plans must be considered as part of the EIA process.

If an activity or development is proposed in a locality likely or known to be occupied by a threatened species, population, ecological community or critical habitat, any potential impact to that threatened species must be taken into account during the development assessment process. However under the EP&A Act, some types of development are not required to go through approval processes. Please note that a licence may still be required under the TSC Act if such a development/activity is likely to harm a threatened species, population or ecological community. An information circular ('Threatened Species Conservation Act 1995') is available from the Western Directorate for detailed information about the TSC Act.

Eight Part Test & Species Impact Statements

If during the flora or fauna assessment or survey, threatened species are found or are likely to occur in the area, the proponents must undertake an 'Eight Part Test of Significance' as outlined in section 5A of the EP&A Act to determine whether or not the development would be likely to have a significant impact upon threatened species.

07/09/2005
The '8 Part Test' is a statutory mechanism which allows decision makers to assess whether a proposed development or activity is likely to have a significant effect on threatened species, populations or ecological communities, or their habitats.

The '8 Part Test' is contained within section 5A of the EP&A Act and consists of eight factors which need to be addressed for informed decisions to be made regarding the effect of a proposed development or activity on threatened species, populations or ecological communities, or their habitats. An information circular ('Threatened Species Assessment under the EP&A Act: The 8 Part Test of Significance') is available from the Western Directorate for detailed information about the '8 Part Test'.

Following threatened species assessment via the '8 Part Test', it may be necessary to prepare a Species Impact Statement (SIS). The proponent will need to prepare a SIS in the following circumstances:

- If (after having addressed Section 5A) the flora/fauna assessment concludes that there is likely to be a significant impact to threatened species, or
- The proposed development is likely to affect critical habitat declared under the TSC Act.

If a SIS is required, the proponent (not the consultant) must write to the Director-General of DEC for any formal requirements for the SIS that he might deem appropriate. The SIS must then be prepared in accordance with these requirements and provided to the Director-General. In some instances the Minister for the Environment will also need to be consulted for approval. An information circular ('Species Impact Statements') is available from the Western Directorate for detailed information about this assessment.

Methods to reduce the impact on the protected and threatened species should be considered fully, and are considered an integral requirement within any SIS document.

The DEC advises that conducting an '8 Part Test' or a SIS according to the provisions of the EP&A Act and the TSC Act is a complex task and should be undertaken by suitably qualified person(s).
AVAILABLE DATA

The DEC can supply, at the standard cost, fauna prediction data and recorded fauna sightings data (Wildlife Atlas of NSW) to help in the investigation.

The following information on site recordings of Flora and Fauna is available from DEC:

- Atlas of NSW Wildlife (1995). A DEC database containing records of fauna and flora, including threatened species. Computer print-outs for all records on a 1:100,000 mapsheet are available (at cost) from the Data Exchange Officer on (02) 9585 6684.

- Threatened Species of Western NSW (Dec. 1996). Species profiles including likely distribution, habitat and threats. Ringbound folders are available at $82.50 (incl. GST) (plus $5.50 postage) from the Western Directorate Office, Dubbo (02) 6883 5330.

Other reference literature may be available for the subject locality/region. The proponent should explore this possibility thoroughly.

FURTHER INFORMATION

Should you wish to clarify any issues raised here or require further information please feel free to contact:

Conservation Assessment and Planning Unit
Western Directorate office
Department of Environment and Conservation

48 -52 Wingewarra St (PO Box 2111)
DUBBO NSW 2830

PH     (02) 6883 5330
FAX    (02) 6884 9382

07/09/2005
ENVIRONMENTAL ASSESSMENT GUIDELINES
CULTURAL HERITAGE

Aboriginal sites are widespread throughout New South Wales. There is considerable regional variation in the types of sites, their age, their contents and how they are situated on the landscape. It is important that these sites are conserved as fragile and irreplaceable Aboriginal heritage. In some cases there is Aboriginal oral tradition concerning specially significant sites or landscape features.

The Department of Environment and Conservation (DEC) has a statutory role in the protection and preservation of Aboriginal sites. This includes reviewing and assessing the Aboriginal cultural and archaeological aspects of environmental studies, as well as a regulatory role in their impact or destruction.

The EIS or other environmental assessment should consider Aboriginal cultural heritage, even if the area is disturbed in some way. The EIS should consider:

- Accessing the DEC's Aboriginal Heritage Information Management System (AHIMS) in the initial planning stage. This is to determine if there are any already known sites which will require protection, or if there is a need for a Section 87 Permit or Section 90 Consent (see below). The AHIMS database is not a conclusive indicator that sites may exist in the development area. Information from the AHIMS database may be made available by the AHIMS Registrar. For contact details and general information about the Aboriginal Heritage Information Management System please refer to Attachment 1.

- The Aboriginal community (which may include Local Aboriginal Land Councils, Native Title Groups and Elders Groups) needs to be consulted so that they can be advised that there may be impact to sites relevant to their heritage. There also may be knowledge in the community about sites in the development area, particularly those related to oral tradition. This process of Aboriginal consultation should be maintained throughout the entire EIS procedure.

- An assessment of the need for an archaeological survey, and if so, to what level of detail. This should be defined by a study plan or research design. In most cases, an on-the-ground systematic archaeological investigation will be needed. If there is a likelihood of buried sites not visible on the surface, a Section 87 Permit from the DEC may be needed for sub-surface testing.

- The outcome of the survey is to determine what sites can be avoided, and what ones cannot. Another objective is to assess the significance of the sites. It maybe that damage or destruction of some sites is unacceptable, or that special safe-guards are needed for others.

A broad overview of the Aboriginal Heritage Assessment process is
contained in Attachment 2.

If Aboriginal objects/places are known to be directly or indirectly adversely affected, the Proponents will need to apply for, and be issued, a Section 87 Permit or a Section 90 Consent by the Director-General of the DEC to comply with the National Parks and Wildlife Act (1974). A necessary part of this is a written statement detailing the concerns and opinion of the proposed impact from the Aboriginal community.

Normally, Special Conditions are attached. These may include provisions for impact minimisation and salvage. Salvage is a form of mitigation by documenting in detail what is to be lost by the impact. Frequently it involves archaeological excavation and analysis, or other types of recovery and study.

Alternatively the development might be redesigned by the Proponent to accommodate and protect the site(s). The archaeological survey, analysis and reporting, as well as the negotiation with the Aboriginal community, can be a lengthy process. If a Permit for salvage is needed, then this can add on more time. It is important to begin the study for Aboriginal site impacts in the very earliest stages to avoid delays in the developments’ timeline.

The DEC has produced detailed guidelines for consultants and these are available from the Cultural Heritage Manager.

Further information should be sought from the Cultural Heritage Manager at the NPWS office at Dubbo.

Cultural Heritage Manager
Western Aboriginal Heritage Unit
Department of Environment and Conservation

52 Wingewarra St
PO Box 2111
DUBBO NSW 2830

PH  (02) 6883 5345
FAX  (02) 6834 9382
The National Parks and Wildlife Service maintains the Aboriginal Sites Register of NSW. The Register includes a computer database and site recording cards for all recorded Aboriginal sites in NSW, in addition to a database index of archaeological reports and a library of these reports. Information from the Register may be made available for a variety of uses.

**What information is available?**

Information relating to recorded Aboriginal sites in a particular area may be made available upon request. The information is generally available in the form of a standard report from the Register database. This report lists all recorded sites within and/or surrounding the area of interest, with each record including the site identifying number, site type, site location and Australian Map Grid co-ordinates, date of recording and the name of the recorder of the site.

If the area of interest is particularly large (e.g., a river catchment), a Data Licence Agreement may be required. This agreement is a legal contract document between the Director-General of the National Parks and Wildlife Service and a named client, and is designed to ensure that any data supplied under the agreement is used appropriately.

In some cases, written support from the relevant Local Aboriginal Land Council may be required before information can be provided from the Register.

**How is the data provided?**

Site information will generally be provided as a standard computer print out, however, digital computer formats on disk may be available for specific purposes.

**Is there a charge for data?**

The cost for supply of a standard report is $30 per search area. An urgent database search may be conducted for $60. More complex reports may incur an additional charge.

In particular circumstances there may be no charge for a report (e.g., for Aboriginal Land Councils, research purposes etc.). The waiving of any charge requires discussion with the Aboriginal Sites Registrar.

There is no charge imposed for a Data Licence Agreement, however, any data supplied under a Licence Agreement will generally be charged at the current “cost of transfer”.

**Are there any limitations in the data?**

It is essential to note that a report from the Register does not represent a comprehensive list of all Aboriginal sites in a specified area. A report lists recorded sites only. In any
given area there may be a number of undiscovered and/or unrecorded sites. As a result of this limitation, and the fact that all Aboriginal sites are protected under NSW legislation, the NPWS may recommend that a survey for Aboriginal sites is conducted where development is proposed.

Locational details are recorded as grid references. It is important to note that there may be errors in these recordings. If accurate site locations are required it may be necessary to confirm the locations on the ground.

If the information provided is to be used for ongoing purposes, it is recommended that regular updates are obtained as new records are continually being added to the database.

**How to obtain Aboriginal sites data**

To obtain information about recorded Aboriginal sites, a written request should be forwarded to the Aboriginal Sites Registrar (a request form is available if required). All requests must include;

- Company/organisation name (if applicable)
- Contact name, phone number and address details
- Purpose for which the information is required
- Copy of a topographic map with the area of interest clearly marked
- A cheque for $30 per search area, made out to the NPWS (unless other arrangements have been made with the Registrar)

Applications should be forwarded to:

**The Aboriginal Sites Registrar**
Cultural Heritage Division
NPWS
PO Box 1967
Hurstville, NSW 2220.

or fax (02) 9585 6466

**Further information**

For further information about the Aboriginal Sites Register, please contact the Aboriginal Sites Registrar (02 9585 6471, fax 02 9585 6466).
PROGRESS
1. Development proposal.

2. Investigative studies and assessments. This could include: Aboriginal heritage, flora and fauna, hydrology, air, noise, social/economic etc.

3. For Aboriginal heritage, information is required about:

4. Information sources:
NB: Test excavations may be required. This requires a permit from NPWS, allow 8 weeks for processing.

5. Undertake assessment

6. Prepare report and recommend management options.

7. Apply this and information from other assessments to development concept and finalise development proposal. Avoiding impact on sites is the preferred strategy.

8. Lodgement of DA with consent authority

9. DA is an IDA if development will impact on Aboriginal sites in accordance with Section 90 of the NPW Act 1974.

DEVELOPMENT PROPOSAL

ABORIGINAL HERITAGE ASSESSMENT

Aboriginal cultural values

Archeological/scientific values

Consult with the Aboriginal community to identify sites/ places of cultural significance

Field survey to locate and record sites

Check NPWS Aboriginal Sites Register (AHIMS)

Test excavations

Assessment of cultural values

Assessment of archaeological values

- Write report which integrates the cultural and technical assessments
- Develop management options. Consider conservation, compensatory areas.

- Apply information to development concept.
- If sites will be impacted by the proposal, and no alternative options (e.g. conservation) are available, ensure that the DA contains site-specific recommendations

Lodge DA with consent authority.

No impact on Aboriginal sites

Not an integrated development application for NPWS.

Impact on Aboriginal sites

Integrated development application for NPWS if S90 (destruction) is involved.

Referral to NPWS for its general terms of approval.
1. The Department of Environment and Conservation (DEC) respects and acknowledges the role of Aboriginal people in the management and protection of their cultural heritage.

2. These interim guidelines are to guide persons seeking an approval under Part 6 of the National Parks and Wildlife Act 1974.

3. DEC has developed these interim guidelines to clarify and reaffirm the intent of its policies regarding the requirements for consultation by proponents with members and representatives of Aboriginal communities.

4. These interim guidelines seek to be clear as to what the parties involved in this process should expect and, in doing so, seek to be workable and fair to all parties.

5. DEC is committed to developing a more detailed guideline to replace this interim guideline, based on consultation with the Aboriginal community and other stakeholders in 2005.
Part A: Scope and introduction

This is a document focusing on the requirements for engaging with the Aboriginal community as part of the preparation of an application for a consent or permit under Part 6 of the National Parks and Wildlife Act 1974.

Input from the Aboriginal community is an essential part of assessing the significance of those Aboriginal objects likely to be impacted by an activity. Hence DEC requires proponents to undertake consultation with the Aboriginal community as an integral part of the impact assessment.

This document replaces all previous DEC or NPWS policy or procedural documents relating to Aboriginal community consultation connected with Part 6 approvals. It applies to all applications lodged from 1 January 2005.

Statutory framework

Why does DEC manage Aboriginal cultural heritage? Where does it get its authority?

The National Parks and Wildlife Act 1974 (NPW Act) is the primary legislation regulating the protection of Aboriginal heritage through the administration of Part 6 of the NPW Act. DEC administers the NPW Act.

Part 6 of the Act provides protection for Aboriginal objects and Aboriginal places.

- An Aboriginal object is any deposit, object or material evidence (not being a handicraft made for sale) relating to Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains (as defined within the meaning of the NPW Act).

- An Aboriginal place is a place which has been declared so by the Minister administering the NPW Act because he or she believes that the place is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects.¹

DEC responsibilities under part 6 of the NPW Act are triggered where an activity is likely to impact on Aboriginal objects (also referred to as sites) and declared Aboriginal places. Such an activity requires the approval of the Director General of DEC under section 87 or section 90 of

¹ Aboriginal places are those that have been gazetted in accordance with section 84 of the NPW Act. It should be noted that the NPW Act does not provide protection for spiritual areas or natural resource areas that have no physical evidence of Aboriginal occupation or use, unless they have been declared an Aboriginal place.
the NPW Act. Section 91 of the Act requires that DEC be notified by any person who is aware of the location of an Aboriginal object within a reasonable time after discovery of that object.

The decision whether or not to issue a consent under section 90 and/or a permit under section 87 of the NPW Act is the responsibility of the Director General of DEC. It is the responsibility of the proponent to supply sufficient information to enable the Director General to make a decision.

**Why DEC requires consultation**

DEC recognises that:

- Aboriginal heritage has both cultural and scientific/archaeological significance and that both should be the subject of assessment to inform its decision-making
- Aboriginal people are the primary determinants of the significance of their heritage
- Aboriginal community involvement needs to occur early in the assessment process to ensure that their values and concerns are taken fully into account, and so that their own decision-making structures are able to function
- Information arising out of consultation allows the consideration of Aboriginal community views about significance and impact, as well as the merits of management or mitigation measures to be considered in an informed way.

Hence, when administering its approval functions under the NPW Act, DEC requires applicants to consult with the Aboriginal community about the Aboriginal cultural heritage values (cultural significance) of Aboriginal objects and places within the area being considered for development.

However, community consultation is not a sign-off or approval process. The NPW Act establishes the Director General of DEC as the decision-maker. DEC recognises that its decisions will not always be consistent with the views of the Aboriginal community and that there may not always be agreement within the Aboriginal community. However, DEC will take into account all relevant information it receives as part of its decision-making process.

The community consultation process ensures Aboriginal communities have the opportunity to improve assessment outcomes by:

- influencing the design of the assessment of cultural and scientific significance
- providing relevant information regarding the cultural significance values of the objects/places
- contributing to the development of cultural heritage management recommendations

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2 A DEC section 87 permit is required to disturb, move and or take possession of an Aboriginal object or disturb land for the purpose of discovering an Aboriginal object. A DEC section 90 consent is required to destroy, damage or deface an Aboriginal object or Aboriginal place. In the Act, these are collectively referred to as 'approvals'.

3
• providing comment on draft assessment reports prior to their submission.

Summary of the roles of the parties

Proponent
Initiates the proposal; seeks the views of the Aboriginal community about methodologies; gathers cultural and archaeological information; uses this information to assess its significance; undertakes assessment of potential impact; gathers the views of the Aboriginal community about potential impacts and the mitigation of these; and provides the results to DEC in a report to accompany applications for approval.

Aboriginal community
Members of the Aboriginal community are the primary determinants of the significance of their heritage. They may participate in the process through comment on the assessment methodology, contributing cultural knowledge and commenting on cultural significance of potential impacts and/or mitigation measures. These comments are provided through the assessment process conducted by the proponent.

DEC
Is the decision-maker; reviews information from the proponents, including information about the views and knowledge provided by the Aboriginal community; and makes a decision to grant or not grant approval (with or without conditions).

Service providers
Various parties with specialist skills or knowledge can be engaged by proponents to help them fulfil their responsibilities. Services provided can include Aboriginal assessment and advisory services and archaeological services.
Part B: Consultation requirements

In reviewing applications for consents and permits, DEC will look to see that the following consultation requirements have been met.

1: Notification and registration of interests

The proponent or their consultant\(^3\) (referred to as ‘the proponent’ below) must actively seek to identify stakeholder groups or people wishing to be consulted about the project and invite them to register their interest.

To this end, it will be sufficient for the proponent to provide written notification to:

(a) the bodies listed below –

- Local Aboriginal Land Council(s)
- Registrar of Aboriginal Owners
- Native Title Services
- local council(s)
- Department of Environment and Conservation\(^4\), and

(b) via an advertisement in the local print media.

The notification must set out details of the proposal and invite registrations from interested groups or individuals. A closing date for registration of interest must also be included. The time allowed should reflect consideration of the project’s size and complexity, but must in all cases allow at least 10 working days to respond.

The proponent must record all registrations received in writing before the closing date. DEC requires the proponent to include all parties that have registered their interest in Step 2 below. Respondents that do not register by the due date may still participate in the consultation process in Step 3.

2: Preparation for the assessment (design)

Proponents are required to undertake a cultural assessment and a scientific/archaeological assessment. These assessments are then to be integrated into a single Cultural Heritage Assessment Report.

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\(^3\) Proponents may engage consultants to assist them. These could be Aboriginal or non-Aboriginal persons with the appropriate expertise.

\(^4\) Address correspondence to Executive Director Operations, Department of Environment and Conservation, PO Box A290, Sydney South NSW 1232.
The proponent must present and/or provide the proposed methodology for the cultural and archaeological assessment to the registered stakeholders. The stakeholders are then provided with a reasonable time (at least 21 days) to review and provide feedback to the proponent, including identification of issues/areas of cultural significance that might affect, inform or refine the methodology. Comments should be provided in writing, or may be sought verbally in a meeting with the registered respondents. In either case they should be documented in the proponent’s assessment report.

The design of the cultural assessment must consider the following factors:

- notifying Aboriginal people in sufficient detail about activities which may impact on Aboriginal heritage, so that their concerns can be identified
- providing the opportunity for Aboriginal people who hold knowledge to contribute to the assessment process
- identifying objects and places of significance to the Aboriginal community that may be impacted by the proposal so that these impacts can be avoided wherever possible
- identifying whether there are culturally acceptable mitigation measures when impacts are considered to be unavoidable by the proponent.

The consultant must consider any comments provided and explain in the final report how those comments were considered in finalising the methodology. DEC does not require that the proponent remunerate individuals or groups providing feedback on proposed cultural or archaeological methodology.

3: Drafting, review and finalisation of the Cultural Heritage Assessment Report

The proponent must execute their finalised assessment methodology and then produce a draft assessment report on the cultural and archaeological significance of the values that may be impacted by the proposal. The report must:

- detail the objects and places identified and how they will be impacted by the development
- detail the consultation undertaken and how comments received at various times were considered
- include management and mitigation recommendations drawing on both information provided by the stakeholders and the results of the cultural and archaeological assessments.

Once the draft report is completed, notice of its availability must be provided to all the registered stakeholders identified in Step 1, and the Local Aboriginal Land Council (even if not registered) for comment.
Any additional stakeholders who have identified themselves to the proponent in writing after Step 1 must also be notified that the draft report is available and their comments invited.

After considering the comments received the consultant/proponent must then finalise the report, demonstrating how comments received have been considered and submit it to DEC for consideration with their application.

**DEC decision**

On receipt of sufficient information from the applicant, DEC will proceed to make its decision. The outcome of decision-making will be either the granting or refusal of the application(s), with or without conditions. If consent is approved then, in imposing any conditions, DEC will take into account the views of the Aboriginal stakeholders as reflected in the Cultural Heritage Assessment Report.

DEC does not seek to consult directly with the Aboriginal community in relation to the issuing of consents under Part 6 of the NPW Act. This is because it requires the proponent to provide it with the views of and information from interested parties. In making its decision, however, DEC will also consider any other relevant information that has been provided to it.
Part C: Provision of Aboriginal assessment and advisory services

In addition to providing feedback on the proposed methodology, registered stakeholders may lodge offers to provide Aboriginal assessment and advisory services to the proponent for the cultural assessment and/or the archaeological assessment.

In meeting DEC requirements, the proponent should expect that offers to participate in the archaeological assessment will detail skills and experience in one or more of the following:

- field identification and survey techniques (including confirmation of physical ability to undertake fieldwork)
- cultural knowledge
- ability to assist in communicating the results of the survey back to the stakeholders for the assessment of cultural values and significance and returning advice on their response to the proponent.

The number of Aboriginal people that a proponent might engage in the archaeological assessment will depend on the scale and nature of the project, and should provide a balance of field experience and cultural knowledge. DEC anticipates that in some instances there will be multiple offers from suitably qualified, skilled or experienced Aboriginal people. DEC does not require all such people to be engaged, as the number and type of service providers to be engaged is a matter for proponents to determine. The focus should be on improving the outcome of the assessment process and may require some form of competitive selection by the proponent.

DEC does not have or seek a role in the determination of fees or other terms of engagement for service providers. This is a contractual matter between the proponent and service providers. However, it is recommended that the proponent should ensure that the engagement of service providers is through a written agreement or contract that addresses all of the following:

- the services to be provided
- roles and responsibilities of the parties
- payment terms.

The above arrangements mirror DEC expectations regarding engagement of scientific/archaeological services.
Attachment

Measures to control diffuse water pollution to be included in Development Control considerations.

1. The proponent should incorporate best management practices in the proposal in order to minimise impacts on water quality during construction and long-term operation/management of the development. The proponent should also plan for any emergency events that are likely to impact on the environment.

2. The proponent should produce an estimate of the expected change in pollutant loads from the site that would result if the proposal were implemented with these best management practices in place ('residual' loads).

3. Where there is an increase in pollutant load as a result of the development (i.e. the residual load is greater than zero), the proponent should identify and describe the likely environmental impact (e.g., changes in water quality) of these loads and any other significant impacts from the development.

4. The proponent should consider water quality impacts in designing the scale and nature of the development given the proposed location;

5. If a relevant planning document (for example a Regional Environmental Plan or Water Management Plan) addresses the requirements for new development, the consent body should follow these requirements. In relation to urban development proposals, the stormwater management objectives defined in Council's stormwater management plans should be considered;

6. If there are no specific requirements in relevant planning documents the consent body should consider the significance of the likely impacts in the context of the state of the relevant catchment and the water quality objectives set for relevant water bodies. Water Quality and River Flow Interim Environmental Objectives are available on the DEC web site at www.epa.nsw.gov.au.

If the consent body believes that the anticipated residual loads may have a significant impact, the proponent should be encouraged to consider offsetting measures that would reduce other nearby existing sources of the pollutants or impacts so.

7. The consent body should take any estimated residual pollutant loads and impacts into account as it considers the overall merit of the proposal.
Mark Syke  
Associate  
Connell Wagner Pty Ltd  
2 Palmer St  
NORTH PARRAMATTA NSW 2151

Dear Mr Syke

EGLINTON VILLAGE EXPANSION LOCAL ENVIRONMENTAL STUDY – SECTION 62 CONSULTATION

Thank you for this opportunity to provide an opportunity to raise issues in relation to a local environmental study for the expansion of Eglinton Village in your letter dated 16 August 2005. The recognition of the need to consider the protection of rural land and its intrinsic value to the community, and the need to consider the boundary situations between urban and agricultural lands are the main focus of our issues. The Fisheries Division of my Department has also provided information requirements for the preparation of the study in light of the provisions in the Fisheries Management Act, 1994 and the policies that underpin them.

Agriculture is still significance in the Bathurst City area and not restricted to its economic output. Values such as scenic amenity, the association of the district with its agriculture and its values to other industries such as tourism also supports the need to consider the protection of agricultural land in the area. The context of the village expansion in relation to this strategic Council wide issue of protecting agricultural and other resource lands for current and potential primary production should also be considered.

DPI Fisheries are responsible for managing fish (including aquatic invertebrates) and fish habitat throughout NSW. The departments’ goals encompass protecting wetlands and promoting rehabilitation of degraded aquatic environments. This includes protecting rare and threatened species and maintaining aquatic biodiversity. Fisheries also aim to provide quality recreational and sustainable and viable commercial fishing opportunities.

Protection of Agricultural Land and Agricultural Landuse

Agricultural land itself is a finite resource, and deserves protection rather than it being seen as a resource waiting for other uses. It will assist agriculture in the area to have a more stable basis for long term security and surety of investment. The Bathurst area has an important history in the community and the scenic qualities it also contributes to.
The impact of urbanising such land is not only shown in its decline as a resource and the production aspects, but also it has to deal with ongoing threats to its existence with issues such as land use conflict and land speculation. Hence this study should ensure that future land demands for urban use should be justified and clearly set out in terms of development for the long term. Appropriate provisions in separating land uses should also be assessed.

**Boundary Issues and Conflict**

The area surrounding the current village has traditionally played an important role in agricultural use. This landuse should be taken into account in assessing the potential for conflict and ensuring any planning takes into account the ongoing use of such land. The issue of how the areas will interact with other uses and whether the land is retained and how existing agriculture will be able to be considered as a future landuse in the area.

Consideration of the industry of agriculture and its associated externalities, some negative is an issue. Many of these impacts can be minimised and/or avoided through sound farm management, however some impacts, such as odour and noise, are strongly influenced by the location of sensitive receptors in proximity to agriculture. As it would be unreasonable to locate residents in proximity to an industrial zone, it is also unsound to place rural or urban residents in proximity to agricultural developments.

**Agriculture and the Environment**

Environmental management is a major issue in the Council area, so policies and strategies for future development should also consider how it could best be dealt with in planning provisions. In considering the design of such areas and the potential for enhanced management, practises that increase the efficiency of water use and disposal are needed. These may include efficient use of water, maintaining groundcover, implementing sound watering regimes, and encouraging vegetation conservation or establishment. Agricultural lands and their management can play an important part in achieving this in the landscape.

**DPI Fisheries issues**

Fisheries provide the following information requirements for the preparation of the LES in light of the provisions in the *Fisheries Management Act, 1994* and the policies that underpin them.

- The whole area which may be affected either directly or indirectly by the development or activity must be identified and shown on an appropriately scaled map with aerial photographs.

- All waterways and waterbodies within the proposed area of development, or likely to be affected by the development, including freshwater lakes, wetlands and streams are to be identified. Descriptions of the affected streams and rivers should include a maximum and minimum or percentile flow (megalitres/day), length, presence of gravel beds, presence of waterfalls or barriers to fish movement and substrate type. A description of aquatic vegetation, large woody habitat (snags), gravel beds and any other protected, threatened or dominant habitats should be presented. A description of any activity that is likely to affect any waterway is required. For this development, this may include but is not limited to upgrade or establishment of waterway crossings and abstraction of water either directly, by surface harvesting or detention basins.
Developments should aim to achieve no net impact upon the receiving waterway. Impact assessments should, as a minimum, include analysis of dissolved oxygen, pH, turbidity, temperature, toxicants, salinity and nutrients and take account of the existing water quality status of the receiving waterway.

The planning for and construction of new housing estates and other developments should include provision for gross pollutant traps, sedimentation ponds and artificial wetlands to remove nutrients and sediments from stormwater as an integral component of the development. Existing natural or modified fish habitats must not be destroyed or alienated in the process of creating these facilities.

Stormwater from roads, carparks and other paved surfaces should be channelled away from aquatic habitats into well established terrestrial vegetation which can act as a filter and adsorb nutrients and sediments.

Nutrient concentrations, particularly forms of nitrogen and phosphorous in stormwater and surface run-off must comply with relevant guidelines and should be minimised to prevent excessive growth of algae and other vascular plants.

A list of threatened fish species that may be directly or indirectly impacted upon by the development must be presented. An eight part test is required for threatened species that historically occur within the region.

It should be established if any affected waters are used by aquaculture operators, commercial or recreational fishers and an evaluation of the importance of these attempted.

Existing and other proposed developments and activities in the area which could be relevant should be briefly described and mapped. Mention should be made of any apparent adverse cumulative effects that these may have on the aquatic environment.

The prediction of impacts should be clearly stated and framed as specific hypotheses with quantification of expected change.

The effect of the proposed development on the aquatic environment must be assessed. Recommendations must be made concerning:

a) What actions will occur if the expected levels of predicted impacts are exceeded
b) Further information required before the commencement of the operation
c) Monitoring required during the construction and operational phases and after construction (related to specific hypotheses)
d) Safeguards and remedial measures to be taken to reduce adverse effects, including the creation of additional habitat and or proposed habitat compensation measures (eg monetary bond); and
e) Measures to be taken for increasing environmental benefits

In circumstances where all alternatives have been considered and a justifiable development is unable to proceed without destroying a quatic habitat, Fisheries may object to the development or habitat compensation may be required. If this is the case, details of proposed habitat compensation must be provided.

DUBBO OFFICE
PO Box 865, DUBBO, 2830
37 Carrington Avenue, DUBBO, 2830
Should you wish to discuss further details regarding agricultural resource land issues please contact Mary Kovac, Agricultural Environmental Officer at Dubbo on phone 68811270. Should you require further clarification on the fisheries requirements, please contact Sam Davis, Fisheries Conservation Manager ph. 02 68400 994.

Yours sincerely

GREG MARKWICK
Regional Director of Agriculture and Fisheries
(Central West)
NSW Department of Primary Industries
29 September, 2005
29 August 2005

Connell Wagner Pty Ltd
2 Palmer Street
NORTH PARRAMATTA 2151

Attention Mr Mark Syke

Bathurst Regional Council
Local Environmental Study – Eglinton Village Expansion
Section 62 Consultation

Dear Sir,

The Roads and Traffic Authority (RTA) has perused the area to be over which it is intended to carry out a Local Environmental Study for the expansion of the Eglinton Village.

The area of land is well removed from the State’s Arterial Road network, hence the RTA does not oppose the planned potential development of future residential development.

Of concern to the Authority is the potential for only one access road joining the village to the City of Bathurst. With the increase in residential buildings comes the increase in generated traffic. This leads to intersections that lie along the access road to reach their potential maximum capacity ahead of projected design years. There needs to be a plan put in place to ensure that potential residential growth pays towards the upgrade of the existing road infrastructure.

Within the design of the future infrastructure there needs to be accommodation made for transport services to adequately cater for the needs of residents.

Within the area of investigation, there needs to be defined the needs for future school sites, shopping centres, professional services and the like as the area will have the potential to service also those areas lying outside the study area.

Yours faithfully,

R T Wagg
For
Tony Hendry
Road Safety & traffic Manager
Western Region
Dear Mr Sherley,

**Eglinton Village Expansion Local Environmental Study**

I refer to a letter from your consultant Connell Wagner dated 17 August 2005, requesting information regarding the NSW Heritage Council’s requirements for the preparation of a local environmental study for an area comprising 347 hectares of land surrounding the existing village of Eglinton.

It is noted that the purpose of the local environmental study is to investigate the suitability of land within the study area for the expansion of Eglinton Village.

You are advised that the local environmental study should address the following issues:

- The heritage significance of the study area and the impacts that expansion of the existing village of Eglinton may have upon this significance. This assessment should include natural areas and places of Aboriginal, historic or archaeological significance. It should also include a consideration of wider heritage impacts in the area surrounding the site.

- The Heritage Council maintains the State Heritage Inventory which lists some items protected under the Heritage Act, 1977 and other statutory instruments. This register can be accessed through the Heritage Office home page on the internet (http://www.heritage.nsw.gov.au).

  It should be noted that the legal standing of items listed on the State Heritage Register can also be provided by applying for a section 167 Certificate through the Heritage Office home page.

  The lists maintained by the National Trust, the Department of Environment and Heritage and the local council in order to identify any identified items of heritage significance in the study area. Please be aware, however, that these lists are constantly evolving and that items with potential heritage significance may not yet be listed.

- Non-Aboriginal heritage items within the study area should be identified by field survey. This should include any buildings, works, relics (including relics underwater), gardens, landscapes, views, trees or places of non-Aboriginal heritage significance. A statement of significance and an assessment of the

Helping the community to conserve our heritage
impact of the proposal on the heritage significance of these items should be undertaken. Any policies/measures to conserve their heritage significance should be identified. The assessment should be undertaken in accordance with the guidelines in the NSW Heritage Manual. The field survey and assessment should be undertaken by a qualified practitioner/consultant with historic sites experience. The NSW Heritage Office can provide a list of suitable consultants.

- The proposal should have regard to any impacts on places, items or relics of significance to Aboriginal people. Where it is likely that the project will impact on Aboriginal heritage, adequate community consultation should take place regarding the assessment of significance, likely impacts and management/mitigation measures. For guidelines regarding the assessment of Aboriginal sites, please contact the National Parks and Wildlife Division of the Department of Environment and Conservation on (02) 9585 6444.

- The relics provisions in the Heritage Act 1977 require an excavation permit to be obtained from the Heritage Council, or an exception to be endorsed by the Heritage Council, prior to commencement of works if disturbance to a site with known or potential archaeological relics is proposed. If any unexpected archaeological relics are uncovered during the course of work excavation should cease and an excavation permit, or an exception notification endorsement, obtained.

- If approval is required under the Heritage Act 1977 due to the listing of an item or place on the State Heritage Register, or being subject to an Interim Heritage Order, the Heritage Council's approval must be sought prior to an approval being issued by the consent authority under the Environmental Planning and Assessment Act 1979 (except where application relates to Integrated Development). In accordance with section 67 of the Heritage Act 1977, an approval given by a consent authority in these cases before the Heritage Council's determination of the application has been notified to the consent authority, is void.
The Heritage Office would be happy to review any further documentation that may address any likely heritage impacts.

If you require any additional information please contact Alice Brandjes on (02) 9873 8560.

Yours sincerely

[Vincent Sicari’s signature] 23/09/05

VINCENT SICARI
Principal Heritage Officer

CC Mark Syke
Connell Wagner
2 Palmer Street
North Parramatta NSW 2151
Dear Sir / Madam,

Re: Eglinton Village Expansion Local Environmental Study

I refer to your letter dated 16 August 2005 seeking our advice in accordance with Section 62 of the Environmental Planning & Assessment Act 1979 for the preparation of a Local Environmental Study (LES) for the Eglinton Village and apologise for the delay in responding.

The NSW Rural Fire Service (RFS) notes that the subject site is not identified as bush fire prone on the Bathurst Regional Bush Fire Prone Land Map. As such the RFS has no issues in relation to bushfire matters that require inclusion in the LES.

For any enquiries regarding this correspondence please contact Danielle Simpson.

Yours sincerely

Lew Short
Manager, Development Control Services
Anna,

Thank you for your email and attached plans.

As the development may affect Bathurst aerodrome, you will need to talk to the aerodrome manager - Wayne Sartori (at the Bathurst Regional Council) about the development. You can contact Wayne at the council on 02 6331 1622.

As the development may be within the obstacle limitation surfaces of the aerodrome, there may be height and noise issues that only the council can assist you with.

Kind regards,

Anthony

-----Original Message-----
From: Anna C Johnston [mailto:JohnstonAC@conwag.com]
Sent: Friday, 26 August 2005 2:42 PM
To: ROHEAD, ANTHONY
Subject: Re: Eglinton Village LES

Project Code: P713

Hi Anthony,

I spoke to you earlier today regarding our consultation letter. I looked up the location of the Bathurst Airport and it to the east of Bathurst, where as Eglinton is to the north so this is unlikely to be an issue (see Bathurst Airport attachment). The Eglinton Expansion study area is however within close proximity to the east of Pipers Fields Airfield (see Pipers Fields attachment).

Any further queries please give me a call. I look forward to your response.

Best regards,

Anna Johnston
Graduate Planner
Connell Wagner

Telephone: +61 2 9890 4100
Facsimile: +61 2 9890 3558
Email: JohnstonAC@conwag.com
Website: http://www.conwag.com

(See attached file: Pipers Fields Airport.pdf) (See attached file: Bathurst Airport.gif)
1st September 2005

Mark Syke
Associate
Connell Wagner Pty Ltd.
2 Palmer St.
North Parramatta
N.S.W. 2151 Australia.

Dear Mark,

RE: Eglinton Village Expansion Local Environmental Study Section 62 Consultation.

Country Energy are to construct one new 11kV feeder, out of Stewart Zone Substation, (existing electricity supply for the Eglinton Village is from Stewart Zone Substation), within the next two or three years, out of necessity for current and future load growth, in the Wentworth Estate, Avonlea, Riverview Heights and Eglinton areas.

Country Energy, along with the construction of the new feeder will re-configure and upgrade the existing distribution system, around the Eglinton Village.

Therefore with development of the planned 347 hectares and Capital Contribution (refer Policy CEK 8019, which is available on www.countryenergy.com.au ) to Country Energy, from Developers, electricity supply infrastructure and capability will continue to increase.

Yours sincerely,

[Signature]

Gregory Daymond
Planning, Protection & Connection Officer
Ph. No: 02 6338 3597
Fax No: 02 6338 3667

www.countryenergy.com.au
ABN 37 428 185 226
PO Box 718, 30 Morisset Street Queanbeyan NSW 2620 Phone: +61 2 6214 9600 Fax: +61 2 6214 9860
Appendix C

Community meeting group responses
1. Why did you choose to live in Eglinton?
   * We like the village atmosphere & community attitude.
   * The rural aspect.
   * Being separate from Bathurst yet close.

2. What are the things you like about Eglinton?
   * Friendly
   * Crime free
   * Community centered.
   * Safe for young ones
   * Great school.

3. What are the things you do not like about Eglinton?
   * The congested road cut here.
   * The narrow, unsafe streets eg Halsted that the council has created with the latest curb and guttering work.

4. What things would you like to change about Eglinton?
   * If it were to grow
   * Nothing. We love it the way it is.
   * More water freeness.
   * The current town roads are in bad repair.
   * The council neglects the town as it is.
5. Would you like to see further development in the Eglinton area? Why?
   - No - But if growth were to go ahead then land holders within zone who were against the LEP should not be ‘rated out’.

6. If development was to proceed, do you think the whole area should be developed or should there be a limit to further development? Why?
   - Slow
   - limited initially to boundaries - Fremantle / Mill Lane + Logan St. Duramana Rd + Cox’s Lane.

7. If development does proceed, would you like to see lot sizes similar to existing lots (about 900-1000 square metres), larger lots (2000 square metres or more), or some combination of these? Why?
   - larger lots as to attract high end market & keep rural look of area.
   - No Public housing.

8. Do you think there is a need for more local facilities (such as shops and open space) as part of any village expansion?
   - A green belt
   - bicycle tracks
   - continued Stewart St double lane to Eglinton Rd
   - skate park
   - If the area is to grow - suitable infrastructure / parks + community spaces, shops.
   - More area for local school
   - Wide roads with plenty of parking

BATHURST REGIONAL COUNCIL

Connell Wagner
1. Why did you choose to live in Eglinton?
- Family roots in Eglinton
- Small village attraction
- Born and bred in Eglinton
- Family reasons
- School

2. What are the things you like about Eglinton?
- Quietness
- No pubs
- Sense of community aligned with small village
- Safe environment for children

3. What are the things you do not like about Eglinton?
- Setting bigger
- Increasing level of vandalism

4. What things would you like to change about Eglinton?
- Better sporting facilities - Normaie Field
- Landscape cubic oval make it better environment
- Footpaths
- More bicycle tracks
5. Would you like to see further development in the Eglinton area? Why?

Yes - Land owner.
No - Resident. Don't like it the way it is. Village atmosphere.
     - Close knit community.

6. If development was to proceed, do you think the whole area should be developed or should there be a limit to further development? Why?

- Limit development to bigger blocks to limit number of residents.
- Feel it will be limited due to the area proposed to be built for short to medium term.
- Limit so area mixed with houses of Portland.
- RCC roads would not cope.

7. If development does proceed, would you like to see lot sizes similar to existing lots (about 900-1000 square metres), larger lots (2000 square metres or more), or some combination of these? Why?

- Large lots - to limit residents or spread people out more.
- Key is that whatever lot size, it needs the same services with sewerage, gutters etc.

8. Do you think there is a need for more local facilities (such as shops and open space) as part of any village expansion?

- Will need more open space grounds.
- Increase size of School. The new school is at capacity now.
- Identify park land & make plans for future infrastructure - plan location for parks and commercial centre so people know what their options are.

Bathurst Regional Council

Connell Wagner
1. Why did you choose to live in Eglinton?

Because it's small village atmosphere
quietness - less traffic.
views - to mountains etc.
larger blocks.
shorter roads reduces traffic.

2. What are the things you like about Eglinton?

School has an excellent school.
low crime rates.
transportation.
Community spirit.
quiet weekends.
Village atmosphere.

3. What are the things you do not like about Eglinton?

Overhead power.
already increased traffic - bottlenecks at Hamilton st.
approach from Bx to Rankin's Bx.
shortage of footpaths.
highly reactive soils.

4. What things would you like to change about Eglinton?

Lack of trees, especially in parkland & streets.
Recreational walks - access to River, or along
tracks Bx.
5. Would you like to see further development in the Eglinton area? Why?

No! See Q's 1 & 2.

We are a village!
The pressure on school, water, sewage, roads. It would make it 3x the current size.

6. If development was to proceed, do you think the whole area should be developed or should there be a limit to further development? Why?

* No development behind Alexander St - wetlands/watercourse
* Increase of traffic, school pressure - limit development
* Recreational walks
* Back access to school - extend grounds to wetlands
* No sewerage treatment works nearby
* No houses on hill area along Duramana Rd - affects views
* No houses close to Saltair Creek

7. If development does proceed, would you like to see lot sizes similar to existing lots (about 900-1000 square metres), larger lots (2000 square metres or more), or some combination of these? Why?

Mostly larger or at least the same as the original blocks - limit population density; to maintain village atmosphere. Consultation on street names.

8. Do you think there is a need for more local facilities (such as shops and open space) as part of any village expansion?

No shops, pubs, petrol stations.
No double storey development - single story houses
Public high school
Water recycling in new areas

Bigger hall
More parks

(6) continued. - Wetland part made into reserve, cycle ways, boardwalk, recreational area, wildlife corridor.
1. Why did you choose to live in Eglinton?
   "Small, community, used to be a "village." Grew up here, the school, "quiet, environment, watching sunsets over a base LiU (Mt. Rankin)"

2. What are the things you like about Eglinton?
   "Friendly feel about the place, knowing local faces, the school, community feel, "quiet, little village" (small school), high % of homeownership - respect home / neighbours.

3. What are the things you do not like about Eglinton?
   "It's getting too big, need more footpaths. No full time Fire Brigade available to Bathurst. Little own Eglinton eg: Kelso High. Reactive soil."

4. What things would you like to change about Eglinton?
   "No development, facilities for children need to be upgraded eg: skate park, no bike track, basketball park, 'open' toilet facilities, the water pressure has dropped over the last six years in houses."

P.S. It's nice and quite the way it is. All the same.
5. Would you like to see further development in the Eglinton area? Why?
   - Lose the village feel, if it develops it won't be a village anymore
   - Land value depreciates - Rates (?) upgrading of sewage, water, gas etc.
   - Fear of extra traffic / extra crime / diminishing productive rural land
   - Skum areas, riff-raff
   - Large companies buying up and start looking like 'ibmone Park'
   - Environmentally damaging to the river

6. If development was to proceed, do you think the whole area should be developed or should there be a limit to further development? Why?

   No the whole area shouldn't be developed. If it does proceed there should be a buffer zone between school and future properties (development.)
   A limit so this issue doesn't come up again in 10 years.

7. If development does proceed, would you like to see lot sizes similar to existing lots (about 900-1000 square metres), larger lots (1200 square metres or more), or some combination of these? Why?

   Rural residence - 10 acres to 20 acres.

8. Do you think there is a need for more local facilities (such as shops and open space) as part of any village expansion? Yes definitely!!!

   - Severe lack of road maintenance at the moment so what's going to happen with more cars etc!??
   - Fear of extra strain on sewage/water/water pressure etc."
   - Public sewer in being put in
   - Wouldn't like to see the constant inconvenience of building + laying sewage pipes etc turning E60 into a constant laveling construction zone

   Who cares it? Property owners at the moment!?
Appendix D

Community information sheets
Introduction

This Community Information Sheet is the first of a series to be prepared for this project over the coming months. It is intended to inform you about the planning and environmental investigations being undertaken for the possible expansion of the Eglinton village and about opportunities for your involvement in the study process.

Bathurst Regional Council has appointed Connell Wagner to undertake the investigations and to prepare what is known as a local environmental study for rural land surrounding the existing village. The purpose of the local environmental study is to investigate whether the land is suitable for residential development and consider the appropriate form of future development.

Depending on the findings of the study, council may proceed to rezone the land for urban development as part of a comprehensive local environmental plan for the Bathurst area.

Study area

The study area comprises private landholdings surrounding the existing village as shown on the plan below. The total area is about 347 hectares.
Study process and timeframe

The local environmental study is being undertaken in three stages. The first stage involves a range of planning and environmental investigations to identify development constraints and opportunities and initial consultation with stakeholders and the Eglinton community. This first stage is expected to be completed mid-September.

The second stage involves the preparation and assessment of possible development options for the area and further community consultation. This stage is expected to be completed early November.

The third and final stage involves preparation of the local environmental study report and is expected to be completed prior to Christmas. It is anticipated that council will exhibit the local environmental study for public comment early next year.

Community consultation

Stakeholder groups and landowners within the study area will be invited over the next few weeks to express their views on the development of the area through written submissions and meetings with the study team.

The first of two community meetings will be held on Wednesday 14 September. The details are:

Eglinton Community Hall @ 7:00pm on Wednesday 14 September.

All Eglinton residents and others with an interest in the local environmental study are welcome to attend. The meeting will provide an opportunity for the study team to hear your views on the future development of the area.

A second community meeting will be held during October to discuss possible development options for the area.

Written submissions from the local community are welcome at any stage of the study and should be forwarded to Connell Wagner.

Who to contact

The project manager for the local environmental study is:

Mark Syke
Connell Wagner
2 Palmer Street
North Parramatta 2151
Phone: 9890 4100
Fax: 9890 3558
Email: sykem@conwag.com

You can also contact the Environmental Planning and Building Services Department of Bathurst Regional Council on 6222 6211 or council@bathurst.nsw.gov.au.
Introduction

This Community Information Sheet is the second of a series for this project. It is intended to provide you with an update on the progress of the local environmental study and inform you about ongoing opportunities for your involvement in the study process.

Community consultation update

The study team has received some written submissions on the study from stakeholder groups and landowners and has met with a number of individual landowners and Eglinton Public School representatives to discuss the study and the possible future development of the area.

A community meeting was also held at the Eglinton War Memorial Hall on Wednesday 14 September to provide an opportunity for the local community to express its views on the future development of the area.

28 people attended the meeting and provided input into the study through group discussions and responses to questions put forward by the study team. The questions were designed to provide the study team with a better understanding of community attitudes to living in Eglinton and possible future expansion of the Eglinton village.

The key messages from the meeting were:

• The Eglinton community values the small and friendly village atmosphere and the sense of community.

• The Eglinton primary school is a cornerstone of the community and attracts people to Eglinton.

• Residents like the rural aspect of the village and being close but separate to Bathurst.

A COMMUNITY INFORMATION DAY WILL BE HELD AT THE EGLINTON WAR MEMORIAL HALL BETWEEN 9:00AM AND 4:00PM ON SATURDAY 29 OCTOBER.
People do not like that Eglinton is getting bigger and have concerns about traffic congestion and the lack of infrastructure such as footpaths.

Eglinton residents would like to see better sporting and recreational facilities for children, better landscaped parks and streets, and more walking and bicycle paths.

Most people indicated they would not like to see further development in Eglinton. The main concerns are loss of the village atmosphere and rural feel, increased traffic and crime, and pressure on infrastructure and services.

Residents felt that if development was to proceed then the extent of development should be limited and that lot sizes should be larger than the existing village lots to maintain the rural feel of the area and limit population increase. There was a view that new housing should be limited to single storey development.

Most people felt there was a need for more open space and recreational facilities and an expanded primary school as part of any village expansion. There were mixed views on the need for commercial facilities within Eglinton.

The consultation undertaken provides valuable input into the study and will be documented in the local environmental study report.

Study process and timeframe update

The first stage in the local environmental study process has been completed including identification of development constraints and opportunities and initial consultation with stakeholders and the Eglinton community.

The study team is now progressing the second stage of the study which involves the preparation and assessment of possible development options for the area. This stage is expected to be completed late October.

The third and final stage involves preparation of the local environmental study report and is expected to be completed prior to Christmas.

Come along to the Community Information Day

A Community Information Day will be held on Saturday 29 October between 9:00am and 4:00pm at the Eglinton War Memorial Hall.

Draft options for the possible future expansion of the Eglinton village will be on display and the study team will be available to discuss the options and answer your questions.

All Eglinton residents and others with an interest in the local environmental study are welcome to drop in at any time during the day to view the display. Comment sheets will also be available for you to express your views on the draft development options.

Written submissions welcome any time

Written submissions from the local community are welcome at any time and should be forwarded to Connell Wagner.

Who to contact

The project manager for the local environmental study is:

Mark Syke
Connell Wagner
2 Palmer Street
North Parramatta 2151
Phone: 9890 4100
Fax: 9890 3558
Email: sykem@conwag.com

You can also contact the Environmental Planning and Building Services Department of Bathurst Regional Council on 6333 6211 or council@bathurst.nsw.gov.au
Eglinton Village Expansion
Local Environmental Study

Introduction
This Community Information Sheet is the third and final of a series for this project. It is intended to provide you with an update on the progress of the local environmental study and feedback on the outcomes of recent community consultation.

Development scenarios
Development scenarios for the possible expansion of the Eglinton village have been prepared based on the technical investigations undertaken and the feedback from the public meeting. These range from no growth to high growth scenarios and include:

No growth scenario
• no further expansion of the Eglinton village

Low growth scenario
• village expansion limited to south of Wellington Street
• predominantly larger minimum 2000sqm lots
• estimated 153 additional lots and a population increase of 428
• estimated 8 year supply of residential land

Moderate growth scenario
Option 1
• village expansion limited to south of Wellington Street
• minimum 1000sqm lots consistent with existing development
• estimated 292 additional lots and population increase of 818
• estimated 15 year supply of residential land

Option 2
• village expansion extended north of Wellington Street
• 1000sqm lots south of Wellington Street with larger 2000sqm lots to the north
• estimated 445 additional lots and a population increase of 1246
• estimated 25 year supply of residential land

High growth scenario
Option 1
• expansion around entire village edge
• 1000sqm lots consistent with existing development
• estimated 558 additional lots and population increase of 1562
• estimated 30 year supply of residential land

Option 2
• urban expansion contained with rural residential development over the balance of the study area
• transition of rural residential lots from 4000sqm to 2 hectares
• estimated 768 additional lots and population increase of 2150
• estimated 40 year supply of residential land
Community consultation update

A Community Information Day was held on the 29 October 2005 at the Eglinton War Memorial Hall to provide the local community an opportunity to view and provide feedback on the development scenarios. The information day was well attended with about 90 people viewing the display over the course of the day. Those who attended were invited to provide feedback and raise any issues about the development scenarios.

People were asked to indicate their preferred development option by placing a red sticker on the option or options they would most like to see proceed. The numbers recorded for each option were:

<table>
<thead>
<tr>
<th>Development Scenario</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Growth Scenario</td>
<td>27</td>
</tr>
<tr>
<td>Low Growth Scenario</td>
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People were also asked to write comments about the options on sticky notes and place them on the plans. The issues raised consistently in the sticky notes collected included:

- The need for additional commercial facilities for the village. Many people felt that a separate area should be set aside for commercial development. However a number of people were also opposed to increased commercial development within Eglinton.
- Opposition to dual occupancy development in the existing village or any expansion area was expressed.
- Many people indicated that they would not like to see any further development in Eglinton or that any expansion should be kept to a minimum. In particular people felt that development would impact on the village character.

The consultation undertaken provides valuable input into the study and will inform the finalisation and assessment of the development scenarios. The outcomes of the consultation will also be documented within the local environmental study report.

Study process and timeframe update

The first and second stages of the local environmental study process have now been completed. The third and final stage involves finalisation and assessment of the development scenarios and preparation of a local environmental study report. The report is expected to be completed prior to Christmas.

Once the local environmental study report has been finalised it will be presented to Bathurst Regional Council for consideration. Council will aim to place the final report on public exhibition in early 2006 to obtain further community input. Following that exhibition process Council will then consider the findings of the study and make a decision on whether land around the village should be rezoned to enable further expansion of the village. Should Council support the expansion of the village, land will be rezoned as part of the comprehensive review of the LEP over the next few years.

Who to contact

If you have any other questions about the local environmental study process please feel free to contact Connell Wagner at any time. The project manager for the local environmental study is:

Mark Syke
Connell Wagner
2 Palmer Street
North Parramatta 2151
Phone: 9890 4100
Fax: 9890 3558
Email: sykem@conwag.com

You can also contact the Environmental Planning and Building Services Department of Bathurst Regional Council on 6333 6211 or council@bathurst.nsw.gov.au.
Appendix E

Written submissions
Dear John and Thelma

Thank you for your comments on the development scenarios.

Regards
Mark

"John & Thelma W. <jnw3tlw6@ix.net.au>

Attention Mark Syke.

Mark, I was unable to get back to the Eglinton Hall on Saturday with my comments on the Eglinton Village expansion, due to my wife's ill health. However I would like our comments considered with others re the proposed expansion.

After moving to Bathurst in 1971 for a quieter country life, we moved out of the city, to Eglinton some 12 years ago, because of, amongst other considerations, the congestion and traffic within that city's boundaries. We felt that Eglinton had the quiet, rural atmosphere, despite being just outside Bathurst itself. In that time we have seen some limited residential building work in the village. However Eglinton has now been virtually linked to and become a suburb of Bathurst due to the extensive subdivisions and building works between the two places. In addition the provision of a two lane bridge in place of the old single lane one over the river, and the provision of a larger and elevated causeway on the Eleven Mile Drive has undoubtedly contributed to an increased traffic flow through Eglinton. The local infrastructure struggles already to cope with these additional buildings and traffic.

We do not wish to see Eglinton expand at all, and are very happy to have it remain a village, with a small "corner shop". However we are sure that the extension is a "faite accompli", and the village will expand, despite our thoughts being sought. As such we feel that a minimal expansion is the most we could reluctantly support. e.g. Low Growth, Option 1, or at the most, Moderate Growth, Option 2A. With the option of "potential for future subdivision" to the predominately larger lots as in Option 1, such option could in due course end up with nearly as extensive a number of lots as 2A. This must be the absolute maximum development allowed, to retain the present quiet country village, with the safety of only a limited number of extra vehicles coming to the area through building expansion.

Although the NSW Dept of Education and Training has apparently said that 1/2 a hectare is
the maximum additional site need for even the massive Option 3B I would seriously challenge such a statement, having worked for some 25 years in the very section of the Department in Bathurst which plans and develops such schools. I was involved with the construction of the present school, and experienced many cases where school sites in various towns had to be extended, sometimes with great difficulty, as the school's needs became greater with modern educational development. West Bathurst Public School and Canobolas High School in Orange spring to mind as just two examples. Eglinton School was also extended over the years as the village grew, but pupils still need to use the village oval and associated grounds, to supplement current site restrictions. Will these borrowed facilities be always available to the school in the future? Probably not, as other emerging village needs receive priority. The schools pupil drawing area may have to be rezoned and restricted to fit in the purely village children!

I fail to find on any plan, an area set aside for future commercial developments, such as more shops, bottle shop, medical facilities, a service station, a social (RSL/Leagues type) club (as has been mooted on occasions already, before expansion was ever mentioned). A Precinct shopping centre such as the recently provided Westpoint, and even more recent Trinity Heights will undoubtedly spring up somewhere, despite no provision on the proposed plans. I cannot believe that with the high growth options, there will not be any move by developers to provide facilities such as these, or others. With Option 3B for example, Eglinton will be almost a city in itself. To think we will all be going into Bathurst for every little shopping item is ludicrous, but the present small shop would be overwhelmed with the extra population. Bathurst's present shopping provisions will not be able to cope with the additional shopping population either, considering all the development going on concurrently elsewhere round the city.

In conclusion, let things remain as they are at present. If they increase to any great extent, we will be considering, well before that, a move to a quieter location elsewhere in the state.

John & Thelma Williams
21 Cottonwood Drive
Eglinton 2795
02-63371223
Dear Ms Johnston

Re Eglinton Village Expansion

The National Trust welcomes the opportunity to comment on the plans for the proposed expansion of the village and supports the process of consultation being undertaken by Connell Wagner on behalf of Bathurst Regional Council.

The 364 hectares around Eglinton that is proposed for expansion has been farmed since the founding of Bathurst. Our initial historical research indicates that this land, part of the former Saltram Estate at Eglinton, was highly valued by the early pastoral settlers. Their agricultural practices not only sustained themselves and the new settlement of Bathurst, but also contributed to the survival of the struggling colony. Their homes and surrounding land, including Westbourne and Kellosheil on Mill Lane, Alloway Bank and others, are of extremely high heritage significance. (Refer to article from ‘Bathurst Free Press’ 18th Feb, 1854). On the whole, this land has retained its agricultural status to the present day.

The Trust feels that heritage considerations need to be included in the LES, to adequately justify change of use for this large, historically productive area. We would like to know more about the ‘big picture’ and how this proposal will fit in with the Bathurst LEP and Urban, Rural & Heritage Strategies being prepared now.

Hopefully, we as custodians of the oldest inland settlement in the country, now a thriving regional city surrounded by a rural community, can learn from the mistakes made by other expanding towns. The options are interesting, but before commenting on them, we would like to see an Environmental & Heritage Impact Statement. Our committee is of the opinion that the whole issue of the city’s urban sprawl needs to be addressed to provide a truly sustainable outcome for Bathurst and Eglinton.

Yours sincerely,

Pauline Barker
Chair
Bathurst & District Branch

The National Trust is a not-for-profit, non-government, community-based organisation working to conserve our built, natural and cultural heritage.
Bathurst Free press 18th February 1854

Allotments at Eglinton, & Farms at Saltram, three miles from Bathurst, on the well-known Estate of George Rankin Esq.

Mort and Co, have received instructions to sell by public auction, at Bathurst, on FRIDAY, the 24th February, at 11 o'clock, About 1000 acres of the Saltram Estate, situated on the rich alluvial land on the banks of the Macquarie River, on the north side, only three miles from the township of Bathurst, laid out in farms varying in size from 3 acres to 20 acres; together with the VILLAGE OF EGLINTON, which is laid out in allotments of about half an acre each. Several of the farms have frontages to the Macquarie River and Saltram Creek, and the soil is of first rate character.

The splendid paddocks at Saltram have been long known for their peculiar rich pastorage, and it is an established fact that the butter and cheese from “Kelloshiel,” immediately adjoining the land now offered for sale, are not to be surpassed by any dairy produce in the colony. This estate is situated in the very centre of the western gold fields, and it is the intention of the proprietor to open a new line of road to the Turon and Tambaroora through his property, which will materially curtail the distance, and increased value will be given to these lands.

The following is a brief description of this magnificent property:-

It is bounded on the east of Alloway bank the property of W.H. Sutter, Esq. On the north by Saltram the residence of George Rankin, Esq. On the west by “Kelloshiel” the dairy establishment and farms of Mr. Rankin, comprising the mill and brewery. On the south by the Macquarie River, which contains fresh water, and divides the property from Mount Pleasant, the residence of General Stewart. Saltram Creek, which runs through a great part of the property for sale, is also of fresh water.

The township of Eglinton, which is placed a little back from the river, is situated on an eminence commanding a magnificent view of Mount Pleasant, the township of Bathurst, the undulating plains or downs, with the Blue Mountains and Mount Rankin in the distance.

The principal portion of the farms contains rich alluvial soil, fit for market gardens. The greater part has been under cultivation, producing luxuriant crops of wheat, and there are many localities offering delightful villa residences or farm homesteads.

Mr. Stuchbury, the Government Geologist, states that the Bathurst Plains are highly auriferous and quartz loads of considerable dimension exist at Saltram.

*Vide Supplement to the Sydney Morning Herald, July 6, 1852*

Plan on view at the Rooms
Terms at Sale

Bathurst Free Press 4th March 1854
EGLINTON VILLAGE EXPANSION - LOCAL ENVIRONMENTAL STUDY SUBMISSION

We would like to add our support to a number of the key messages arising from the Community Meeting held at Eglinton on 14 September 2005 and published in the Community Information Sheet No.2. In particular, we strongly agree with the key messages of:

The Eglinton community values the small and friendly village atmosphere and the sense of community;

Residents like the rural aspect of the village and being close, but separate to Bathurst;

People do not like that Eglinton is getting bigger and have concerns about traffic congestion and lack of infrastructure such as footpaths; and

Most people indicated they would not like to see further development in Eglinton. The main concerns are loss of the village atmosphere and rural feel, increased traffic and crime, and pressure on infrastructure and services.

In addition, we put it to Council that its strategy of expanding residential areas by simply extending and adding onto existing residential areas is completely contrary to the wishes of residents throughout the Bathurst region and serve only to repeat the mistakes made in Sydney with its miles and miles of dead and dying suburbs filled with crime, fear, lack of diversity, lack of services, lack of opportunity, and depressing outlook.

We urge Council to abandon this destructive and misguided strategy. Why turn Bathurst into another Sydney by destroying its diverse mix of town and country outlook, atmosphere, industry, and community which make it one of the most beautiful, appealing, interesting, economically dynamic, and livable areas in Australia. It’s the closest we have found to having the best of both worlds.

Yours sincerely

Kathy Olsen & Bruce Flood
PO Box 1327
BATHURST NSW 2795
Mark,

I have read with interest the Information Sheet concerning the Eglinton Local Environmental Study.

My wife and I live in Cox Lane, Eglinton

We will be unable to attend Wednesday's meeting

We appreciate the need to provide residential land for development.

Some points we would like to make for consideration are:

1. Additional Land has to be set aside for Eglinton Public School Development - if the area under the study were to be made residential and occupied at anything like the density of the existing village then the current school grounds would be insufficient to sustain the increase in school population that could be expected as a result of the larger "village"

2. Consideration should be made to having "larger" building blocks, so as to retain the rural feel of the village - the disappointing thing about the new proposed development in Alexander St / Cox Lane, on the North East corner of the existing village is that the blocks are "normal" residential blocks when there is every reason to expect a bit more space around the houses.

3. Space should be set aside for some small shopping complex, to include a few specialty stores and a general store like the current store

4. Flood mitigation works need to be undertaken along the Macquarie River (North Bank) and Saltram Creek (West Bank) as some of the areas under consideration were subject to flooding (or close flooding) on the 8th August 1998

Thanks for your time to consider our thoughts

Regards

Lindsay & Gwenda Croll

Lindsay Croll
Director, Infrastructure Services
NSW Police.

Mobile: 0418 616 081
Home : lindsay@croll.net.au
Work : crol1lin@police.nsw.gov.au
Appendix F

Phase 1 contamination assessment
Eglinton Village Expansion LES
Phase 1 Contamination Assessment

7 November 2005
Reference P713.01/
Revision 0
A person using Connell Wagner documents or data accepts the risk of:

a) Using the documents or data in electronic form without requesting and checking them for accuracy against the original hard copy version; and

b) Using the documents or data for any purpose not agreed to in writing by Connell Wagner.
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Executive summary

Introduction
Connell Wagner was engaged by Bathurst Regional Council to prepare a Local Environmental Study (LES) for 347 hectares of land adjoining the Eglington village. Eglington is located approximately 7km north of Bathurst within central eastern NSW. The Macquarie River separates Eglington from the urban area of Bathurst. The principal purpose of the LES is to assess the suitability of the land for proposed residential development as shown in Figure 1 and 2 in Appendix A.

As part of the preparation of the LES, this Phase 1 contamination assessment of the study area has been undertaken to satisfy the relevant legislative and regulatory requirements and in accordance with the NSW Department of Environment and Conservation (DEC) guidelines for assessing site contamination under the Contaminated Land Management Act 1997. The purpose of this Phase 1 contamination investigation is to identify whether potentially contaminating activities have previously been undertaken on the site or within the surrounding area.

Objectives
The objectives of this assessment are to:

- identify potential historical and/or current sources of contamination within the study area
- identify potential contaminants of concern
- provide a preliminary risk assessment to identify the likelihood of encountering contamination on site
- identify key issues that should be addressed if urban development of the site is to proceed

Scope
The following scope of work has been carried out as part of this assessment:

- A review of local geology, soil and hydrogeology records;
- A contaminated land search through the NSW Department of Environment and Conservation (DEC) Contaminated Site Register;
- A review of any other relevant contaminated site registers;
- A review of historical aerial photographs for the site and surrounding area to determine possible contaminating activities on and around the site;
- An historical land title search;
- Consideration of legislative requirements and relevant assessment guidelines;
- Interview of selected landowners regarding previous activities within the study area;
- A qualitative risk assessment to assess the potential of encountering existing site contamination within the subject site during development;
- Identification of potential impacts resulting from the disturbance of contaminated soil; and
- Recommendations for any works to be carried out prior to urban development.

Conclusions
Based on the results and findings presented in this assessment report, a number of potentially contaminating activities and potential contaminant source areas were identified within the study area and surrounding areas.

As part of this assessment, a preliminary qualitative risk assessment was undertaken based on the available information at the time of the assessment.

Based on the results and the findings of the phase 1 contamination assessment, the overall likelihood of encountering contamination during proposed development was considered to be moderate to high.
due to the potential sources of contamination identified within the study area and the proposed future land use indicated in the LES.

Recommendations
Based on the results and conclusions presented in this assessment report, it is recommended that:

- An intrusive soil investigation (Phase 2 ESA), be undertaken at the potential source areas proposed to be developed for residential land uses in accordance with the relevant NSW contaminated land guidelines. This should be undertaken prior to preparation of a draft Local Environmental Plan.
- On the basis of the preliminary risk assessment area proposed for intrusive soil investigation should include but not be limited to the following:
  - sheep dip and cattle dip areas
  - crop land (subject to hand spraying of herbicides and pesticides)
  - buildings potentially constructed of asbestos containing materials
  - machinery and chemical storage areas where contamination is noted on the site
  - fill areas where the source of material is unknown
  - old groundwater wells
- The specific requirements for any further investigation, remediation or management of any contamination excavated within the identified areas would be recommended in the phase two investigations report.
- A soil and groundwater management plan should be prepared as part of any development application or construction environmental management plan for site development. This would include but not be limited to, safeguard measures, containment procedures, investigation guidelines and a contingency plan. Should any contamination be identified during site construction activities, a detailed investigation would be required to be undertaken to identify the nature and extent of contamination.
- Excavated material would need to be managed and handled in a manner appropriate to the type of material. All excavated material would need to be appropriately sampled, classified and stockpiled in accordance with the Environmental Guidelines: Classification and Management of Liquid and Non-liquid waste (NSW EPA 1999) prior to off site disposal or reuse or treatment of material on site. It is recommended that the sample data collected during the Phase 2 ESA be used, in part, to classify waste material prior to any proposed excavation works being undertaken. However, supplementary waste classification sampling may also be necessary.
- The inspection and removal of asbestos materials should be undertaken by a suitably qualified asbestos licensed specialist/removalist.
1. **Introduction**

1.1 **Background**

Connell Wagner was engaged by Bathurst Regional Council to prepare a Local Environmental Study (LES) for 347 hectares of land adjoining the Eglinton village. Eglinton is located approximately 7km north of Bathurst within central western NSW. The Macquarie River separates Eglinton from the urban area of Bathurst. The principal purpose of the LES is to assess the suitability of the land for proposed residential development as shown in Figure 1 and 2 in Appendix A.

As part of the preparation of the LES, this Phase 1 contamination assessment of the study area has been undertaken to satisfy the relevant legislative and regulatory requirements and in accordance with the NSW Department of Environment and Conservation (DEC) guidelines for assessing site contamination under the *Contaminated Land Management Act 1997*. The purpose of this Phase 1 contamination investigation is to identify whether potentially contaminating activities have previously been undertaken on the site or within the surrounding area.

1.2 **Objectives**

The objectives of this assessment are to:

- identify potential historical and/or current sources of contamination within the study area
- identify potential contaminants of concern
- provide a preliminary risk assessment to identify the likelihood of encountering contamination on site
- identify key issues that should be addressed if urban development of the site is to proceed

1.3 **Scope**

The following scope of work has been carried out as part of this assessment:

- A review of local geology, soil and hydrogeology records;
- A contaminated land search through the NSW Department of Environment and Conservation (DEC) Contaminated Site Register;
- A review of any other relevant contaminated site registers;
- A review of historical aerial photographs for the site and surrounding area to determine possible contaminating activities on and around the site;
- An historical land title search;
- Consideration of legislative requirements and relevant assessment guidelines;
- Interviews of selected landowners regarding previous activities within the study area;
- A qualitative risk assessment to assess the potential of encountering existing site contamination within the subject site during development;
- Identification of potential impacts resulting from the disturbance of contaminated soil and
- Recommendations for any works to be carried out prior to urban development.

This report has been prepared generally in accordance with the NSW DEC *Guidelines for Consultants Reporting on Contaminated Sites* (DEC November 1997). It should be noted that this report does not constitute a Site Auditors Report. A formal auditor’s assessment may be required if significant site contamination is identified.
2. **Physical characteristics**

2.1 **Study area**
The study area for the purposes of this LES comprises 347 hectares of land surrounding the Eglinton village. The study area location plan is presented in Figure 2 in Appendix A. The study area is almost entirely agricultural land which is cleared of vegetation and used predominantly for grazing purposes and to a lesser extent cropping and vegetable production. Saltram Creek, as well as a number of other drainage gullies and lines, traverse the site from north to south draining into the Macquarie River. The study area is bounded by Logan Street at the south and is accessed by Duramana Road, Cox Lane, Eleven Mile Drive and Fremantle Road as well as number of private access roads.

2.2 **Surrounding land uses**
The land directly adjoining the study area comprises predominantly agricultural and residential land uses. The study area wraps around the northern, eastern and western boundaries of Eglinton village. The village comprises predominantly residential development as well as a local shop, school and recreation area toward the south west of the village. Directly to the south of Eglinton village are a small number of rural residential allotments. The land around the outside of the study area in all directions is rural land predominantly used for grazing and to a lesser extent cropping.

2.3 **Topography**
The Eglinton study area slopes gently from approximately 684 metres AHD at the north west corner to approximately 646 metres AHD at the southern and south eastern boundary near the Macquarie River and Saltram Creek. A number of high points occur to the north and north west of the study area at approximately 700 metres AHD. The area has been almost entirely cleared of vegetation for agriculture.

2.4 **Geology**
The Bathurst Regional LGA lies in central western NSW in the eastern part of the Lachlan Fold Belt (Pogson D.J. and Watkins J.J. 1998). The area around Bathurst comprises Carboniferous rocks which are predominantly granite.

The majority of the Eglinton expansion study area is located within the Bathurst Granite geological group which comprises coarse grained, porphyritic biotite granite. Small areas within the south and south east of the study area along the Macquarie River and Saltram Creek comprise recent alluvial deposits of mostly sand and gravel and minor clay.

2.5 **Soil landscapes**
The Bathurst 1:250 000 soil landscape mapping (Kovac, M. and Lawrie, J.A. 1990) indicated that the soils within and around the study area comprise two soil landscapes which are described below:

**Raglan soil landscape**
The Raglan soil landscape is the predominant landscape within the study area. It occurs on the northern portion of the existing village and study area and also extends toward the south west of the study area. The landscape comprises the gently undulating to undulating rises of the Bathurst Plains and typically overlies Bathurst Granite. Red solodic soils are the dominant soils with yellow solodic soils commonly found on lower slopes and in drainage depressions.

The topsoil of red solodic soils comprises reddish or dark brown sandy loam to loam. The subsoil comprises reddish brown light to heavy clay with moderate to strong structure overlying dull yellowish brown medium to heavy clay with strong structure. Red solodic soils are typically moderately well drained, slowly permeable, have a high water holding capacity, moderate soil salinity and low erosion hazard. These soils have a high shrink swell potential which relates to changes in volume with
changes in moisture content and which can give rise to problems for earth structures and foundations of buildings.

The topsoil of yellow solodic soils comprises brown to brownish black loamy sand to sandy loam with weak structure or single-grained. The subsoil comprises dull yellowish brown to greyish brown mottled sandy clay loam to heavy clay with moderate to strong structure. Yellow solodic soils are typically imperfectly to poorly drained, slowly permeable, have a high water holding capacity, moderate soil salinity and moderate erosion hazard. They also have a high shrink swell potential.

**Macquarie soil landscape**

The Macquarie soil landscape occurs within the southern portion of the existing village and to the south east and south west of the study area. The landscape occurs on the alluvial plains and terraces of the Macquarie River. Prairie soils are the dominant soils on the floodplain. Other soils include earthy loams, siliceous sands and loams, wiesenboden, podzolic soils and black earths. Terraces have a variety of soils including red podzolic soils and red earths on the upper levels with yellow podzolic soils and yellow solodic soils on the middle and lower levels.

Prairie soils are typically moderately well drained, moderately permeable, have high water holding capacity, low soil salinity, low erosion hazard and moderate shrink swell hazard. Earthy loams are typically imperfectly to moderately well drained, moderately permeable, have high water holding capacity, low soil salinity, low erosion hazard and moderate shrink swell potential.

**2.6 Acid sulfate soils**

The DIPNR acid sulfate soil mapping shows that no areas of acid sulfate soil risk occur within the Bathurst LGA (DIPNR 2005).

**2.7 Regional hydrology**

A groundwater bore search was carried out via the DIPNR Natural Resource Atlas Online GIS System (DIPNR 2005b) on 16 August 2005. The results of the search are presented in Appendix B. The search identified six boreholes within the study area and another four within close proximity. Predominantly the groundwater holes are for domestic and livestock purposes. Drill log information indicates that water bearing zones start at between 16 to 19.8 metres below the ground surface.

The likely direction of groundwater flow across the majority of the site would be north to south flowing into the Macquarie River which runs approximately 200 metres to the south of the study area and flows east to west. The land in the eastern portion of the study area may flow toward the south east draining into the Saltram Creek which traverses the eastern boundary of the study area.

Given the depth of the water table it is unlikely that groundwater would be encountered if the site were developed for urban residential land uses.

**2.8 Watercourses**

The main watercourse which passes through the site is the Saltram Creek which travels along the eastern boundary of the study area and joins the Macquarie River near Rankins Bridge. The creek flows in a southerly direction passing through the study area along its eastern boundary.

Investigation of the 1:25,000 series topographical maps for Peel and Bathurst has identified a number of depressions, which could become watercourses in high rainfall events. These watercourses flow north to south draining into both the Macquarie River and the Saltram Creek. A number of artificial dams have been constructed to collect water along these drainage lines.
3. Record searches and site history

3.1 NSW DEC records
A search of the DEC contaminated site register was undertaken on 16 August 2005 (DEC 2005). This on-line register provides a record of written notices issued by the NSW Environment Protection Authority (EPA) under the Contaminated Land Management Act 1997 in relation to the investigation or remediation of site contamination that presents a significant harm to the environment.

The search revealed that there are no recorded contaminated sites within the vicinity of the site. A copy of this search is located at Appendix C.

3.2 Bathurst Regional Council contaminated land register
Bathurst Regional Council holds a list of sites within the LGA which have been identified as potentially contaminated sites. The site register does not contain any sites within the study area. The details of sites within the surrounding area and the associated potentially contaminating activities are listed below:

- 167 Fremantle Road – Pipers Field Airport and associated activities
- 10 Loren Street, Eglinton – Fuel previously sold from the site
- 21 Park Street, Eglinton – Local shop including fuel sales

The two fuel sales sites are located within the Eglinton village approximately 80 and 300 metres from the study area boundary respectively. Given the distance from the study area and that water resources drain north to south it is unlikely that contamination would been transferred from these sites to any land within the study area.

The Pipers Field Airport is located at least 2 km from the south west corner of the site and would not pose a contamination risk for the study area.

A copy of the relevant pages of the Bathurst Regional Council contaminated land register is located at Appendix D.

3.3 Historical title search
A search of historical information was undertaken by Advance Legal Search on 12 September 2005. This search did not cover all lots within the study area. This was based on the assumption that lots not covered by the search have been used only for grazing land. Connell Wagner cannot discount the possibility that some agricultural chemicals may have been used on the sites not covered by the title search. The aim of this exercise was to identify previous site owners to determine previous land use practices. Information obtained from the search is summarised below. A copy of the title search is located at Appendix E.

Table 3.1 Summary of Historical Title Search

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 10 DP 872964</td>
<td>1988 to date</td>
<td>Bathurst City Council</td>
</tr>
<tr>
<td></td>
<td>1956 – 1962</td>
<td>William Carl Treamor, grazier</td>
</tr>
<tr>
<td></td>
<td>1956 – 1956</td>
<td>Pearl Zillah Orth, married woman</td>
</tr>
<tr>
<td></td>
<td>1931 – 1956</td>
<td>William Hall, grazier</td>
</tr>
</tbody>
</table>
### Summary of owners of Lot 11 DP 872964

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 11 DP 872964</td>
<td>2002 – to date</td>
<td>Hynash Pty Limited</td>
</tr>
<tr>
<td></td>
<td>1999 – 2000</td>
<td>Noel Heywood Williams, William Bernard Patrick Lawson</td>
</tr>
<tr>
<td></td>
<td>1997 – 1999</td>
<td>Douglas Keith Callaghan, farmer &amp; grazier</td>
</tr>
<tr>
<td></td>
<td>1990 – 1988</td>
<td>Douglas Keith Callaghan</td>
</tr>
<tr>
<td></td>
<td>1956 – 1962</td>
<td>William Carl Treamor, grazier</td>
</tr>
<tr>
<td></td>
<td>1956 – 1956</td>
<td>Pearl Zillah Orth, married woman</td>
</tr>
<tr>
<td></td>
<td>1931 – 1956</td>
<td>William Hall, grazier</td>
</tr>
<tr>
<td></td>
<td>1930 – 1931</td>
<td>The Union Trustee Company of Australia Limited</td>
</tr>
<tr>
<td></td>
<td>1928 – 1930</td>
<td>John Jeremiah Leary, farmer</td>
</tr>
<tr>
<td>Portion 71 Parish Jedburgh &amp; other lands</td>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire The Union Trustee Co of Australia Limited (trustee &amp; nominee)</td>
</tr>
<tr>
<td></td>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David Paxton Fyle, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
</tr>
</tbody>
</table>

### Summary of owners of Lot 11 DP 625612

<table>
<thead>
<tr>
<th>Title Reference</th>
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<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 11 DP 825612</td>
<td>1992 to date</td>
<td>Peter Anthony Keogh</td>
</tr>
</tbody>
</table>

Lot 1 DP 786760 was comprised of parts of Lot 1 DP 532372 and Lot 990 DP 777674. See summaries below:

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 1 DP 532373</td>
<td>1988 – 1989</td>
<td>Graham Bede Dominic Waddell, grazier (Lease to Bathurst Broadcasters Proprietary Ltd of the 2BS Transmitting Station)</td>
</tr>
<tr>
<td>Lot 1 DP 532373</td>
<td>1981 – 1988</td>
<td>Graham Bede Dominic Waddell, grazier (Lease to Bathurst Broadcasters Proprietary Ltd of the 2BS Transmitting Station)</td>
</tr>
<tr>
<td></td>
<td>1969 – 1981</td>
<td>Kenneth Bede Dominic Waddell, grazier Marjorie Jean Wadell (Lease to Bathurst Broadcasters Proprietary Ltd)</td>
</tr>
<tr>
<td>Title Reference</td>
<td>Years</td>
<td>Details</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lot 990 DP 777674</td>
<td>1988 – 1989</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>Lot 9 DP 594335</td>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>Lot 2 DP 532373</td>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marjorie Jean Waddell</td>
</tr>
<tr>
<td></td>
<td>1968 – 1969</td>
<td>Kenneth Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Marjorie Jean Waddell</td>
</tr>
<tr>
<td>Lot 4 DP 16832</td>
<td>1963 – 1968</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arthur Harold Waddell, dairy farmer</td>
</tr>
<tr>
<td>Lot 4 DP 16832</td>
<td>1941 – 1941</td>
<td>Thomas Francis Peacock, grazier</td>
</tr>
<tr>
<td>Part Portion 17 Parish Jedburgh</td>
<td>1930 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>Part Portion 17 Parish Jedburgh &amp; other lands</td>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td></td>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Union Trustee Company of Australia Limited (trustee &amp; nominee)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David Paxton Fyfe, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
</tr>
<tr>
<td></td>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David Paxton Fyfe, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
</tr>
<tr>
<td>Lot 12 DP 825612</td>
<td>1993 to date</td>
<td>Kevin George Hurst</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pauline Patricia Hurst</td>
</tr>
<tr>
<td>Lot 1 DP 786760</td>
<td>1989 – 1992</td>
<td>Graham Bede Dominic Waddell</td>
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Lot 1 DP 786760 was comprised of parts of Lot 1 DP 532372 and Lot 990 DP 777674 (See ownership summary for Lot 11 DP 825612 above)
### Summary of owners of Lots 2 & 3 DP 786760

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lots 2 &amp; 3 DP 786760</td>
<td>1989 to date</td>
<td>Camplin Broadcasters Pty Limited</td>
</tr>
<tr>
<td></td>
<td>1989 – 1989</td>
<td>Graham Bede Dominic Waddell, grazier</td>
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</table>

Lots 2 & 3 DP 786760 comprises parts of Lot 1 DP 532372 and Lot 990 DP 777674 (See ownership summary for Lot 11 DP 825612 above)

### Summary of owners of Lot 991 DP 777674

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
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<tr>
<td>Lot 992 DP 777674</td>
<td>1988 to date</td>
<td>Helen Clara Waddell</td>
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<tr>
<td></td>
<td>1988 – 1988</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>Lot 9 &amp; 10 DP 594335</td>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td></td>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer Marjorie Jean Waddell</td>
</tr>
<tr>
<td>Lot 2 DP 532373</td>
<td>1969 – 1978</td>
<td>Kenneth Bede Waddell, dairy farmer Marjorie Jean Waddell</td>
</tr>
<tr>
<td>Part Lot 4 DP 16832</td>
<td>1941 – 1963</td>
<td>Thomas Francis Peacock, grazier</td>
</tr>
<tr>
<td>Part Portion 71 Parish Jedburgh</td>
<td>1941 – 1941</td>
<td>The Union Trustee Company of Australia Limited</td>
</tr>
<tr>
<td>Portion 71 Parish Jedburgh</td>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>Portion 71 Parish Jedburgh &amp; other lands</td>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire The Union Trustee Co of Australia Limited (trustee &amp; nominee)</td>
</tr>
<tr>
<td></td>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire Arthur Wigram Allen, trustee David Paxton Fyfe, trustee Alfred Macartney Hemsley, trustee</td>
</tr>
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</table>

### Summary of owners of Lot 992 DP 777674

<table>
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<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
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</thead>
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<tr>
<td>Lot 992 DP 777674</td>
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<td>Robert Gerald Churchill Evelyn Dawn Churchill</td>
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<tr>
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<td>1988 – 1991</td>
<td>Nicole Margaret Toomey, married woman</td>
</tr>
<tr>
<td></td>
<td>1988 – 1988</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>Lot 9 &amp; 10 DP 594335</td>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
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<tr>
<td></td>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer Marjorie Jean Waddell</td>
</tr>
<tr>
<td>Lot 2 DP 532373</td>
<td>1969 – 1978</td>
<td>Kenneth Bede Waddell, dairy farmer Marjorie Jean Waddell</td>
</tr>
<tr>
<td>Part Lot 4 DP 16832</td>
<td>1941 – 1963</td>
<td>Thomas Francis Peacock, grazier</td>
</tr>
<tr>
<td>Part Lot 4 DP 16832</td>
<td>1941 – 1941</td>
<td>Thomas Francis Peacock, grazier</td>
</tr>
<tr>
<td>Part Portion 71 Parish Jedburgh</td>
<td>1930 – 1941</td>
<td>The Union Trustee Company of Australia Limited</td>
</tr>
<tr>
<td>Part Portion 71 Parish Jedburgh</td>
<td>1930 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>Part Portion 71 Parish Jedburgh</td>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>Portion 71 Parish Jedburgh &amp; other lands</td>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Union Trustee Co of Australia Limited (trustee &amp; nominee)</td>
</tr>
<tr>
<td></td>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David Paxton Fyfle, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
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</table>

### Summary of owners of Lot 100 DP 710096

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</thead>
<tbody>
<tr>
<td>Lot 100 DP 710096</td>
<td>1988 to date</td>
<td>Poppo Christian Boer, Eildertina Tona Johann Boer-Flohill</td>
</tr>
<tr>
<td></td>
<td>1985 – 1988</td>
<td>Graham Bede Dominic Waddell, Helen Clara McFadden</td>
</tr>
<tr>
<td>Lot 9 &amp; 10 DP 594335</td>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>Lot 2 DP 532373</td>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer, Marjorie Jean Waddell</td>
</tr>
<tr>
<td></td>
<td>1969 – 1978</td>
<td>Kenneth Bede Waddell, dairy farmer, Marjorie Jean Waddell</td>
</tr>
<tr>
<td>Part Lot 4 DP 16832</td>
<td>1941 – 1963</td>
<td>Thomas Francis Peacock, grazier</td>
</tr>
<tr>
<td>Part Lot 4 DP 16832</td>
<td>1941 – 1941</td>
<td>Thomas Francis Peacock, grazier</td>
</tr>
<tr>
<td>Part Portion 71 Parish Jedburgh</td>
<td>1930 – 1941</td>
<td>The Union Trustee Company of Australia Limited</td>
</tr>
<tr>
<td></td>
<td>1930 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>Part Portion 71 Parish Jedburgh</td>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>Portion 71 Parish Jedburgh &amp; other lands</td>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Union Trustee Co of Australia Limited (trustee &amp; nominee)</td>
</tr>
<tr>
<td></td>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David Paxton Fyfle, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
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### Summary of owners of Lot 3 DP 795012

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<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 3 DP 795012</td>
<td>1998 to date</td>
<td>Colin Barry De Vere Cox, grazier</td>
</tr>
<tr>
<td>Allotment 1 to 8 Section 5 Village of Eglinton &amp; Part Portion 10 Parish Jedburgh</td>
<td>1972 – 1998</td>
<td>Colin Barry De Vere Cox, grazier</td>
</tr>
<tr>
<td></td>
<td>1958 – 1972</td>
<td>Hazel Charity De Vere Cox, widow, Jeanette De Vere Johnson, wife of architect, Colin Barry De Vere Cox, grazier</td>
</tr>
<tr>
<td></td>
<td>1944 – 1958</td>
<td>Hazel Charity De Vere Cox, widow</td>
</tr>
<tr>
<td></td>
<td>1922 – 1944</td>
<td>Percival George Cox, farmer</td>
</tr>
<tr>
<td></td>
<td>1921 – 1922</td>
<td>James Edward Burrell, stationer</td>
</tr>
<tr>
<td></td>
<td>1920 – 1921</td>
<td>Charles Bloodworth, grazier</td>
</tr>
<tr>
<td></td>
<td>1911 – 1920</td>
<td>James Freeman, farmer</td>
</tr>
</tbody>
</table>
### Summary of owners of Lot 6 DP 795012

<table>
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<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
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<tr>
<td>Lot 6 DP 795012</td>
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<td>Colin Barry De Vere Cox, grazier</td>
</tr>
<tr>
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<td>1972 – 1998</td>
<td>Colin Barry De Vere Cox, grazier</td>
</tr>
<tr>
<td></td>
<td>1958 – 1972</td>
<td>Hazel Charity De Vere Cox, widow, Jeanette De Vere Johnson, wife of architect</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Colin Barry De Vere Cox, grazier</td>
</tr>
<tr>
<td></td>
<td>1944 – 1958</td>
<td>Hazel Charity De Vere Cox, widow</td>
</tr>
<tr>
<td></td>
<td>1922 – 1944</td>
<td>Percival George Cox, farmer</td>
</tr>
<tr>
<td></td>
<td>1921 – 1922</td>
<td>James Edward Burrell, stationer</td>
</tr>
<tr>
<td></td>
<td>1920 – 1921</td>
<td>Charles Bloodworth, grazier</td>
</tr>
<tr>
<td></td>
<td>1911 – 1920</td>
<td>James Freeman, farmer</td>
</tr>
<tr>
<td>Allotments 1, 2, 3, 4 &amp; 8 Section 5 of Saltrams Estate</td>
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### Summary of owners of Lot 31 DP 1064156

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<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 31 DP 1064156</td>
<td>2004 to date</td>
<td>Rex Allan Kellahan, grazier Colleen Cleytus Kellahan</td>
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Lot 31 DP 1064156 comprises parts of Lot 1 DP 740403 and Lot 3 DP 740403. See summaries below:

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<tbody>
<tr>
<td>Lot 1 DP 740403</td>
<td>2000 – 2004</td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Colleen Cleytus Kellahan</td>
</tr>
<tr>
<td></td>
<td>1987 – 2000</td>
<td>Harold Richard Kellahan, grazier, Rex Allan Kellahan</td>
</tr>
<tr>
<td>Lot 1 Section 4 Village Eglinton</td>
<td>1985 – 1987</td>
<td>Harold Richard Kellahan, grazier, Rex Allan Kellahan</td>
</tr>
<tr>
<td>Lot 1 &amp; Lot 2 Section 4 Village of Eglinton</td>
<td>1947 – 1985</td>
<td>Herbert Allan Kellahan, labourer</td>
</tr>
<tr>
<td></td>
<td>1947 – 1947</td>
<td>Margaret Cusick, widow</td>
</tr>
<tr>
<td></td>
<td>1919 – 1947</td>
<td>Alfred Ernest Cusick, farmer &amp; grazier</td>
</tr>
<tr>
<td></td>
<td>1910 – 1919</td>
<td>William Bryant, labourer</td>
</tr>
<tr>
<td>Lot 3 DP 740403</td>
<td>2000 – 2004</td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td></td>
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<td>Colleen Cleytus Kellahan</td>
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<tr>
<td></td>
<td>2000 – 2000</td>
<td>Vincent John Kellahan</td>
</tr>
<tr>
<td></td>
<td>1987 – 2000</td>
<td>Herbert Allan Kellahan</td>
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<tr>
<td>Part of Section 4 Village Eglinton</td>
<td>1986 – 1987</td>
<td>Herbert Allan Kellahan (possessionary title)</td>
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<td>George Rankin</td>
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### Summary of owners of Lot 32 DP 1064156

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<th>Years</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Lot 32 DP 1064156</td>
<td>2004 to date</td>
<td>Ian Arthur Stuart Taylor Jennifer Ann Barnwell</td>
</tr>
<tr>
<td>Lot 1 DP 740403</td>
<td>2004 – 2004</td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Colleen Cleytus Kellahan</td>
</tr>
<tr>
<td>Lot 1 Section 4 Village Eglinton</td>
<td>1985 – 1987</td>
<td>Harold Richard Kellahan, grazier, Rex Allan Kellahan</td>
</tr>
</tbody>
</table>
### Summary of owners of Lot 2 DP 740403

<table>
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<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>Lot 2 DP 740403</td>
<td>1987 to date</td>
<td>Harold Richard Kellahan</td>
</tr>
<tr>
<td>Lot 2 Section 4 Village Eglinton</td>
<td>1987 – 1987</td>
<td>Harold Richard Kellahan</td>
</tr>
<tr>
<td></td>
<td>1947 – 1947</td>
<td>Margaret Cusick, widow</td>
</tr>
<tr>
<td></td>
<td>1919 – 1947</td>
<td>Alfred Ernest Cusick, farmer &amp; grazier</td>
</tr>
<tr>
<td>Lot 1 &amp; 2 section 4 village Eglinton</td>
<td>1910 – 1919</td>
<td>William Bryant, labourer</td>
</tr>
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</table>

### Summary of owners of Lot 9 Section 4 DP 983884

<table>
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<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
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<tbody>
<tr>
<td>Lot 9 Section 4 DP 983884</td>
<td>2004 to date</td>
<td>Claudio Tolomeo, bricklaying contractor</td>
</tr>
<tr>
<td></td>
<td>2002 – 2004</td>
<td>Valerie Mary Tolomeo</td>
</tr>
<tr>
<td></td>
<td>1995 – 2002</td>
<td>Claudio Tolomeo, bricklaying contractor</td>
</tr>
<tr>
<td>Lots 3 to 15 &amp; 33 Section 4 DP 983884</td>
<td>1972 – 1995</td>
<td>Valerie Mary Tolomeo</td>
</tr>
<tr>
<td></td>
<td>1927 – 1972</td>
<td>Beaufort Andrew Brown, grazier</td>
</tr>
<tr>
<td></td>
<td>1923 – 1927</td>
<td>Francis Henry Brown</td>
</tr>
<tr>
<td></td>
<td>1893 – 1923</td>
<td>Fitzherbert Hawkins, esquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>James Russell Blacket, esquire</td>
</tr>
</tbody>
</table>

### Summary of owners of Lot 1 DP 1047811

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 1 DP 1047811</td>
<td>2002 to date</td>
<td>Macquarie Motors Group Pty Limited</td>
</tr>
<tr>
<td>Lot 12 DP 1011635</td>
<td>1999 – 2002</td>
<td>Macquarie Motors Group Pty Limited</td>
</tr>
<tr>
<td>Lot 10 DP 883019</td>
<td>1999 – 1999</td>
<td>Macquarie Motors Group Pty Limited</td>
</tr>
<tr>
<td>Lot 1 DP 777759</td>
<td>1989 – 1989</td>
<td>Willow Creek Grazing Co Pty Limited</td>
</tr>
<tr>
<td></td>
<td>1989 – 1989</td>
<td>Warren Francis Blomfield, chemist</td>
</tr>
</tbody>
</table>

Lot 1 DP 777759 was comprised of parts of the lots outlined below:

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portion 87 Parish Jedburgh Area 1 CT Vol 8324 Fol 223</td>
<td>1989 – 1989</td>
<td>Warren Francis Blomfield, chemist</td>
</tr>
<tr>
<td></td>
<td>1961 – 1989</td>
<td>Horace Willot, grantee</td>
</tr>
<tr>
<td>Portion 87 Parish Jedburgh</td>
<td>Prior to 1961</td>
<td>Crown Land</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot A DP 162951 subdivision of Lots 6-11 &amp; Part Reserve of the Saltram Estate</td>
<td>1982 – 1989</td>
<td>Warren Francis Blomfield, chemist</td>
</tr>
<tr>
<td></td>
<td>1966 – 1982</td>
<td>Warren Francis Blomfield, chemist Beulah Sapphire Cant, hairdresser</td>
</tr>
<tr>
<td></td>
<td>1958 – 1966</td>
<td>Arthur William Hopper, grazier</td>
</tr>
<tr>
<td></td>
<td>1935 – 1958</td>
<td>Adrian Belmore Sutherland, farmer</td>
</tr>
<tr>
<td>Lots 6, 7, 8, 9, 10 &amp; 11 &amp; part of Reserve of Saltram Estate &amp; other lands</td>
<td>1927 – 1935</td>
<td>John Henry Stocks, farmer</td>
</tr>
<tr>
<td></td>
<td>1918 – 1927</td>
<td>Colin McIvor Lamont, farmer &amp; grazier</td>
</tr>
<tr>
<td></td>
<td>1900 – 1918</td>
<td>Eliza Louisa Boyd, married woman</td>
</tr>
</tbody>
</table>

**Summary of owners of Lot 1 DP 786472**

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 1 DP 786472</td>
<td>1998 to date</td>
<td>Jennifer Ann Smyth</td>
</tr>
<tr>
<td>Allotment 4 to 12 Section 2 Village of Eglinton</td>
<td>1960 – 1989</td>
<td>Gilbert Arthur Bond Booth, labourer Florence Adelaide Booth</td>
</tr>
<tr>
<td></td>
<td>1959 – 1960</td>
<td>John Chester Morgan, company representative Valmai Shirley Morgan</td>
</tr>
<tr>
<td></td>
<td>1930 – 1959</td>
<td>Joseph Willott, grazier</td>
</tr>
<tr>
<td></td>
<td>1898 – 1930</td>
<td>Joseph Willott, senior, farmer</td>
</tr>
</tbody>
</table>

**Summary of owners of Lot 2 DP 786472**

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 2 786472</td>
<td>1989 to date</td>
<td>John Duncan Peard Beverly Ann Peard</td>
</tr>
<tr>
<td>Allotment 4 to 12 Section 2 Village of Eglinton</td>
<td>1960 – 1989</td>
<td>Gilbert Arthur Bond Booth, labourer Florence Adelaide Booth</td>
</tr>
<tr>
<td></td>
<td>1959 – 1960</td>
<td>John Chester Morgan, company representative Valmai Shirley Morgan</td>
</tr>
<tr>
<td></td>
<td>1930 – 1959</td>
<td>Joseph Willott, grazier</td>
</tr>
<tr>
<td></td>
<td>1898 – 1930</td>
<td>Joseph Willott, senior, farmer</td>
</tr>
</tbody>
</table>

**Summary of owners of Lot 11 DP 1077306**

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 11 DP 1077306</td>
<td>2005 to date</td>
<td>Douglas James Fulton, surveyor Elizabeth Alison Fulton</td>
</tr>
<tr>
<td>Part Lot 1 and Lots 2 &amp; 3 Section 2 Saltrams Estate &amp; other lands</td>
<td>1971 – 2005</td>
<td>Douglas James Fulton, surveyor Elizabeth Alison Fulton</td>
</tr>
<tr>
<td></td>
<td>1955 – 1971</td>
<td>William Michael Kellahan, farmer</td>
</tr>
</tbody>
</table>

The above mentioned lots were comprised of parts of the lots discussed below:

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 1 &amp; 2 Section 2 Saltrams Estate &amp; other lands</td>
<td>1950 – 1955</td>
<td>Walter John McGregor, farmer Violet Thurza Jane McGregor, widow Alfred Henry Albert Hanson, architect</td>
</tr>
<tr>
<td></td>
<td>1922 – 1950</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td>Allotments 1,2,7 &amp; 8 section 2 Saltrams Estate</td>
<td>1908 – 1922</td>
<td>Hannah Adlam, wife of farmer</td>
</tr>
<tr>
<td></td>
<td>1907 - 1908</td>
<td>Henry Prior, farmer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 3 Section 2 of Saltrams Estate &amp; other lands</td>
<td>1950 – 1955</td>
<td>Walter John McGregor, farmer Violet Thurza Jane McGregor, widow Alfred Henry Albert Hanson, architect</td>
</tr>
<tr>
<td></td>
<td>1931 – 1950</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td></td>
<td>1907 – 1931</td>
<td>Charles Prior, farmer</td>
</tr>
</tbody>
</table>
### Summary of owners of Lot 10 DP 1077306

<table>
<thead>
<tr>
<th>Title Reference</th>
<th>Years</th>
<th>Details</th>
</tr>
</thead>
</table>
| Lot 10 DP 1077306 | 2005 to date | Christopher Peter Bourke
|                 |             | Ann Therese Burnett                                                     |
| Lot 1 DP 998173  | 1996 – 2005 | Christopher Peter Bourke
|                 |             | Ann Therese Burnett                                                     |
| Part Lot 1 Section 2 DP 983884 | 1995 - 1996 | Christopher Peter Bourke
|                 |             | Ann Therese Burnett                                                     |
|                 | 1973 - 1996 | Maud Myrea Bourke, home duties                                          |
|                 | 1970 - 1973 | Arthur Norman Herbert, fitter & turner
|                 |             | Shirley Nellie Margaret Herbert                                        |
|                 | 1967 - 1970 | Campbell Woods Fragar, farmer
|                 |             | Elsie Beatrice Fragar                                                   |
|                 | 1944 - 1967 | Cecil Henry Joseph Adlam, farmer
|                 |             | Mavis Jean Mutton, femme sole                                           |
|                 |             | Claire Beatrice Rumble, married woman                                  |
| Allotment 1, 2, 7 & 8 Section 2 of Saltrams Estate | 1919 - 1944 | Cecil Henry Joseph Adlam, labourer                                      |
|                 | 1908 - 1919 | Hannah Adlam, wife of farmer                                            |
|                 | 1907 - 1908 | Henry Prior, farmer                                                     |

### 3.4 Historical aerial photographs

Aerial photographs held at the Department of Lands were reviewed to obtain information on historical development of the area. A summary of the review of aerial photographs dating back to 1954 is located below.

#### Table 3.2 Summary of historical aerial photographs

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathurst series</td>
<td></td>
</tr>
<tr>
<td>Run 3 27/01/1954</td>
<td>The study area had been almost entirely cleared of vegetation apart the banks of watercourse and some other small stands of trees. The entire study area appeared to be used for agricultural land uses and a small number of associated dwellings and buildings had been constructed. At the south of what is now the Eglinton Village some smaller residential lots and the school had already been developed.</td>
</tr>
<tr>
<td>Bathurst series</td>
<td></td>
</tr>
<tr>
<td>Run 9 Jan 1964</td>
<td>No change of land use was noted within the study area. More residential lots had been developed at the south of Eglinton village.</td>
</tr>
<tr>
<td>Bathurst series</td>
<td></td>
</tr>
<tr>
<td>Run 3 1:48 000 04-12-1974</td>
<td>The entire study area continued to be used for agricultural uses and a further associated buildings or dwellings had been constructed. Additional low density residential dwellings have been constructed within the Eglinton village and there is further evidence of subdivision in the form of road construction.</td>
</tr>
<tr>
<td>Bathurst series</td>
<td></td>
</tr>
<tr>
<td>Run 10 1:25 000 05-10-1989</td>
<td>No change of land use was noted within the study area. Construction of dwellings on the lots being constructed in the previous photograph is evident.</td>
</tr>
<tr>
<td>Bathurst series</td>
<td></td>
</tr>
<tr>
<td>Run 10 1:25 000 19-02-2004</td>
<td>No change of land use was noted within the study area. Eglinton had been developed to the boundaries of the current village.</td>
</tr>
<tr>
<td>Bathurst series</td>
<td></td>
</tr>
<tr>
<td>Run 3 1:16 000 19-02-2004</td>
<td>No change of land use was noted within the study area. Some residential development within Eglinton village.</td>
</tr>
</tbody>
</table>

### 3.5 Summary of historic contamination potential

#### 3.5.1 Within study area

The land within the study area began to be developed for agricultural land uses at the end of the 1800s. Since then the land has predominantly continued to be used for agricultural purposes with associated dwellings and farm buildings. The major exceptions are the land
which has been developed for AM radio transmission towers for approximately 40 years and land which was transferred to the Bathurst City Council in 1988 and is used by the Fire Brigade. There are no recorded contaminated sites within the study area. Contaminants have the potential to be present within the site area based on the past land uses are those associated with crop spraying, vehicle, machinery and drum storage, asbestos containing building structures and chemicals associated with sheep and cattle dip sites.

3.5.2 **Surrounding land**

The Eglinton village is surrounded by agricultural and residential land uses. Two listed contaminated sites are located within the Eglinton village and one site is located approximately 2km to the south west of the site. It is unlikely that contamination could have been transferred from these sites to the study area.

3.6 **Potential data gaps**

Due to the limited availability of information, there are potential gaps in the historical and land use data.

Aerial photographs could only provide limited information on historical potential source areas. Although the historical data indicated little evidence of potentially contaminating activities, the potential for offsite sources of contamination migrating to the study area via sub-surface pathways such as groundwater exists both historically and currently. The nature, extent and mobility of any potential contamination depends on the type of activities which have historically been undertaken in the context of the local geology and hydrogeology.

Information obtained from the historical search provided no specific information relating to local processes.

A full site walkover was not considered feasible given the total area of the site and as such potentially contaminated sites or process may not have been identified in this phase 1 assessment. In addition, these site investigations did not comprise an assessment of asbestos building materials.
4. Legislative requirements and relevant assessment guidelines

4.1 Contaminated Land Management Act 1997

The legislative framework used for the management of contamination in NSW is the Contaminated Land Management Act 1997 (CLM Act 1997) in NSW. The CLM Act requires the DEC to become involved in the management of contamination where the contamination presents a significant risk of harm to health or some aspect of the environment. The assessment guidelines made and approved by the DEC relevant to this report are summarised below.

4.2 Assessment guidelines

Relevant contamination assessment guidelines include:

- NSW Environment Protection Agency (NSW EPA) Service Station Guidelines December 1994. These guidelines provide soil threshold concentrations (appropriate remediation standards) for sensitive land uses such as residential development. This guideline is considered appropriate for use as a preliminary indicator of soil contamination where less sensitive developments occur or where the aim is to assess potential short term health risks to construction workers during excavation activities.

- National Environment Protection (Assessment of Site Contamination) Measure, December 1999 (NEPM, 1999). The Measure consists of a policy framework for the assessment of site contamination, Schedule A (Recommended General Process for the Assessment of Site Contamination) and Schedule B (Guidelines). This guideline was developed to protect human health and is based on risk assessments for long-term land use. The Health-Based Soil Investigation Levels (NEPM HILs) in Schedule B, are not directly applicable to assessing acute health risks but may be used for a preliminary screening assessment of soil contamination.

- Australian and New Zealand Guidelines for Fresh and Marine Wager Quality, Australian and New Zealand Environment and Conservation Council and Agriculture Resource Management Council of Australia and New Zealand, Paper 4, 2000 (ANZECC, 2000). At present there is no guideline established for assessing groundwater quality in NSW. The ANZECC (2000) guideline is currently used as the default national guideline to assess surface water and groundwater quality in marine and freshwater environments approved for the purposes of contaminated site assessment, investigation, remediation and site auditing under the CLM Act (or other relevant legislation).

- Australian and New Zealand Guideline for the Assessment and Management of Contaminated Sites, published by Australian and New Zealand Environment and Conservation Council (ANZECC) and the National Health and Medical Research Council (NHMRC), January 1992. This guideline aims to provide a fundamental framework for preventing, assessing, cleaning and managing existing contaminated sites.

- Environmental Guidelines for Assessment, Classification and Management of Liquid and Non-Liquid Wastes, NSW EPA, 1999. This guideline outlines the appropriate protocols and controls applying to the handling, storage, treatment and disposal of the waste. Excavated materials generated from construction activities will be required to be classified and disposed of to approved waste facilities or consideration of material re-use.
5. Site inspections

Site investigations were carried out with the study area inspected from surrounding roads. It should be noted that a full site walkover was not considered feasible given the total area of the site and as such potentially contaminated sites or processes may not have been identified in this phase 1 assessment. In addition, these site investigations did not comprise an assessment of asbestos building materials.

A heritage assessment (Charles Dearling Archaeological and Cultural Heritage Consultants 2005) has also been carried out as part of the LES and involved an extensive field survey. During the heritage field survey a number of sites were identified which could pose a contamination risk.

Sites and potentially contaminating activities which have been identified through site inspections are listed below.

Table 5.1 Potential sources of contamination identified within the study area

<table>
<thead>
<tr>
<th>Activities</th>
<th>Details</th>
<th>Possible contaminants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos shed</td>
<td>A shed that appeared to be constructed of asbestos was located near the AM transmission towers on Lot 2 DP 786760. Other buildings that were identified on the site may contain asbestos.</td>
<td>Asbestos</td>
</tr>
<tr>
<td>Fire Station</td>
<td>A fire station was identified to be located to the east of the Eglinton village on Lot 10 DP 872964. Minor spillage of petroleum products may have occurred.</td>
<td>Include petroleum hydrocarbons (petrol, diesel), BTEX, lead, PAH and AFFF.</td>
</tr>
<tr>
<td>Water storage dams</td>
<td>A number of small water storage dams were identified across the site. These dams have potential to have been constructed using imported fill material.</td>
<td>Unknown fill contaminants.</td>
</tr>
<tr>
<td>Old well site</td>
<td>An old well was identified on Lot 6 DP 795012, which has since been filled in.</td>
<td>Unknown</td>
</tr>
<tr>
<td>Water storage system including troughs and groundwater well</td>
<td>A water storage system was identified on Lot 6 Part 4 DP 983884. The system consisted of three water storage troughs, two constructed of brick and one plastic which were linked to a nearby water storage well.</td>
<td>Unknown</td>
</tr>
<tr>
<td>Horse training tracks</td>
<td>Horse training tracks were identified on Lot 11 and 12 DP 825612. These have potential to have been constructed using imported fill material.</td>
<td>Unknown fill contaminants.</td>
</tr>
<tr>
<td>Sheep dip site</td>
<td>A past sheep dip site is located Lot 13 Part 4 DP 983884. There is potential for various other sheep and cattle dip sites to have been located within the study area in the past.</td>
<td>Arsenic, organochlorines (eg lindane, dieldiun), organophosphates, carbamates and synthetic pyrethoids.</td>
</tr>
<tr>
<td>Farm and other machinery storage areas</td>
<td>A machinery storage shed was identified on Lot 4 DP 795012. However it is likely that other storage sheds are located on most properties. Minor spillage of petroleum products and engine oil may have occurred at these sites.</td>
<td>Include petroleum hydrocarbons (petrol, diesel), BTEX, lead and PAH, organochlorides and organo-pesticides.</td>
</tr>
<tr>
<td>Activities</td>
<td>Details</td>
<td>Possible contaminants</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Abandoned farm machinery</td>
<td>A number of pieces of abandoned farm machinery scattered across the site. The heritage study has identified abandoned machines on Lot 1 DP 1047811 and Lot Lot 740403 However there is potential for machinery to be present at various other locations on the site. Minor spillage of petroleum products and engine oil may occurred.</td>
<td>Include petroleum hydrocarbons (petrol, diesel), BTEX, lead and PAHs.</td>
</tr>
<tr>
<td>AM radio transmission towers</td>
<td>AM radio transmission were identified within the Lot 2 DP 786760 just to the west of Eglinton village.</td>
<td>Contamination is considered unlikely however unknown imported fill materials could have been used in its construction.</td>
</tr>
<tr>
<td>Hand spraying of crops</td>
<td>Areas within the site were identified to be currently used for cultivation of lucerne and oats as well as small areas of vegetables.</td>
<td>Include herbicides (ammonium thiocyanate, carbamates, copper sulfate, copper chloride, sulfur, chromium, zinc) and Pesticides (arsenic, lead, organochlorines, organophosphates, sodium tetraborate, carbamates, sulfur, synthetic pyrethroids, xylene, kerosene, methyl isobutyl ketone, amyl acetate, chlorinated solvents)</td>
</tr>
</tbody>
</table>

There are a number of sensitive receptors within the study area that have the potential to be impacted by contaminated soils or groundwater should development of the proposed site proceed. These include:

- current and future residential properties around the study area;
- Saltram Creek and Macquarie River;
- construction workers;
- the Eglinton Primary School; and
- future residential or commercial properties located on the site.

The key concerns in regard to development of the site are exposure by construction workers and other future users of the site with potentially harmful contaminants and the mobilisation of potential contaminants resulting from earthworks such as dust generation and release of contaminated material into waterways.
6. Consultation

Interviews have been carried out with a number of major landowners within the study area to identify past and current land use practices that may have included potentially contaminating activities. A summary of these interviews has been provided below.

The following anecdotal information has been provided:

**Terry Dunphy – Lot 1 DP 1047811**  
Interview held on 14 September 2005  
In regard to the above property Mr Dunphy stated that:

- he had owned the property for 16 years;
- during this time the property has been used for grazing of horses, sheep and cattle;
- prior to this the property was a horse stud;
- he was aware the property had only otherwise been used for low scale grazing;
- it was believed that the properties to the north have also predominantly been used for low scale grazing purposes; and
- he was not aware of any past sheep or cattle dip sites located on his property or the properties to the north.

**Lester Hewitt – Lot 2 DP 16832 and Lot 11 DP 872964**  
Interview held on 14 September 2005  
In regard to the above property Mr Hewitt stated that:

- he had owned the site for the past 6 years;
- the site was currently used for grazing of cattle with the exception of an oat crop in the south east corner;
- the site has also been used for the cultivation of oats in the past;
- as far as he is aware a sheep or cattle dip site has not been located on his property; and
- hand spraying has been carried out on the site.

**Phil Cole and Jason Davis (Camplin Broadcasters) – Lot 2 & 3 DP 786760**  
Interview held on 14 September 2005  
In regard to the above property Mr Cole and Mr Davis stated that:

- broadcasting towers had occupied the site for approximately 40 years;
- prior to this the site was used for farming;
- the building located on the site was constructed of asbestos;
- an earth mat comprising copper wires was located under the ground around the transmission towers; and
- as far as they were aware no contamination concerns existed on the site other than the asbestos building.

**Peter Keogh – Lot 11 DP 825612**  
Interview held on 14 September 2005  
In regard to the above property Mr Keogh stated that:

- he had owned the property for 6 years;
- the site was currently used for horse training, sheep grazing and vegetable cultivation;
- a horse training track was located on the site;
- hand spraying was used for the vegetable cultivation; and
- As far as he was aware, before he owned the property the site was used for cattle grazing.

**Barry Cox, Marjorie Cox, Debbie Cox, Alan Cox and Peter Cox - Lots 1-8 795012**  
Interview held on 14 September 2005  
In regard to the above property Mr Cox stated that:
• the site had been in the ownership of the Cox family for over 50 years;
• the site has been used for sheep and cattle grazing and cropping for lucerne and oats;
• he was not aware of any sheep or cattle dip sites being located on the site;
• the dip site on their property was located on land at least 1 kilometre to the north of the study area on the other side of the hills;
• hand spraying had been carried out on the site; and
• a well was located on the site but this had been filled in some time ago.

Paul Tolomeo – Lots 3-15, 30 & 33 DP 983884
Interview held on 6 October 2005
In regard to the above property Mr Tolomeo stated that:
• the property has been in the ownership of his family for over 25 years;
• during this time site the land has been used for livestock grazing only and has not been used for growing of any crops or spraying;
• as far as he is aware no buildings have been located on the site in the time that it has been in the ownership of the Tolomeo family; and
• as far as he is aware no other sheep dip sites are located on the property.

Keith Meehan – Rural Fire Service Chifley Zone – Lot 10 DP 872964 (leased from Bathurst Regional Council)
Interview held on 4 October 2005
In regard to the above site Mr Meehan stated:
• the site had only been used by the Rural Fire Service for storage of three fire fighting vehicles and water;
• AFFF and BFFF had only been stored on the fire fighting vehicles for fire fighting purposes in their diluted form and not as a concentrate;
• AFFF and BFFF are not stored anywhere else on the site;
• maintenance of vehicles did not take place on site;
• no fuel products have ever been stored at the site; and
• As far as he was aware no other chemicals had ever been stored on the site.

Summary
The interviews confirm that predominantly the land uses carried out within the study area have been cattle and sheep grazing and cropping of oats and lucerne. A number of potentially contaminated sites or source areas were identified as follows:

• Crop land where spraying was known to have been employed (Lots 1-8 DP 795012, Lot 11 DP 825612, Lot 2 DP 16832 and Lot 11 DP 872964). It is likely that spraying has also taken place in other parts of the site.
• The asbestos building and AM transmission towers on Lot 2 DP 786760.
• Horse training tracks located on Lots 11 and 12 DP 825612 and which may have been constructed using contaminated fill.
• The well located on Lot 6 DP 795012.
7. Environmental risk assessment

Environmental risk
For there to be an environmental risk the following must be in continuity:

- a contaminant source;
- an exposure pathway; and
- a receptor (human, ecological or environmental)

Potential contaminants of concern
A range of potential sources of contamination were identified in the vicinity of the study area and the resulting potential contaminants of concern identified include the following:

- chemicals associated with sheep or cattle dip sites including arsenic, organochlorines, organophosphates, carbamates and synthetic pyrethroids;
- chemicals associated with herbicides including ammonium thiocyanate, carbamates, copper sulfate, copper chloride, sulfur, chromium and zinc;
- chemicals associated with pesticides including arsenic, lead, organochlorines, organophosphates, sodium tetraborate, carbamates, sulfur, synthetic pyrethroids, xylene, kerosene, methyl isobutyl ketone, amyl acetate and chlorinated solvents;
- contaminants associated with minor spillage of petroleum products and engine oil including petroleum hydrocarbons (petrol, diesel), BTEX, lead and PAH;
- asbestos; and
- unknown contaminants in imported fill material.

Potential exposure pathway
The potential pathways for contaminant exposure identified included:

- site drainage;
- release through the air (particularly through disturbance during demolition and excavation);
- groundwater;
- direct contact with soil (dermal absorption);
- soil vapour inhalation; and
- watercourses.

Potential receptors
The potential receptors identified in the vicinity of the study area include:

- current and future residents, farmers and other users of land within and around the study area;
- Saltram Creek and Macquarie River;
- construction workers; and
- Eglinton Primary School.

Risk Assessment
Based on the information reviewed as part of this assessment and taking into account the sensitivity of the land use being considered under the LES a preliminary qualitative risk assessment was undertaken to identify the likelihood or risk of contamination being encountered on the site during construction.

A breakdown of the likelihood or risk of contamination being encountered at each potential source area within the study area has been presented in table 7.1. Based on the results presented in Table 7.1, overall, the likelihood of encountering contamination in soil and/or groundwater in the vicinity of the
The study area was considered to be moderate to high. The locations of the potential source areas identified in table 7.1 are shown in Figure 3 in Appendix A.

### Table 7.1 Preliminary Risk Assessment

<table>
<thead>
<tr>
<th>Areas of contamination</th>
<th>Potential hazard to receptor identified</th>
<th>Risk or likelihood of encountering contaminants during development</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos shed</td>
<td>Exposure to asbestos containing material.</td>
<td>High due to probable relocation if development proceeds.</td>
<td></td>
</tr>
<tr>
<td>Fire Station</td>
<td>Exposure to petroleum hydrocarbons (petrol, diesel), BTEX, lead, PAH, AFFF and BFFF.</td>
<td>Low as storage of contaminants on the site has been minimal, vehicle maintenance was not carried out on site and spills would be unlikely.</td>
<td>Potential for migration of contaminants.</td>
</tr>
<tr>
<td>Water storage dams</td>
<td>Exposure to unknown contaminants present in fill.</td>
<td>High due to possibility that imported fill has been used.</td>
<td>Potential for migration of contaminants.</td>
</tr>
<tr>
<td>Old groundwater well site</td>
<td>Unknown</td>
<td>High as unknown materials may have been dumped at the site and entered groundwater.</td>
<td>Potential for migration of contaminants.</td>
</tr>
<tr>
<td>Water storage system including troughs and groundwater well</td>
<td>Unknown</td>
<td>High as unknown material may have been dumped at the site and entered groundwater.</td>
<td>Potential for migration of contaminants.</td>
</tr>
<tr>
<td>Horse training tracks</td>
<td>Exposure to unknown contaminants present in fill.</td>
<td>High due to likelihood that imported fill has been used.</td>
<td></td>
</tr>
<tr>
<td>Sheep and cattle dip areas</td>
<td>Exposure to arsenic, organochlorines, organophosphates, carbamates, synthetic pyrethroids.</td>
<td>High due to known use as a sheep dip site and proximity to Saltram Creek.</td>
<td>Potential for migration of contaminants.</td>
</tr>
<tr>
<td>Farm and other machinery storage areas</td>
<td>Exposure to petroleum hydrocarbons (petrol, diesel), BTEX, lead and PAH.</td>
<td>High as it is likely that contaminants would have been stored at these locations.</td>
<td>Potential for migration of contaminants.</td>
</tr>
<tr>
<td>Abandoned farm machinery areas</td>
<td>Exposure to petroleum hydrocarbons (petrol, diesel), BTEX, lead and PAH.</td>
<td>Moderate as any spills are likely to be minor.</td>
<td></td>
</tr>
<tr>
<td>AM radio transmission towers</td>
<td>Exposure to unknown contaminants present in fill.</td>
<td>Low as the materials used for the tower are unlikely to be contaminated.</td>
<td></td>
</tr>
<tr>
<td>Crop land where hand spraying of herbicides and pesticides has been employed.</td>
<td>Exposure to chemicals associated with herbicide and pesticide use.</td>
<td>High as use of contaminants of concern is widespread across the study area and the extent is unknown.</td>
<td>Potential for migration of contaminants.</td>
</tr>
</tbody>
</table>
8. **Conclusions**

Based on the results and findings presented in this assessment report, a number of potentially contaminating activities and potential contaminated areas were identified within the study area and the surrounding areas.

As part of the assessment a preliminary qualitative risk assessment was undertaken based on available information at the time of the assessment. Based on the results and findings of the phase 1 contamination assessment, the overall likelihood of encountering contamination during the proposed development was considered to be moderate to high due to the potential sources of contamination identified within the study area and the proposed future land use indicated in the LES.
9. Recommendations

Based on the results and conclusions presented in this assessment report, it is recommended that:

- An intrusive soil investigation (Phase 2 ESA), be undertaken at the potential source areas proposed to be developed for residential land uses in accordance with the relevant NSW contaminated land guidelines. This should be undertaken prior to preparation of a draft Local Environmental Plan.

- On the basis of the preliminary risk assessment area proposed for intrusive soil investigation should include but not be limited to the following:
  - sheep dip and cattle dip areas
  - crop land (subject to hand spraying of herbicides and pesticides)
  - buildings potentially constructed of asbestos containing materials
  - machinery and chemical storage areas where contamination is noted on the site
  - fill areas where the source of material is unknown
  - groundwater wells

- The specific requirements for any further investigation, remediation or management of any contamination excavated within the identified areas would be recommended in the phase two investigations report.

- A soil and groundwater management plan should be prepared as part of any development application or construction environmental management plan for site development. This would include but not be limited to, safeguard measures, containment procedures, investigation guidelines and a contingency plan. Should any contamination be identified during site construction activities, a detailed investigation would be required to be undertaken to identify the nature and extent of contamination.

- Excavated material would need to be managed and handled in a manner appropriate to the type of material. All excavated material would need to be appropriately sampled, classified and stockpiled in accordance with the Environmental Guidelines: Classification and Management of Liquid and Non-liquid waste (NSW EPA 1999) prior to off site disposal or reuse or treatment of material on site. It is recommended that the sample data collected during the Phase 2 ESA be used, in part, to classify waste material prior to any proposed excavation works being undertaken. However, supplementary waste classification sampling may also be necessary.

- The inspection and removal of asbestos materials should be undertaken by a suitably qualified asbestos licensed specialist/removalist.
10. Limitations

We have prepared this working paper for the use of the Bathurst Regional Council to support the LES process. This paper has not been prepared for use by parties other than the Client, and the Client’s respective consulting advisers.

This working paper has been written with the expressed intent of providing preliminary information for LES process. Sub-surface conditions relevant to design and construction works should be assessed by contractors who can make their own interpretation of the factual data and test results, and perform any additional tests as necessary for their own purposes.

This assessment has been prepared based on a review of existing information and through discussions with the Authorities. Connell Wagner take no responsibility and disclaims all liability whatsoever for any loss or damage that Bathurst Regional Council may suffer as a result of using or relying on any such information or recommendations contained in this assessment, except to the extent Connell Wagner expressly indicates in this assessment that it has verified the information to its satisfaction. This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined in Section 1.3. Should further information become available regarding the conditions at the site, including previously unknown likely sources of contamination, Connell Wagner reserves the right to review the report in the context of the additional information.

Soil and rock formations are often variable, resulting in heterogeneous distribution of contaminants across the site. Contaminant concentrations may be estimated at chosen sample locations, however, conditions between sample sites can be inferred on the basis of geological and hydrological conditions and the nature and extent of the identified contamination. Boundaries between zones of variable contamination are often indistinct, and therefore interpretation is based on available information and the application of professional judgement. The accuracy with which sub-surface conditions are characterised depends on the frequency and methods of sampling and the uniformity of sub-surface conditions and it is therefore limited to the scope of works undertaken.
11. References


Australian and New Zealand Environment and Conservation Council and Agriculture and National Health and Medical Research Council (1992) *Australian and New Zealand Guidelines for Assessment and Management of Contaminated Sites*, Australian and New Zealand Environment and Conservation Council and Agriculture and National Health and Medical Research Council, Canberra.


Appendix A

Figures
FIGURE 1
LOCALITY PLAN

EGLINTON
PHASE 1 CONTAMINATION ASSESSMENT
Appendix B

Bore Search Result
Eglinton Groundwater Bores (NSW Natural Resource Atlas)

Legend

<table>
<thead>
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<th>Symbol</th>
<th>Layer</th>
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<tr>
<td>⬤</td>
<td>Groundwater bores</td>
</tr>
<tr>
<td><del>/</del></td>
<td>Major rivers</td>
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<td>○</td>
<td>Town</td>
</tr>
<tr>
<td>√</td>
<td>Primary/arterial road</td>
</tr>
<tr>
<td>℄</td>
<td>Motorway/freeway</td>
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<tr>
<td>✈</td>
<td>Railway</td>
</tr>
<tr>
<td>✈</td>
<td>Runway</td>
</tr>
<tr>
<td>~</td>
<td>Contour</td>
</tr>
<tr>
<td>▮</td>
<td>Background</td>
</tr>
</tbody>
</table>

Topographic base map (Topoweb)
Appendix C

NSW DEC Register Search Results
Search results

Your search for: LGA: Bathurst City Council

Matched 2 notices relating to 2 sites.

<table>
<thead>
<tr>
<th>Suburb</th>
<th>Address</th>
<th>Site Name</th>
<th>Notices related to this site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathurst</td>
<td>71 Russell Street</td>
<td>Former Bathurst Gasworks</td>
<td>1 current</td>
</tr>
<tr>
<td>Bathurst</td>
<td>Corner William and Durham Street</td>
<td>Former Police Station Site</td>
<td>1 current</td>
</tr>
</tbody>
</table>

Page 1 of 1

16 August 2005
Appendix D

Bathurst Regional Council Contaminated Land Register Search
CONTAMINATED LAND REGISTER

ADDRESS: 167 FREEMANTLE RD

LAND DESCRIPTION: Lot 5 DP594198

OWNER: BATHURST SOARING CLUB PTY LTD

POSTAL ADDRESS: GPO Box 3110

SYDNEY 2001

DETAILS

PREVIOUS USES: PIPERS FIELD AIRPORT & ASSOCIATED ACTIVITIES.

COUNCIL RECORD: 

CURRENT USE: 

GEOTEchnical INVESTIGATIONS: 

REMEDIATED: 

VALIDATED: 

CONTAMINATED LAND REGISTER

ADDRESS: 10 LOREN ST, EGLINTON

LAND DESCRIPTION: LOT 60 DP825743

OWNER: H & N DRUIT

POSTAL ADDRESS: 10 LOREN ST

EGLINTON

DETAILS

PREVIOUS USES: FUEL PREVIOUSLY RETAILED FROM SITE.

COUNCIL RECORD: PERS COMM (S. COOPES)

CURRENT USE: RESIDENTIAL

GEOTECHNICAL INVESTIGATIONS: ____________________________

__________________________

REMEDIATED: ____________________________

VALIDATED: ____________________________
CONTAMINATED LAND REGISTER

ADDRESS: 21 Park St, Eglinton

LAND DESCRIPTION: Lot 3 DP38206

OWNER: M & H Michel

POSTAL ADDRESS: 21 Park St
                Eglinton

DETAILS

PREVIOUS USES: Shop including fuel sales

COUNCIL RECORD: 

CURRENT USE: Shop

GEOTECHNICAL INVESTIGATIONS: 

REMEDIATED: 

VALIDATED: 


Appendix E

Historical Title Information
Dear Connell Wagner Pty Ltd,

PO Box 538
Neutral Bay NSW 2089

Attention: Anna Johnston

RE: Eglinton Site
Ref: Project Code 713

Note 1: Folio Identifier 10/872964
Note 2: Folio Identifier 11/872964
Note 3: Folio Identifier 2/786760 & Folio Identifier 3/786760
Note 4: Folio Identifier 11/825612
Note 5: Folio Identifier 12/825612
Note 6: Folio Identifier 991/777674
Note 7: Folio Identifier 992/777674
Note 8: Folio Identifier 100/710096
Note 9: Folio Identifier 3/795012
Note 10: Folio Identifier 6/795012
Note 11: Folio Identifier 31/1064156
Note 12: Folio Identifier 32/1064156
Note 13: Folio Identifier 2/740403
Note 14: Folio Identifier 9/4/983884
Note 15: Folio Identifier 1/1047811
Note 16: Folio Identifier 1/786472
Note 17: Folio Identifier 2/786472
Note 18: Folio Identifier 11/1077306
Note 19: Folio Identifier 10/1077306
Note 1:

**Current Search**

Folio Identifier 10/872964 (attached)
DP 872964 (plan attached)
Dated 07 September 2005
Registered Proprietor:
BATHURST CITY COUNCIL

---

**Title Tree**

**Lot 10 DP 872964**

Folio Identifier 10/872964

Folio Identifier 2/598358

Certificate of Title Volume 14207 Folio 29
Certificate of Title Volume 4473 Folio 186
Certificate of Title Volume 4417 Folio 55
P A 30659
Conveyance BK 1539 No. 400

****
### Summary of proprietor(s)
#### Lot 10 DP 872964

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988 – todate</td>
<td>Bathurst City Council</td>
</tr>
<tr>
<td>1997 – 1998</td>
<td>Douglas Keith Callaghan, farmer &amp; grazier (Lot 2 DP 598358)</td>
</tr>
<tr>
<td>1962 – 1980</td>
<td>Douglas Keith Callaghan, farmer &amp; grazier</td>
</tr>
<tr>
<td>1956 – 1962</td>
<td>William Carl Treamor, grazier</td>
</tr>
<tr>
<td>1956 – 1956</td>
<td>Pearl Zillah Orth, married woman</td>
</tr>
<tr>
<td>1931 – 1956</td>
<td>William Hall, grazier</td>
</tr>
<tr>
<td>1930 – 1931</td>
<td>The Union Trustee Company of Australia Limited</td>
</tr>
<tr>
<td>1930 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td>1928 – 1928</td>
<td>The Union Trustee Co of Australia Limited (trustee &amp; nominee)</td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>David Paxton Fyfe, trustee</td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>Alfred Macartney Hemsley, trustee</td>
</tr>
</tbody>
</table>

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Note 2:

Current Search

Folio Identifier 11/872964 (attached)
DP 872964 (plan attached)
Dated 07 September 2005
Registered Proprietor:
HYNASH PTY LIMITED

Title Tree
Lot 11 DP 872964

Folio Identifier 11/872964
Folio Identifier 2/598358
Certificate of Title Volume 14207 Folio 29
Certificate of Title Volume 4473 Folio 186
Certificate of Title Volume 4417 Folio 55
P A 30659
Conveyance BK 1539 No. 400

****
### Summary of proprietor(s)
#### Lot 11 DP 872964

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002 – todate</td>
<td>Hynash Pty Limited</td>
</tr>
<tr>
<td>1999 – 2000</td>
<td>Noel Heywood Williams, William Bernard Patrick Lawson</td>
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<tr>
<td>1997 – 1999</td>
<td>Douglas Keith Callaghan, farmer &amp; grazier</td>
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<tr>
<td>1988 – 1997</td>
<td>Douglas Keith Callaghan, farmer &amp; grazier</td>
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<tr>
<td>1962 – 1980</td>
<td>Douglas Keith Callaghan, farmer &amp; grazier</td>
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<tr>
<td>1956 – 1962</td>
<td>William Carl Treamor, grazier</td>
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<td>1956 – 1956</td>
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<td>1931 – 1956</td>
<td>William Hall, grazier</td>
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<td>1930 – 1931</td>
<td>The Union Trustee Company of Australia Limited</td>
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<tr>
<td>1930 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire, The Union Trustee Co of Australia Limited</td>
</tr>
</tbody>
</table>
| 1900 – 1920 | James Horne Stewart, esquire, Arthur Wigram Allen, David Paxton Fyfe, Alfred Macartney Hemsley,
Note 3:

**Current Search**

Folio Identifier’s 2/786760 & 3/786760 (attached)
DP 786760 (plan attached)
Dated 07 September 2005
Registered Proprietor:
CAMPLIN BROADCASTERS PTY LIMITED

**Title Tree**
Lots 2 & 3 DP 786760

Folio Identifier’s 2/786760 & 3/786760

(a) Folio Identifier 1/532373
Certificate of Title Volume 10943 Folio 73

\ Certificate of Title Volume 13564 Folio 34
\ Certificate of Title Volume 10943 Folio 74

Certificate of Title Volume 8425 Folio 82 & 83
Certificate of Title Volume 5251 Folio 180
Certificate of Title Volume 5198 Folio 95
Certificate of Title Volume 4417 Folio 55

P A 30659
Conveyance BK 1539 No. 400

****

Summary of proprietor(s)
Lots 2 & 3 DP 786760
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<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989 – todate</td>
<td>Camplin Broadcasters Pty Limited</td>
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<tr>
<td>1989 – 1989</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
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</table>

See Notes (a) & (b)

**Note (a)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988 – 1989</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>(1988 – 1989)</td>
<td>(Lease to Bathurst Broadcasters Proprietary Ltd of the 2 BS Transmitting Station)</td>
</tr>
<tr>
<td>(1980 – 1988)</td>
<td>(Lease to Bathurst Broadcasters Proprietary Ltd of the 2 BS Transmitting Station)</td>
</tr>
<tr>
<td>1969 – 1981</td>
<td>Kenneth Bede Dominic Waddell, grazier Marjorie Jean Waddell</td>
</tr>
<tr>
<td>(1969 – 1980)</td>
<td>(Lease to Bathurst Broadcasters Proprietary Ltd)</td>
</tr>
<tr>
<td>(Part of Lot 4 DP 16832 Area 279 Acres 3 Roods 33 Perches- CT Vol 8425 Fol 82 &amp; 83)</td>
<td></td>
</tr>
<tr>
<td>(Part Lot 4 DP 16832 Area 279 Acres 3 Roods 33 Perches- CT Vol 5251 Fol 180)</td>
<td></td>
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<tr>
<td>1941 – 1963</td>
<td>Thomas Francis Peacock, grazier</td>
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<tr>
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<tr>
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<tr>
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<tr>
<td>1930 – 1941</td>
<td>The Union Trustee Company of Australia Limited</td>
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<tr>
<td>1930 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
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<tr>
<td>(Part Portion 71 Parish Jedburgh Area 2138 Acres 2 Roods)</td>
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<tr>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
</tr>
<tr>
<td>(Portion 71 Parish Jedburgh &amp; other lands)</td>
<td></td>
</tr>
<tr>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire The Union Trustee Co of Australia Limited</td>
</tr>
<tr>
<td>(trustee &amp; nominee)</td>
<td></td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire Arthur Wigram Allen, trustee David Paxton Fyfle, trustee Alfred Macartney Hemsley, trustee</td>
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</table>

**Note (b)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Lot 990 DP 777674)</td>
<td>(Lot 2 &amp; 3 DP 786760)</td>
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<tr>
<td>Year</td>
<td>Name</td>
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<tr>
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<tr>
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<tr>
<td>1985 – 1988</td>
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<tr>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
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<tr>
<td>1969 – 1978</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
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<tr>
<td>1941 – 1941</td>
<td>Thomas Francis Peacock, grazier</td>
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<td>1930 – 1931</td>
<td>The Union Trustee Company of Australia Limited</td>
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<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
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<tr>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
</tr>
</tbody>
</table>

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Note 4:

Current Search

Folio Identifier 11/825612 (attached)
Title Tree
Lot 11 DP 825612

Folio Identifier 11/825612
Folio Identifier 1/786760

(a) Folio Identifier 1/532373
(b) Folio Identifier 990/777674

Certificate of Title Volume 10943 Folio 73
Certificate of Title Volume 13564 Folio 34
Certificate of Title Volume 10943 Folio 74
Certificate of Title Volume 8425 Folio 82 & 83
Certificate of Title Volume 5251 Folio 180
Certificate of Title Volume 5198 Folio 95
Certificate of Title Volume 4417 Folio 55
P A 30659
Conveyance BK 1539 No. 400

****

Summary of proprietor(s)
Lot 11 DP 825612

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<th>Proprietor</th>
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<td>1992 – todate</td>
<td>Peter Anthony Keogh</td>
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<td>Graham Bede Dominic Waddle</td>
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See Notes (a) & (b)
Note (a)

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<th>Name and Occupation</th>
<th>Description</th>
</tr>
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<tr>
<td>1981 – 1988</td>
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<td>(Lot 1 DP 532373- CT Vol 10943 Fol 73)</td>
</tr>
<tr>
<td>1969 – 1981</td>
<td>Kenneth Bede Dominic Waddell, grazier</td>
<td>(Lot 1 DP 532373- CT Vol 10943 Fol 73)</td>
</tr>
<tr>
<td>1930 – 1941</td>
<td>The Union Trustee Company of Australia Limited</td>
<td>(Part Portion 71 Parish Jedburgh Area 2138 Acres 2 Roods)</td>
</tr>
<tr>
<td>1928 – 1930</td>
<td>John Jeremiah Leahy, farmer</td>
<td>(Portion 71 Parish Jedburgh &amp; other lands)</td>
</tr>
<tr>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire</td>
<td>(Portion 71 Parish Jedburgh &amp; other lands)</td>
</tr>
<tr>
<td>1900 – 1920</td>
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<td>(Portion 71 Parish Jedburgh &amp; other lands)</td>
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</table>

Note (b)

<table>
<thead>
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<th>Name and Occupation</th>
<th>Description</th>
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<tbody>
<tr>
<td></td>
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<td>(Lot 990 DP 777674)</td>
</tr>
<tr>
<td>Years</td>
<td>Owners and Occupiers</td>
<td>Description</td>
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<tr>
<td>------------</td>
<td>-----------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1988 – 1989</td>
<td>Graham Bede Dominic Waddell, grazier</td>
<td>(Lot 99 DP 710096)</td>
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<tr>
<td>1985 – 1988</td>
<td>Graham Bede Dominic Waddell, grazier</td>
<td>(Lot 9 DP 594335- CT Vol 13564 Fol 34)</td>
</tr>
<tr>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
<td></td>
</tr>
<tr>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
<td>(Lot 2 DP 532373- CT Vol 10943 Fol 74)</td>
</tr>
<tr>
<td>1969 – 1978</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
<td></td>
</tr>
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<td>1968 – 1969</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
<td></td>
</tr>
<tr>
<td>1963 – 1968</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
<td></td>
</tr>
<tr>
<td>1941 – 1963</td>
<td>Thomas Francis Peacock, grazier</td>
<td></td>
</tr>
<tr>
<td>1941 – 1941</td>
<td>Thomas Francis Peacock, grazier</td>
<td></td>
</tr>
<tr>
<td>1930 – 1931</td>
<td>The Union Trustee Company of Australia Limited</td>
<td></td>
</tr>
<tr>
<td>1930 – 1930</td>
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<td></td>
</tr>
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<td>John Jeremiah Leahy, farmer</td>
<td>(Portion 71 Parish Jedburgh Area 2138 Acres 2 Rooods)</td>
</tr>
<tr>
<td>1920 – 1928</td>
<td>James Horne Stewart, esquire</td>
<td>(Portion 71 Parish Jedburgh &amp; other lands)</td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
<td></td>
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Note 5:

Current Search
Title Tree
Lot 12 DP 825612

Folio Identifier 12/825612
Folio Identifier 1/786760
(a) Folio Identifier 1/532373 (b) Folio Identifier 990/777674
Certificate of Title Volume 10943 Folio 73 Certificate of Title Volume 13564 Folio 34
\ \ Certificate of Title Volume 10943 Folio 74
\ \ Certificate of Title Volume 13564 Folio 34
Certificate of Title Volume 8425 Folio 82 & 83
Certificate of Title Volume 5251 Folio 180
Certificate of Title Volume 5198 Folio 95
Certificate of Title Volume 4417 Folio 55
P A 30659
Conveyance BK 1539 No. 400

****

Summary of proprietor(s)
Lot 12 DP 825612
<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Lot 12 DP 825612)</td>
</tr>
</tbody>
</table>
| 1993 –todate| Kevin George Hurst  
Pauline Patricia Hurst |
| 1992 – 1993| Graham Bede Dominic Waddle                     |
|            | (Lot 1 DP 786760)                               |

See Notes (a) & (b)

Note (a)

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Lot 1 DP 532373)</td>
</tr>
<tr>
<td>1988 – 1989</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>(1988 – 1989)</td>
<td>(Lease to Bathurst Broadcasters Proprietary Ltd of the 2 B S Transmitting Station)</td>
</tr>
<tr>
<td>Period</td>
<td>Names and Titles</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>(1980 – 1988)</td>
<td>Lease to Bathurst Broadcasters Proprietary Ltd of the 2 BS Transmitting Station</td>
</tr>
<tr>
<td>1969 – 1981</td>
<td>Kenneth Bede Dominic Waddell, grazier Marjorie Jean Waddell</td>
</tr>
<tr>
<td></td>
<td>(Part of Lot 4 DP 16832 Area 279 Acres 3 Roods 33 Perches- CT Vol 8425 Fol 82 &amp; 83)</td>
</tr>
<tr>
<td></td>
<td>(Part Lot 4 DP 16832 Area 279 Acres 3 Roods 33 Perches- CT Vol 5251 Fol 180)</td>
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<td>1941 – 1963</td>
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<tr>
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<td>(Portion 71 Parish Jedburgh &amp; other lands)</td>
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</tr>
<tr>
<td></td>
<td>The Union Trustee Co of Australia Limited (trustee &amp; nominee)</td>
</tr>
<tr>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
</tr>
<tr>
<td></td>
<td>Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td></td>
<td>David Paxton Fyfle, trustee</td>
</tr>
<tr>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
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Note (b)
<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
<td></td>
</tr>
<tr>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
<td>Marjorie Jean Waddell</td>
</tr>
<tr>
<td></td>
<td><strong>(Lot 2 DP 532373- CT Vol 10943 Fol 74)</strong></td>
<td></td>
</tr>
<tr>
<td>1969 – 1978</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
<td>Marjorie Jean Waddell</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td><strong>(Part Lot 4 DP 16832 Area 279 Acres 3 Roods 33 Perches- CT Vol 5251 Fol 180)</strong></td>
<td></td>
</tr>
<tr>
<td>1941 – 1963</td>
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<td></td>
</tr>
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<td></td>
<td></td>
<td>(trustee &amp; nominee)</td>
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<tr>
<td>1900 – 1920</td>
<td>James Horne Stewart, esquire</td>
<td>Arthur Wigram Allen, trustee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>David Paxton Fyfle, trustee</td>
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<td></td>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
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-16-

Note 6:

**Current Search**

Folio Identifier 991/777674 (attached)
DP 777674 (plan attached)
Dated 07 September 2005
Registered Proprietor:
HELEN CLARA WADDELL

Title Tree
Lot 991 DP 777674

Folio Identifier 991/777674
Folio Identifier 99/710096
Certificate of Title Volume 13564 Folio 34
Certificate of Title Volume 10943 Folio 74
Certificate of Title Volume 8425 Folio 82 & 83
Certificate of Title Volume 5251 Folio 180
Certificate of Title Volume 5198 Folio 95
Certificate of Title Volume 4417 Folio 55
P A 30659
Conveyance BK 1539 No. 400

****

-17-

Summary of proprietor(s)
Lot 991 DP 777674

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
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<tbody>
<tr>
<td>1988 – todate</td>
<td>Helen Clara Waddell</td>
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<td>Period</td>
<td>Owner/Title/Role</td>
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<td>-------------------------------------------</td>
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<tr>
<td>1985 – 1988</td>
<td>Graham Bede Dominic Waddell, grazier</td>
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<tr>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
</tr>
<tr>
<td>1978 – 1981</td>
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<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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Note 7:

Current Search

Folio Identifier 992/777674 (attached)
DP 777674 (plan attached)
Dated 07 September 2005
Registered Proprietor:
ROBERT GERALD CHURCHILL
EVELYN DAWN CHURCHILL
Title Tree
Lot 992 DP 777674

Folio Identifier 992/777674
Folio Identifier 99/710096

Certificate of Title Volume 13564 Folio 34
Certificate of Title Volume 10943 Folio 74
Certificate of Title Volume 8425 Folio 82 & 83
Certificate of Title Volume 5251 Folio 180
Certificate of Title Volume 5198 Folio 95
Certificate of Title Volume 4417 Folio 55

P A 30659
Conveyance BK 1539 No. 400

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Summary of proprietor(s)
Lot 992 DP 777674

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
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| 1991 – todate | Robert Gerald Churchill  
                           Evelyn Dawn Churchill |
<p>| 1988 – 1991 | Nicole Margaret Toomey, married woman          |</p>
<table>
<thead>
<tr>
<th>Years</th>
<th>Owners and Occupations</th>
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</thead>
<tbody>
<tr>
<td>1988 – 1988</td>
<td>Graham Bede Dominic Waddell, grazier</td>
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<tr>
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<td>(Lot 99 DP 710096)</td>
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<tr>
<td>1985 – 1988</td>
<td>Graham Bede Dominic Waddell, grazier</td>
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<td>(Lot 9 DP 594335- CT Vol 13564 Fol 34)</td>
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<tr>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
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<tr>
<td>1978 – 1981</td>
<td>Kenneth Bede Waddell, dairy farmer</td>
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<td>1930 – 1941</td>
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<td>Arthur Wigram Allen, trustee</td>
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<td></td>
<td>David Paxton Fyfle, trustee</td>
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<tr>
<td></td>
<td>Alfred Macartney Hemsley, trustee</td>
</tr>
</tbody>
</table>

Note 8:

Current Search

Folio Identifier 100/710096 (attached)
DP 710096 (plan attached)
Dated 07 September 2005
Registered Proprietor:
POPPO CHRISTIAAN BOER
EILDERTINA TONA JOHANNA BOER-FLOHILL
**Title Tree**  
**Lot 100 DP 710096**  
Folio Identifier 100/710096

(a)                                                     (b)

Certificate of Title Volume 13564 Folio 34  
Certificate of Title Volume 13564 Folio 35

Certificate of Title Volume 10943 Folio 74

Certificate of Title Volume 8425 Folio 82 & 83

Certificate of Title Volume 5251 Folio 180

Certificate of Title Volume 5198 Folio 95

Certificate of Title Volume 4417 Folio 55

P A 30659

Conveyance BK 1539 No. 400

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**Summary of proprietor(s)**  
**Lot 100 DP 710096**

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
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<tbody>
<tr>
<td>1988 – todate</td>
<td>Poppo Christiaan Boer</td>
</tr>
<tr>
<td></td>
<td>Eildertina Tona Johanna Boer-Flohill</td>
</tr>
<tr>
<td>1985 – 1988</td>
<td>Graham Bede Dominic Waddell</td>
</tr>
<tr>
<td></td>
<td>Helen Clara McFadden</td>
</tr>
</tbody>
</table>
See (a) & (b)

### Note (a)

<table>
<thead>
<tr>
<th>Date</th>
<th>Name and Occupation</th>
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<tbody>
<tr>
<td>1981 – 1985</td>
<td>Graham Bede Dominic Waddell, grazier</td>
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</table>

### Note (b)

<table>
<thead>
<tr>
<th>Date</th>
<th>Name and Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978 – 1985</td>
<td>Graham Bede Waddell, dairyman</td>
</tr>
<tr>
<td></td>
<td>Helen Clara McFadden, clerk</td>
</tr>
<tr>
<td>1978 – 1978</td>
<td>Kenneth Bede Waddell, dairyman</td>
</tr>
<tr>
<td></td>
<td>Marjorie Jean Waddell</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
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1968 – 1969 Kenneth Bede Waddell, dairy farmer
Arthur Harold Waddell, dairy farmer
(Part of Lot 4 DP 16832 Area 279 Acres 3 Roods 33 Perches- CT Vol 8425 Fol 82 & 83)

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Arthur Harold Waddell, dairy farmer
(Part Lot 4 DP 16832 Area 279 Acres 3 Roods 33 Perches- CT Vol 5251 Fol 180)

1941 – 1963 Thomas Francis Peacock, grazier
(Part Lot 4 DP 16832 Area 550 Acres 3 Roods 14 Perches- CT Vol 5198 Fol 95)

1941 – 1941 Thomas Francis Peacock, grazier
(Part Portion 71 Parish Jedburgh Area 2138 Acres 2 Roods- CT Vol 4417 Fol 55)

1930 – 1941 The Union Trustee Company of Australia Limited
(Part Portion 71 Parish Jedburgh Area 2138 Acres 2 Roods)

1928 – 1930 John Jeremiah Leahy, farmer
(Portion 71 Parish Jedburgh & other lands)

1920 – 1928 James Horne Stewart, esquire
The Union Trustee Co of Australia Limited
(trustee & nominee)

1900 – 1920 James Horne Stewart, esquire
Arthur Wigram Allen, trustee
David Paxton Fyfle, trustee
Alfred Macartney Hemsley, trustee

****

Note 9:

Current Search

Folio Identifier 3/795012 (attached)
DP 795012 (plan attached)
Dated 07 September 2005
Registered Proprietor:
COLIN BARRY DE VERE COX
## Title Tree
### Lot 3 DP 795012

Folio Identifier 3/795012

C A 40527

Conveyance BK 3051 No. 692

Conveyance BK 2458 No. 368

Conveyance BK 1276 No. 393

Conveyance BK 1243 No. 430

Conveyance BK 1201 No. 398

Conveyance BK 927 No. 931

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### Summary of proprietor(s)
#### Lot 3 DP 795012

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<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Lot 3 DP 795012)</td>
<td>(Allotment 1 to 8 Section 5 Village of Eglinton &amp; Part Portion 10 Parish Jedburgh)</td>
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<tr>
<td>1998 – todate</td>
<td>Colin Barry De Vere Cox, graizer</td>
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<tr>
<td>1972 – 1998</td>
<td>Colin Barry De Vere Cox, graizer</td>
</tr>
<tr>
<td>1958 – 1972</td>
<td>Hazel Charity De Vere Cox, widow</td>
</tr>
<tr>
<td>Year Range</td>
<td>Name and Occupation</td>
</tr>
<tr>
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<td>-----------------------</td>
</tr>
<tr>
<td>1944 – 1958</td>
<td>Hazel Charity De Vere Cox, widow</td>
</tr>
<tr>
<td>1922 – 1944</td>
<td>Percival George Cox, farmer</td>
</tr>
<tr>
<td>1921 – 1922</td>
<td>James Edward Burrell, stationer</td>
</tr>
<tr>
<td></td>
<td>(Allotments 1, 2, 3, 4 &amp; 8 Section 5 of Saltrames Estate)</td>
</tr>
<tr>
<td>1920 – 1921</td>
<td>Charles Bloodworth, grazier</td>
</tr>
<tr>
<td>1911 – 1920</td>
<td>James Freeman, farmer</td>
</tr>
</tbody>
</table>

Note 10:

**Current Search**

Folio Identifier 6/795012 (attached)
DP 795012 (plan attached)
Dated 07 September 2005
Registered Proprietor:
COLIN BARRY DE VERE COX
**Title Tree**

**Lot 6 DP 795012**

Folio Identifier 6/795012

CA 40527

Conveyance BK 3051 No. 692
Conveyance BK 2458 No. 368
Conveyance BK 1276 No. 393
Conveyance BK 1243 No. 430
Conveyance BK 1201 No. 398
Conveyance BK 927 No. 931

****

---

**Summary of proprietor(s)**

**Lot 6 DP 795012**

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Lot 6 DP 795012)</td>
<td>(Allotment 1 to 8 Section 5 Village of Eglinton &amp; Part Portion 10 Parish Jedburgh)</td>
</tr>
<tr>
<td>1998 – todate</td>
<td>Colin Barry De Vere Cox, graizer</td>
</tr>
<tr>
<td>1972 – 1998</td>
<td>Colin Barry De Vere Cox, graizer</td>
</tr>
<tr>
<td>1958 – 1972</td>
<td>Hazel Charity De Vere Cox, widow, Jeanette De Vere Johnson, wife of architect</td>
</tr>
<tr>
<td>Years</td>
<td>Name</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>1944 – 1958</td>
<td>Colin Barry De Vere Cox</td>
</tr>
<tr>
<td>1922 – 1944</td>
<td>Hazel Charity De Vere Cox</td>
</tr>
<tr>
<td>1921 – 1922</td>
<td>Percival George Cox</td>
</tr>
<tr>
<td>1920 – 1921</td>
<td>James Edward Burrell</td>
</tr>
<tr>
<td>1911 – 1920</td>
<td>Charles Bloodworth</td>
</tr>
<tr>
<td></td>
<td>(Allotments 1, 2, 3, 4 &amp; 8 Section 5 of Saltrames Estate)</td>
</tr>
</tbody>
</table>

Note 11:

Current Search

Folio Identifier 31/1064156 (attached)
DP 1064156 (plan attached)
Dated 07 September 2005
Registered Proprietor:
REX ALLAN KELLAHAN
COLLEEN CLEYTUS KELLAHAN
Title Tree
Lot 31 DP 1064156

Folio Identifier 31/1064156

(a)  (b)

Folio Identifier 1/740403  Folio Identifier 3/740403
P A 59906              P A 59908
Conveyance BK 3655 No. 971  Possessionary Title
Conveyance BK 3646 No. 566
****
Conveyance BK 3624 No. 859
Conveyance BK 2031 No. 454
Conveyance BK 1149 No. 251

*****

Summary of proprietor(s)
Lot 31 DP 1064156

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 – todate</td>
<td>(Lot 31 DP 1064156) Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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</tbody>
</table>

See Notes (a) & (b)

Note (a)
<table>
<thead>
<tr>
<th>Time</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 – 2004</td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td>Colleen Cleytus Kellahan</td>
</tr>
<tr>
<td>1987 – 2000</td>
<td>Harold Richard Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td>(Lot 1 Section 4 Village Eglinton)</td>
<td></td>
</tr>
<tr>
<td>1985 – 1987</td>
<td>Harold Richard Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td>Rex Allan Kellehan, grazier</td>
</tr>
<tr>
<td>(Lot 1 &amp; Lot 2 Section 4 Village of Eglinton)</td>
<td></td>
</tr>
<tr>
<td>1947 – 1985</td>
<td>Herbert Allan Kellahan, labourer</td>
</tr>
<tr>
<td>1947 – 1947</td>
<td>Margaret Cusick, widow</td>
</tr>
<tr>
<td>1919 – 1947</td>
<td>Alfred Ernest Cusick, farmer &amp; grazier</td>
</tr>
<tr>
<td>1910 – 1919</td>
<td>William Bryant, labourer</td>
</tr>
</tbody>
</table>

Note (b)

<table>
<thead>
<tr>
<th>Time</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 – 2004</td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td>Colleen Cleytus Kellahan</td>
</tr>
<tr>
<td>2000 – 2000</td>
<td>Vincent John Kellahan</td>
</tr>
<tr>
<td>1987 – 2000</td>
<td>Herbert Allan Kellahan</td>
</tr>
<tr>
<td>(Part of Section 4 Village Eglinton)</td>
<td></td>
</tr>
<tr>
<td>1986 – 1987</td>
<td>Herbert Allan Kellahan (possessionary title)</td>
</tr>
<tr>
<td>1900 – 1986</td>
<td>George Rankin</td>
</tr>
</tbody>
</table>

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Note 12:

Current Search

Folio Identifier 32/1064156 (attached)
DP 1064156 (plan attached)
Dated 07 September 2005
Registered Proprietor:
IAN ARTHUR STUART TAYLOR
JENNIFER ANN BARNWELL
Title Tree
Lot 32 DP 1064156

Folio Identifier 32/1064156
Folio Identifier 1/740403
P A 59906
Conveyance BK 3655 No. 971
Conveyance BK 3646 No. 566
Conveyance BK 3624 No. 859
Conveyance BK 2031 No. 454
Conveyance BK 1149 No. 251

*****

Summary of proprietor(s)
Lot 32 DP 1064156

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Lot 32 DP 1064156)</td>
<td>Ian Arthur Stuart Taylor</td>
</tr>
<tr>
<td></td>
<td>Jennifer Ann Barnwell</td>
</tr>
<tr>
<td>2004 – todate</td>
<td></td>
</tr>
<tr>
<td>(Lot 1 DP 740403)</td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td></td>
<td>Colleen Cleytus Kellahan</td>
</tr>
<tr>
<td>2004 – 2004</td>
<td></td>
</tr>
<tr>
<td>2000 – 2004</td>
<td>Rex Allan Kellahan, grazier</td>
</tr>
<tr>
<td>Year</td>
<td>Name</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>1987 – 2000</td>
<td>Colleen Cleytus Kellahan</td>
</tr>
<tr>
<td>1985 – 1987</td>
<td>Harold Richard Kellahan</td>
</tr>
<tr>
<td></td>
<td>Rex Allan Kellahan</td>
</tr>
<tr>
<td>1947 – 1985</td>
<td>Herbert Allan Kellahan</td>
</tr>
<tr>
<td>1947 – 1947</td>
<td>Margaret Cusick</td>
</tr>
<tr>
<td>1919 – 1947</td>
<td>Alfred Ernest Cusick</td>
</tr>
<tr>
<td>1910 – 1919</td>
<td>William Bryant</td>
</tr>
</tbody>
</table>

****

Note 13:

**Current Search**

Folio Identifier 2/740403 (attached)
DP 740403 (plan attached)
Dated 07 September 2005
Registered Proprietor:
**HAROLD RICHARD KELLAHEN**
## Title Tree
**Lot 2 DP 740403**

Folio Identifier 2/740403

P A 59906

Conveyance BK 3655 No. 971
Conveyance BK 3646 No. 566
Conveyance BK 3624 No. 859
Conveyance BK 2031 No. 454
Conveyance BK 1149 No. 251

*****

### Summary of proprietor(s)
**Lot 2 DP 740403**

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987 – todate</td>
<td>Harold Richard Kellahan</td>
</tr>
<tr>
<td><strong>(Lot 2 DP 740403)</strong></td>
<td></td>
</tr>
<tr>
<td>1987 – 1987</td>
<td>Harold Richard Kellahan</td>
</tr>
<tr>
<td>1985 – 1987</td>
<td>Rex Allan Kellahan</td>
</tr>
<tr>
<td></td>
<td>Harold Richard Kellahan</td>
</tr>
<tr>
<td><strong>(Lots 2 Section 4 Village Eglinton)</strong></td>
<td></td>
</tr>
<tr>
<td>1947 – 1985</td>
<td>Herbert Allan Kellahan, labourer</td>
</tr>
<tr>
<td><strong>(Lots 1 &amp; 2 Section 4 Village Eglinton)</strong></td>
<td></td>
</tr>
<tr>
<td>Period</td>
<td>Name</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>1947 – 1947</td>
<td>Margaret Cusick, widow</td>
</tr>
<tr>
<td>1919 – 1947</td>
<td>Alfred Ernest Cusick, farmer &amp; grazier</td>
</tr>
<tr>
<td>1910 – 1919</td>
<td>William Bryant, labourer</td>
</tr>
</tbody>
</table>

*****

Note 14:

Current Search

Folio Identifier 9/4/983884 (attached)
DP 983884 (plan attached)
Dated 07 September 2005
Registered Proprietor:
CLAUDIO TOLOMEO
VALERIE MARY TOLOMEO

Title Tree
Lot 9 Section 4 DP 983884

Folio Identifier 9/4/983884

C A 64213

Conveyance BK 4058 No. 855
Conveyance BK 3059 No. 77
Conveyance BK 3053 No. 366
Conveyance BK 1458 No. 242
Conveyance BK 1148 No. 944

*****

Summary of proprietor(s)
Lot 9 Section 4 DP 983884

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
</table>
| 2004 – todate | Claudio Tolomeo, bricklaying contractor  
Valerie Mary Tolomeo |
| 2002 – 2004 | Valerie Mary Tolomeo  
Claudio Tolomeo, bricklaying contractor |
| 1995 – 2002 | Valerie Marie Tolomeo  
Claudio Tolomeo, bricklaying contractor |
| (Lots 3 to 15 & 33 Section 4 DP 983884 Village Eglinton) | |
| 1972 – 1995 | Valerie Mary Tolomeo  
Claudio Tolomeo, bricklaying contractor |
1927 – 1972  Beaufort Andrew Brown, grazier
1923 – 1927  Francis Henry Brown
1893 – 1923  Fitzherbert Hawkins, esquire
             James Russell Blacket, esquire

*****

Note 15:  

Current Search

Folio Identifier 1/1047811 (attached)
DP 1047811 (plan attached)
Dated 07 September 2005
Registered Proprietor:
MACQUARIE MOTORS GROUP PTY LIMITED

Title Tree
Lot 1 DP 1047811
**Folio Identifier 1/1047811**

**Folio Identifier 12/1011635**

**Folio Identifier 10/883019**

**Folio Identifier 1/777759**

(a) **Certificate of Title Volume 8324 No. 223** P A 60807

**CROWN LAND**

(b) **Conveyance BK 3589 No. 740**

****

**Conveyance BK 2788 No. 478**

**Conveyance BK 2446 No. 27**

**Conveyance BK 1719 No. 167**

**Conveyance BK 1495 No. 337**

**Conveyance BK 1129 No. 595**

**Conveyance BK 667 No. 936**

****

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---

**Summary of proprietor(s)**

**Lot 1 DP 1047811**

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002 – todate</td>
<td>Macquarie Motors Group Pty Limited</td>
</tr>
<tr>
<td>(Lot 1 DP 1047811)</td>
<td></td>
</tr>
<tr>
<td>1999 – 2002</td>
<td>Macquarie Motors Group Pty Limited</td>
</tr>
<tr>
<td>(Lot 12 DP 1011635)</td>
<td></td>
</tr>
<tr>
<td>1999 – 1999</td>
<td>Macquarie Motors Group Pty Limited</td>
</tr>
<tr>
<td>(Lot 10 DP 883019)</td>
<td></td>
</tr>
<tr>
<td>1998 – 1999</td>
<td>Macquarie Motors Group Pty Limited</td>
</tr>
<tr>
<td>1989 – 1998</td>
<td>Willow Creek Grazing Co Pty Limited</td>
</tr>
<tr>
<td>1989 – 1989</td>
<td>Warren Francis Blomfield, chemist</td>
</tr>
</tbody>
</table>
See Notes (a) & (b)

**Note (a)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989 – 1989</td>
<td>Warren Francis Blomfield, chemist</td>
</tr>
<tr>
<td>1961 – 1989</td>
<td>Horace Willot, grantee</td>
</tr>
</tbody>
</table>

(Portion 87 Parish Jedburgh Area 1 Acre 1 Rood 36 Perches- CT Vol 8324 Fol 223)

**Note (b)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982 – 1989</td>
<td>Warren Francis Blomfield, chemist</td>
</tr>
<tr>
<td>1966 – 1982</td>
<td>Warren Francis Blomfield, chemist Beulah Sapphire Cant, hairdresser</td>
</tr>
<tr>
<td>1958 – 1966</td>
<td>Arthur William Hopper, grazier</td>
</tr>
<tr>
<td>1935 - 1958</td>
<td>Adrian Belmore Sutherland, farmer</td>
</tr>
</tbody>
</table>

(Lot A DP 162951 subdivision of Lots 6-11 & Part Reserve of the Saltram Estate)

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1927 – 1935</td>
<td>John Henry Stocks, farmer</td>
</tr>
<tr>
<td>1918 – 1927</td>
<td>Colin McIvor Lamont, farmer &amp; grazier</td>
</tr>
<tr>
<td>1900 – 1918</td>
<td>Eliza Louisa Boyd, married woman</td>
</tr>
</tbody>
</table>

(Lots 6, 7, 8, 9, 10 & 11 & part of Reserve of Saltram Estate & other lands)

*****

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**Note 16:**

**Current Search**

Folio Identifier 1/786472 (attached)
DP 786472 (plan attached)
Dated 07 September 2005
Registered Proprietor:
JENNIFER ANN SMYTH

**Title Tree**

Lot 1 DP 786472
Folio Identifier 1/786472
**Summary of proprietor(s)**
Lot 1 DP 786472

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Lot 1 DP 786472)</td>
<td>(Lot 1 DP 786472)</td>
</tr>
<tr>
<td>1989 – 1998</td>
<td>Gilbert Arthur Bond Booth, labourer</td>
</tr>
<tr>
<td></td>
<td>Florence Adelaide Booth</td>
</tr>
<tr>
<td>(Allotment 4 to 12 Section 2 Village of Eglinton)</td>
<td>(Allotment 4 to 12 Section 2 Village of Eglinton)</td>
</tr>
<tr>
<td>1960 – 1989</td>
<td>Gilbert Arthur Bond Booth, labourer</td>
</tr>
<tr>
<td></td>
<td>Florence Adelaide Booth</td>
</tr>
<tr>
<td>1959 – 1960</td>
<td>John Chester Morgan, company representative</td>
</tr>
<tr>
<td></td>
<td>Valmai Shirley Morgan</td>
</tr>
<tr>
<td>1930 – 1959</td>
<td>Joseph Willott, grazier</td>
</tr>
<tr>
<td>1898 – 1930</td>
<td>Joseph Willott, senior, farmer</td>
</tr>
</tbody>
</table>
Note 17:

Current Search

Folio Identifier 2/786472 (attached)
DP 786472 (plan attached)
Dated 07 September 2005
Registered Proprietor:
JOHN DUNCAN PEARD
BEVERLY ANN PEARD

Title Tree
Lot 2 DP 786472

Folio Identifier 2/786472

C A 36447

Conveyance BK 2545 No. 894
Conveyance BK 2482 No. 105
Conveyance BK 1617 No. 74
# Summary of proprietor(s)

**Lot 2 DP 786472**

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989 – todate</td>
<td>John Duncan Peard, Beverly Ann Peard</td>
</tr>
<tr>
<td></td>
<td><em>(Lot 2 DP 786472)</em></td>
</tr>
<tr>
<td>1959 – 1960</td>
<td>John Chester Morgan, company representative, Valmai Shirley Morgan</td>
</tr>
<tr>
<td>1930 – 1959</td>
<td>Joseph Willott, grazier</td>
</tr>
<tr>
<td>1898 – 1930</td>
<td>Joseph Willott, senior, farmer</td>
</tr>
<tr>
<td></td>
<td><em>(Allotment 4 to 12 Section 2 Village of Eglinton)</em></td>
</tr>
</tbody>
</table>

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### Note 18:

**Current Search**

Folio Identifier 11/1077306 (title attached)
Lot 11 DP 1077306 (plan attached)
Dated 07 September 2005
Registered Proprietor:
DOUGLAS JAMES FULTON
ELIZABETH ALISON FULTON

---

**Title Tree**

**Lot 11 DP 1077306**

Folio Identifier 11/1077306
Conveyance BK 3005 No. 510
Conveyance BK 2342 No. 41

(a) Conveyance BK 1254 No. 842
Conveyance BK 863 No. 753
Conveyance BK 842 No. 154
Conveyance BK 838 No. 822

(b) Conveyance BK 2291 No. 427
Conveyance BK 2204 No. 460
Conveyance BK 1622 No. 825
Conveyance BK 838 No. 822

****

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Summary of proprietor(s)
Lot 11 DP 1077306

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005 – todate</td>
<td>Douglas James Fulton, surveyor, Elizabeth Alison Fulton</td>
</tr>
<tr>
<td>1971 – 2005</td>
<td>Douglas James Fulton, surveyor, Elizabeth Alison Fulton</td>
</tr>
<tr>
<td>1955 – 1971</td>
<td>William Michael Kellahan, farmer</td>
</tr>
</tbody>
</table>

See Notes (a) & (b)

Note (a)

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950 – 1955</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td>Year</td>
<td>Name and Occupation</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>1907–1922</td>
<td>Hannah Adlam, wife of farmer</td>
</tr>
<tr>
<td>1908–1922</td>
<td>Henry Prior, farmer</td>
</tr>
<tr>
<td>1922–1950</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td>1931–1950</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td>1950–1955</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td>1922–1950</td>
<td>Violet Thurza Jane McGregor, widow</td>
</tr>
<tr>
<td>1907–1931</td>
<td>Charles Prior, farmer</td>
</tr>
<tr>
<td>1931–1950</td>
<td>Alfred Henry Albert Hanson, architect</td>
</tr>
<tr>
<td>1907–1908</td>
<td>Alfred Henry Albert Hanson, architect</td>
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</tbody>
</table>

Note (b) (Lot 3 Section 2 of Saltrams Estate & other lands)

<table>
<thead>
<tr>
<th>Year</th>
<th>Name and Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950–1955</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td>1931–1950</td>
<td>Walter John McGregor, farmer</td>
</tr>
<tr>
<td>1907–1931</td>
<td>Charles Prior, farmer</td>
</tr>
<tr>
<td>1907–1931</td>
<td>Charles Prior, farmer</td>
</tr>
</tbody>
</table>

Note 19: **Current Search**

Folio Identifier 10 /1077306 (title attached)
DP 1077306 (attached)
Dated 07 September 2005
Registered Proprietor: CHRISTOPHER PETER BOURKE ANN THERESA BURNETT

**Title Tree**

Lots 10 DP 1077306

Folio Identifier 10 /1077306
Folio Identifier 1/998173
C A 59287

Conveyance BK 4119 No. 131
Conveyance BK 3133 No. 739
Conveyance BK 2997 No. 704
Conveyance BK 2846 No. 589
Conveyance BK 1949 No. 61
Conveyance BK 1160 No. 529
Conveyance BK 863 No 753
Conveyance BK 842 No. 154

*****

Summary of proprietor(s)
Lot 10 DP 1077306

<table>
<thead>
<tr>
<th>Year</th>
<th>Proprietor</th>
</tr>
</thead>
</table>
| 2005 – todate   | Christopher Peter Bourke
                | Ann Therese Burnett

(Lot 1 DP 998173)

| 1996 – 2005     | Christopher Peter Bourke
                | Ann Therese Burnett

(Part Lot 1 Section 2 DP 983884 Area 2 Roods)

| 1995 – 1996     | Christopher Peter Bourke
                | Ann Therese Burnett

| 1973 – 1995     | Maud Myrea Bourke, home duties

                | Shirley Nellie Margaret Herbert

| 1967 – 1970     | Campbell Woods Fragar, farmer
<pre><code>            | Elsie Beatrice Fragar |
</code></pre>
<table>
<thead>
<tr>
<th>Years</th>
<th>Name and Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1944 – 1967</td>
<td>Cecil Henry Joseph Adlam, farmer</td>
</tr>
<tr>
<td></td>
<td>Mavis Jean Mutton, femme sole</td>
</tr>
<tr>
<td></td>
<td>Claire Beatrice Rumble, married woman</td>
</tr>
<tr>
<td>1919 – 1944</td>
<td>Cecil Henry Joseph Adlam, labourer</td>
</tr>
<tr>
<td></td>
<td><em>(Allotment 1, 2, 7 &amp; 8 Section 2 of Saltrams Estate)</em></td>
</tr>
<tr>
<td>1908 – 1919</td>
<td>Hannah Adlam, wife of farmer</td>
</tr>
<tr>
<td>1907 – 1908</td>
<td>Henry Prior, farmer</td>
</tr>
</tbody>
</table>

*****
Appendix G

*Ecological assessment*
Eglinton Village Expansion
Local Environmental Study

Flora and fauna report

14 October 2005
Reference P713.02
Revision 2
A person using Connell Wagner documents or data accepts the risk of:

a) Using the documents or data in electronic form without requesting and checking them for accuracy against the original hard copy version; and

b) Using the documents or data for any purpose not agreed to in writing by Connell Wagner.
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ABBREVIATIONS & DEFINITIONS

DEC  NSW Department of Environment and Conservation (incorporating NPWS)
DEH  Commonwealth Department of Environment and Heritage
EEC  Endangered Ecological Community
Endemic  Indigenous to an area; originally occurring within an area
EP  Endangered Population
EP&A Act  Environmental Planning and Assessment Act 1979
EPBC Act  Environment Protection and Biodiversity Conservation Act 1999
ha  Hectare
km  Kilometre
Local Area  Defined by NPWS (2001) as the area within a 10km radius of the study area
LGA  Local Government Area
m  Metre
mm  Millimetre
NES  National Environmental Significance
NP  National Park
NPWS  NSW National Parks and Wildlife Service (now included under DEC)
NR  Nature Reserve
remnant vegetation  Naturally occurring local native vegetation that has remained in the landscape following clearing (Terra Consulting 2003).
SEPP  State Environmental Planning Policy
TSC Act  Threatened Species Conservation Act 1995
VMP  Vegetation Management Plan
1. **Introduction**

1.1 **Background to the study**

A Local Environmental Study (LES) was commissioned by Bathurst Regional Council to investigate the suitability of the study area for urban development and the possible form of future development. Flora and fauna investigations were required as part of the LES to identify any ecological constraints and opportunities for future development within the study area.

1.2 **Site description**

1.2.1 **Location and context**

The study area covers an area of approximately 347 hectares surrounding the existing village of Eglinton, two kilometres north of Bathurst in the Central Tablelands of NSW. It falls on the eastern part of the Lachlan Fold Belt and is situated within the Sydney Basin Bioregion, which extends from Nelson Bay in the north to just above Batemans Bay in the south. The diverse topography, climate and rock types within this region have resulted in it containing a high biological diversity.

The study area is also within the Macquarie River Catchment, which contains the Macquarie Marshes Nature Reserve, a Ramsar listed wetland.

1.2.2 **Site characteristics**

The landuse of the study area is predominantly rural, consisting largely of treeless pasture used for cattle and sheep grazing. Adjacent landuse consists of rural pastures and the residential development of Eglinton. Saltram Creek, a tributary of the Macquarie River, passes through the eastern portion of the study area.

The study area is approximately 700 m ASL and is gently undulating, rising slightly from the Macquarie River in the south to a low ridge in the north.

The majority of the study area is located within the Bathurst Granite geological group which comprises coarse grained, porphyritic biotite granite. Small areas within the south and south east of the study area along the Macquarie River and Saltram Creek comprise recent alluvial deposits of mostly sand and gravel and minor clay.

The Bathurst 1:250 000 soil landscape mapping (Kovac & Lawrie 1990) indicates that the soils within and around the study area are part of the Raglan and Macquarie soil landscapes.

The Raglan soil landscape is the predominant landscape within the study area. It occurs on the northern portion of the existing village and study area and also extends toward the south west of the study area. The landscape typically overlies Bathurst Granite. Red solodic soils are the dominant soils with yellow solodic soils commonly found on lower slopes and in drainage depressions.

The Macquarie soil landscape occurs within the southern portion of the existing village and to the south east and south west of the study area. Prairie soils are the dominant soils on the floodplain. Other soils include earthy loams, siliceous sands and loams, wiesenboden, podzolic soils and black earths. Terraces have a variety of soils including red podzolic soils and red earths on the upper levels with yellow podzolic soils and yellow solodic soils on the middle and lower levels.

1.3 **Objectives of the flora and fauna investigations**

The objectives of the flora and fauna investigations were to:
• identify and describe the vegetation communities and fauna habitats occurring within the study area
• document the animal and plant species recorded within the study area, highlighting any species listed on the Threatened Species Conservation Act 1995 (TSC Act) or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
• determine the likelihood of occurrence of any threatened species, population and ecological community listed under the TSC Act and EPBC Act
• investigate potential flora and fauna corridors extending from the study area to adjacent natural areas
• identify declared noxious weeds and feral animals within the study area
• provide recommendations for noxious weeds and threatened species, populations and ecological communities
2. Study methodology

2.1 Database and literature review

A database and literature review was carried out to identify threatened species, populations and endangered ecological communities that have the potential to exist within the local area (defined as a 10km radial area surrounding the study area). The review included previous environmental investigations in the area and database searches of DEC Wildlife Atlas and the EPBC Act Protected Matters Report (August 2005). The likelihood of occurrence of threatened species, populations and/or endangered ecological communities identified from the review was assessed and is dealt with in Section 3 of this report.

The main document from which information on local flora and fauna was sourced was the Bathurst City Council Vegetation Management Plan, prepared in June 2003 by Terra Consulting. The Vegetation Management Plan (VMP) identifies management principles for core themes, developed through consultation with the community and interested stakeholders. The VMP provides strategies and recommendations for vegetation management in the Bathurst LGA, and has been developed in recognition of the City’s cultural heritage, rural identity and natural bushland and riverine resources (Terra Consulting 2003).

2.2 Field survey

2.2.1 Flora assessment

A survey of vascular plant species within the study area was conducted on 29-30 August 2005.

The aim of the flora survey was to:

- compile a list of plant species characterising the plant community/communities on-site
- assess suitability of habitat for threatened plant species
- conduct searches for threatened species

Vegetation within the study area predominantly comprises open pasture, hence the random meander survey method (Cropper 1993) was employed, with each stratification unit being traversed for approximately 30 minutes. Particular attention was given to areas retaining remnant trees and wooded areas on adjacent properties. Stratification units were defined on the basis of the following broad ecological types:

- open pasture
- remnant vegetation
- riparian vegetation

General information relating to physical attributes likely to influence occurrence of vegetation types eg topographic position, landform type, elevation, slope, aspect and soil type, was recorded.

The primary structural layers within the study area, along with the height of the layers and relative cover abundance of each strata, were identified and recorded. Foliage (or canopy) cover was recorded for each layer, as was the dominant species in each layer.

All species recorded in the transect were identified as far as practicable to a species or subspecies level. Those species not able to be identified in the field were keyed out using the Flora of New South Wales (Harden, 1993, 2000, 2002a and 2002b), Brooker and Keinig (1999) and other reference material or sent to the Royal Botanic Gardens for identification.
2.2.2 Assessment of Significance of Box-Gum Grassy Woodland remnants within the study area

In assessing the significance of Box-Gum Grassy Woodland within the study area, consideration has been given to:

- representativeness of the remnant, including structure and floristics
- condition of the remnant, including weed invasion, eucalypt dieback, seedling regeneration;
- size of remnant
- connectivity with other remnants
- extent of clearance of Box-Gum Grassy Woodland in the local area

2.2.3 Fauna assessment

Sampling for threatened and protected fauna involved searches for evidence of the presence of fauna, such as whitewash and regurgitation pellets of owls, scats, diggings and scratches on tree trunks, as well as opportunistic observations. Due to the poor fauna habitat quality of the study area (cleared grassland with few remaining trees) and the absence of important arboreal habitat components such as hollow-bearing trees, nocturnal surveys (including spotlighting) and live trapping was not undertaken.
3. Results

3.1 Previous ecological investigations

3.1.1 Bathurst City Council Vegetation Management Plan

The Bathurst City Council Vegetation Management Plan (VMP) (Terra Consulting 2003) aims to provide a basis for long term vegetation management strategies, whilst reflecting the recreational, environmental and heritage needs of the community. The VMP is particularly aimed at providing council with management strategies for land under the care and control of council.

Most of the study area has been identified as being predominantly endemic native vegetation, whether it exists in the upperstorey, shrublayer or groundcover. As such rural areas have been characterised by this vegetation theme even though they may be currently grazed or cropped.

Some small parcels of land within the study area have been classified as either predominantly native vegetation or an exotic native mix. The predominantly native vegetation theme is characterised by a plant species composition that is not necessarily representative of surrounding bushland and may be covered with an array of species ranging from grasses to trees. The exotic native mix vegetation theme consists of a mix of native and exotic plant species in home gardens, streets, parks and open space areas.

According to the Bathurst VMP, Blakely’s Red Gum – Yellow Box Woodlands (hereafter referred to as Box-Red Gum Woodland) would have been the predominant vegetation type across the Bathurst LGA prior to European settlement. This community falls within the White Box Yellow Box Blakely’s Red Gum Woodland Endangered Ecological Community (EEC) listed under the TSC Act as.  Due to the infrequent occurrence of White Box, however, it does not fall within the definition of the nationally listed Grassy White Box Woodland EEC.

A small area of remnant vegetation along the northern boundary of the study area has been mapped by the VMP as a highly degraded remnant of the Box-Red Gum Woodland EEC. The mapping undertaken for the VMP has used tree presence to determine remnant vegetation, however this EEC can exist as modified grassland or solely in the seedbank. As such a larger portion of the study area may actually be part of this EEC than that mapped by the Bathurst VMP (2003).

3.2 Vegetation communities within the study area

Vegetation in the study area consists of improved pasture grasslands, remnant Box-Gum Woodland, degraded riparian vegetation, exotic windbreak plantings and residential gardens. These vegetation types are illustrated in Figure 3-1 and discussed in the following sections.

3.2.1 Pasture grasslands

The dominant vegetation community is improved Pasture Grasslands. During site investigations, pasture areas were typically dominated by Phalaris (aquatica or minor), with other exotic grasses such as Poa annua (Winter Grass), Panicum sp. (Panic), Eleusine tristachya (Crabgrass) comprising most of the ground cover. Scattered Juncus sp. (Common Rush) and pasture weed species such as Hypochaeris radicata (Catsear) also occurring within the ground layer. Approximately five native Bursaria spinosa spinosa (Tick Bush) shrubs are scattered across the eastern part of the study area. Pastures in the east of the study area have been heavily grazed, particularly near dams and under any remaining shrubs. As a result these areas have bare ground comprising almost 5% of the groundcover.
3.2.2 Remnant Box-Gum Woodland

Remnant box-gum woodland exists within the study area as degraded grassland and as scattered trees near residences. Whilst the improved pasture grassland discussed above is currently dominated
Figure 3-1: Vegetation communities within the study area
FIGURE 3.1
VEGETATION COMMUNITIES
WITHIN STUDY AREA
by exotics, prior to clearing for agricultural purposes it would have constituted box-gum woodland. It is possible that the grassland may retain some species representative of the woodland community, but which were undetected either because of seasonality or because they exist only within the soil seedbank. Scattered box-gum woodland trees such as Yellow Box (Eucalyptus melliodora) across the study area, eg along the northern boundary (Figure 3-1) are all that remain of the overstorey of the box-gum woodland community.

The field survey was undertaken in late winter. It is therefore possible that a number of native grass and herbaceous species may have gone undetected due to winter dieback. NPWS (undated) emphasises that a flush of annual exotic species may obscure native perennial species, and recommends reassessment of a site after annual species have died. NPWS (undated) further recommends that sites be assessed in both spring and in autumn so that seasonal native species such as orchids, lilies and native annuals can be identified.

3.2.3 Riparian vegetation
The riparian zone of Saltram Creek is severely degraded and is characterised by Salix babylonica (Weeping Willow) with pasture grassland species occurring up to the gravel creek bed. A small bed of Phragmites australis (Common Reed) occurs near the Eleven Mile Drive crossing in an area approximately 20 m x 20 m. At the time of the field survey, Saltram Creek was dry, a factor which is likely to have affected the species assemblage detected during the survey.

Dams within the study area were generally turbid, with the sparse emergent plants comprising Juncus sp. In addition, the fringing improved pasture grassland was heavily grazed.

No threatened flora species were detected onsite during the field survey. Table 3-1 provides an assessment of the likelihood of occurrence of threatened flora species in the study area. A list of the flora species recorded in the study area is provided in Appendix A.
<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Conservation significance</th>
<th>Habitat associations</th>
<th>Likelihood of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Eucalyptus pulverulenta</em></td>
<td>Silver-leaved Gum</td>
<td>V</td>
<td>Rare and scattered in small stands as a tree or mallee almost in the understorey of grassy woodland on relatively poor soil from Bathurst to Bombala (Harden 1991).</td>
<td>Unlikely. Not recorded during field survey.</td>
</tr>
<tr>
<td><em>Lepidium hyssopifolium</em></td>
<td>Basalt Pepper-cress</td>
<td>E</td>
<td>Perennial herb recorded from the Bathurst district and near the QLD border (Harden 2000). Requires suitably shady conditions where the ground layer is open (TDIER undated).</td>
<td>Possible. Marginal habitat in treed areas.</td>
</tr>
<tr>
<td><em>Philotheca ericifolia</em></td>
<td></td>
<td>V</td>
<td>Occurs in drainage areas in dry sclerophyll open forest or woodland on sandstone and in heath on damp sandy flats and gullies (Harden 1991). Microhabitats include alluvial deposits of coarse gravel in dry creek beds (Ayers et al. 1996). Associated species include <em>Eucalyptus crebra</em>, <em>Beyeria viscosa</em> and <em>Philotheca australis</em> (Ayers et al. 1996)</td>
<td>Unlikely. Suitable habitat absent. No sandstone.</td>
</tr>
<tr>
<td><em>Thesium australe</em></td>
<td>Austral Toadflax</td>
<td>V</td>
<td>Parasitic forb to 0.3m high. Grows in grassland or woodland, often in damp sites (Harden 1992). Hemiparasitic on the roots of other plants, notably <em>Themeda australis</em> (Kangaroo Grass). Also associated (less frequently) with native <em>Poa</em> spp. Grazed severely by livestock, particularly cattle, but has been observed to regenerate following light grazing disturbance (Archer 1984, 1987; Leigh &amp; Briggs 1989).</td>
<td>Unlikely. Pasture grassland heavily grazed. Associate species (i.e <em>Themeda australis</em>, native <em>Poa</em> sp.) absent.</td>
</tr>
<tr>
<td><em>Zieria obcordata</em></td>
<td></td>
<td>E</td>
<td>Grows in gentle to moderately steep west to north facing slopes of low hills or ridges in undulating terrain of low hills (Briggs &amp; Leigh 1990). In crevices or at the base of granite boulders, outcrops and/or exposed granite that occur at all sites (Briggs &amp; Leigh 1990).</td>
<td>Unlikely. Suitable habitat absent. No granite boulders, outcrops or exposures.</td>
</tr>
</tbody>
</table>
3.3 Fauna habitats and species recorded

Fauna habitats on site were quite degraded with the major habitat types consisting of remnant vegetation such as trees, shrubs and ornamental garden plantings, grasslands, and aquatic habitats consisting of creeklines and dams. No hollow-bearing trees were observed on-site, although some mature trees at the north of the study area may contain some cryptic hollows.

The diversity of fauna species observed during site investigations was low, with common bird species such as the Australian Magpie, Willie Wagtail, Yellow Thornbill and Superb Blue Fairy-wren and introduced grazing mammal species such as cattle, sheep and Brown Hare being observed. These observations tend to reflect the poor fauna habitat quality of the study area.

Remnant trees, shrubs and ornamental garden plantings are likely to be important resources for fauna species occupying the area, particularly birds species, since little other habitat exists in the local area.

No evidence of habitat degradation due to rabbit grazing/digging/burrowing was recorded during the field survey. No evidence of predation by foxes was recorded.

No threatened flora species were detected onsite during the field survey. Table 3-2 provides an assessment of the likelihood of occurrence of threatened flora species in the study area. A list of the fauna species recorded in the study area is provided in Appendix A.

3.4 Wildlife / vegetation corridors

The study area does not form part of a local wildlife or bushland corridor. Less than one per cent of the original overstorey within the study area remains intact. The study area has little, if any, connectivity with more extensive vegetation remnants in the local area, such as those to the north-east. However, small vegetation remnants, and isolated native trees and shrubs (such as Bursaria spinosa spinosa) provide important ‘stepping-stones’ for woodland birds, as well as increased dispersal potential for eucalypts.

Native riparian vegetation along Saltram Creek has been cleared and replaced with the introduced Weeping Willow (Salix babylonica), altering the natural hydrological and ecological function of the creek system.
### Table 3-2: Assessment of likelihood of occurrence of threatened fauna species

KEY: E = Endangered, E2 = Endangered population, V = Vulnerable, M = Migratory

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Conservation significance</th>
<th>Habitat associations</th>
<th>Likelihood of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>TSC Act</td>
<td>EPBC Act</td>
<td></td>
</tr>
<tr>
<td><strong>FROGS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Litoria aurea</td>
<td>Green and Golden Bell Frog</td>
<td>E</td>
<td>V</td>
<td>Large ephemeral bodies of water exhibiting well-established fringing vegetation adjacent to open grassland areas for foraging (Ehmann 1997).</td>
</tr>
<tr>
<td>Litoria booroolongensis</td>
<td>Boorooolong Frog</td>
<td>E</td>
<td>—</td>
<td>Typically inhabits rocky western-flowing creeks and their headwaters, although a small number of animals have also been recorded in eastern-flowing streams (NSW Scientific Committee 1998).</td>
</tr>
<tr>
<td><strong>REPTILES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aprasia parapulchella</td>
<td>Pink-tailed Legless Lizard</td>
<td>V</td>
<td>—</td>
<td>Known only from Coppins Crossing, Molonglo River, ACT and from near Tarcutta and Bathurst, NSW (Cogger 1992). Type specimens found under weathered granite rocks on a grazed, grassy riverside slope (Cogger 1992).</td>
</tr>
<tr>
<td>Hoplocephalus bungaroides</td>
<td>Broad-headed Snake</td>
<td>E</td>
<td>V</td>
<td>Associated with sandstone outcrops in coastal and near coastal areas of central NSW. In terms of shelter, this species requires rocky crevices and sandstone outcrops with exfoliated rock slabs, which are exposed to sunlight. In the summer months, medium to large tree hollows up to 800m from a cliff are utilised (Shine &amp; Fitzgerald 1989).</td>
</tr>
<tr>
<td><strong>DIURNAL BIRDS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Callocephalon fimbriatum</td>
<td>Gang-gang Cockatoo</td>
<td>V</td>
<td>—</td>
<td>During summer, the species occurs in dense, tall, wet forests of</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>Conservation significance</td>
<td>Habitat associations</td>
<td>Likelihood of Occurrence</td>
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<td>-----------------</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>TSC Act</td>
<td>EPBC Act</td>
<td></td>
</tr>
<tr>
<td><strong>Calyptorhynchus lathami</strong></td>
<td>Glossy Black-Cockatoo</td>
<td>V</td>
<td>—</td>
<td>Associated with a variety of forest types containing Allocasuarina species, usually reflecting the poor nutrient status of underlying soils (Environment Australia 2000, NPWS 1997, NPWS 1999b). Intact drier forest types with less rugged landscapes are preferred (NPWS 1999b). Nests in large trees with large hollows (Environment Australia 2000).</td>
</tr>
<tr>
<td><strong>Climacteris picumnus</strong></td>
<td>Brown Treecreeper</td>
<td>V</td>
<td>—</td>
<td>Distributed through central NSW on the western side of the Great Dividing Range and sparsely scattered to the east of the Divide in drier areas such as the Cumberland Plain of Western Sydney, and in parts of the Hunter, Clarence, Richmond and Snowy River valleys. Occupies eucalypt woodlands, particularly open woodland lacking a dense understorey. It is sedentary and nests in tree hollows within permanent territories. (NSW Scientific Committee 2001a).</td>
</tr>
<tr>
<td><strong>Melanodryas cucullata</strong></td>
<td>Swift Parrot</td>
<td>E</td>
<td>E</td>
<td>Associated with dry open eucalypt forests and woodlands with winter flowering eucalypts (Marchant &amp; Higgins 1993). Often located in urban areas and farmlands with remnant eucalypts.</td>
</tr>
<tr>
<td><strong>Melanodryas cucullata</strong></td>
<td>Hooded Robin</td>
<td>V</td>
<td>—</td>
<td>Associated with a wide range of Eucalypt woodlands, Acacia shrubland and open forests (Blakers et al. 1984). In temperate woodlands, the species favours open areas adjoining large</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>Conservation significance</td>
<td>Habitat associations</td>
<td>Likelihood of Occurrence</td>
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<td>-----------------</td>
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<td>--------------------------</td>
<td>---------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><em>cucullata</em></td>
<td>subspecies)</td>
<td></td>
<td>woodland blocks, with areas of dead timber and sparse shrub cover (NSW Scientific Committee 2001b). Hooded Robin home ranges are relatively large, averaging 18ha for birds from the New England Tableland (NSW Scientific Committee 2001b).</td>
<td>Unlikely. Box-gum woodland remnants within and near the study area considered too small and fragmented.</td>
</tr>
<tr>
<td><em>Polytelis swainsonii</em></td>
<td>Superb Parrot</td>
<td>V V</td>
<td>Tropical and subtropical rainforests, usually with luxuriant epiphytic growth. Rarely seen outside of rainforests (Marchant &amp; Higgins 1999).</td>
<td>Unlikely. Box-gum woodland remnants within and near the study area considered too small and fragmented.</td>
</tr>
<tr>
<td><em>Pyrholaemus sagittatus</em></td>
<td>Speckled Warbler</td>
<td>V</td>
<td>Eucalypt and cypress woodlands on the slopes west of the Great Dividing Range, with an extension of range into the cypress woodlands of the northern Riverina. Populations also occur in drier coastal areas such as the Cumberland Plain, Western Sydney and the Hunter and Snowy River valleys. Speckled Warblers inhabit woodlands with a grassy understorey, often on ridges or gullies (NSW Scientific Committee 2001d). Barrett <em>et al.</em> (1994) found that the species decreased in abundance as woodland area decreased, and it appears to be extinct in districts where no fragments larger than 100ha remain. Isolation of Speckled Warbler populations in small remnants increases their vulnerability to local extinction as a result of stochastic events and decreases their genetic viability in the long term. Low population densities and relatively large home</td>
<td>Unlikely. Box-gum woodland remnants within and near the study area considered too small and fragmented.</td>
</tr>
</tbody>
</table>
Table 3-2: Assessment of likelihood of occurrence of threatened fauna species

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Conservation significance</th>
<th>Habitat associations</th>
<th>Likelihood of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>TSC Act</td>
<td>EPBC Act</td>
<td></td>
</tr>
<tr>
<td><strong>Rostratula australis</strong></td>
<td>Australian Painted Snipe</td>
<td>E</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td><strong>Stagonopleura guttata</strong></td>
<td>Diamond Firetail</td>
<td>V</td>
<td>—</td>
<td>Occurs predominantly west of the Great Dividing Range, although populations are known from drier coastal areas such as the Cumberland Plain of western Sydney and the Hunter, Clarence, Richmond and Snowy River valleys (NSW Scientific Committee 2001e). This species occupies eucalypt woodlands, forests and mallee where there is a grassy understorey (NSW Scientific Committee 2001e). Further, Diamond Firetail populations appear unable to persist in areas which lack remnants of native vegetation larger than 200ha (NSW Scientific Committee 2001e).</td>
</tr>
<tr>
<td><strong>Xanthomyza phrygia</strong></td>
<td>Regent Honeyeater</td>
<td>E</td>
<td>E</td>
<td>Associated with temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts, and riparian forests of River Oak (Casuarina cunninghamiana) (Garnett 1993). Primarily feeds on nectar from box and ironbark eucalypts and occasionally from banksias and mistletoes (NPWS 1995). As such it is reliant on locally abundant nectar sources with different flowering times to provide reliable supply of nectar (Environment Australia 2000).</td>
</tr>
</tbody>
</table>

KEY: E = Endangered, E2 = Endangered population, V = Vulnerable, M = Migratory.

Range requirements also would exacerbate their vulnerability to habitat loss (Barrett et al. 1994).
### Table 3-2: Assessment of likelihood of occurrence of threatened fauna species

**KEY:** E = Endangered, E2 = Endangered population, V = Vulnerable, M = Migratory

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Conservation significance</th>
<th>Habitat associations</th>
<th>Likelyhood of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>TSC Act EPBC Act</td>
<td></td>
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<tr>
<td><strong>NOCTURNAL BIRDS</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><em>Ninox connivens</em></td>
<td>Barking Owl</td>
<td>V —</td>
<td>—</td>
<td>Associated with a variety of habitats such as savanna woodland, open eucalypt forests, wetland and riverine forest. The habitat is typically dominated by Eucalypts (often Redgum species), however often dominated by <em>Melaleuca</em> species in the tropics (NPWS 2003). It usually roosts in dense foliage in large trees such as River She-oak (<em>Allocasuarina cunninghamiana</em>), other <em>Casuarina</em> and <em>Allocasuarina</em>, eucalypts, <em>Angophora</em>, <em>Acacia</em> and rainforest species from streamside gallery forests (NPWS 2003). It usually nests near watercourses or wetlands (NPWS 2003) in large tree hollows with entrances averaging 2-29 metres above ground, depending on the forest or woodland structure and the canopy height (Debus 1997).</td>
</tr>
</tbody>
</table>

| **MAMMALS (EXCLUDING BATS)** |             |             |          |                          |
| *Dasyurus maculatus* | Spotted-tailed Quoll | V — | — | The Spotted-tailed Quoll inhabits a range of forest communities including wet and dry sclerophyll forests, coastal heathlands and rainforests (Mansergh 1984; NPWS 1999)), more frequently recorded near the ecotones of closed and open forest. This species requires habitat features such as maternal den sites, an abundance of food (birds and small mammals) and large areas of relatively intact vegetation to forage in (NPWS 1999)). Maternal den sites are logs with cryptic entrances; rock outcrops; windrows; burrows (Environment Australia 2000). | Unlikely. Suitable habitat absent. |
| *Dasyurus maculatus* | Spotted-tailed Quoll (SE Mainland Population) | V — | — |                          |                          |
| *Phascolarctos cinereus* | Koala | V — | — | Associated with both wet and dry Eucalypt forest and woodland containing a canopy cover of approximately 10 to 70% (Reed et al. 1990), with acceptable Eucalypt food trees. Some preferred *Eucalyptus* species are: *Eucalyptus tereticornis, E. punctata, E.** | Unlikely. Suitable habitat absent. |
### Table 3-2: Assessment of likelihood of occurrence of threatened fauna species

**KEY:** E = Endangered, E2 = Endangered population, V = Vulnerable, M = Migratory

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Conservation significance</th>
<th>Habitat associations</th>
<th>Likelihood of Occurrence</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MAMMALS (BATS)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chalinolobus dwyeri</td>
<td>Large-eared Pied Bat</td>
<td>V</td>
<td>V</td>
<td>Recorded in a variety of habitats, including dry sclerophyll forests, woodland, sub-alpine woodland, edges of rainforests and wet sclerophyll forests (Churchill 1998; NPWS 2005p). Roosts in caves, rock overhangs and disused mine shafts and as such is usually associated with rock outcrops and cliff faces (Churchill 1998; NPWS 2005p).</td>
</tr>
<tr>
<td><strong>INVERTEBRATES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paralucia spinifera</td>
<td>Bathurst Copper Butterfly</td>
<td>E</td>
<td>V</td>
<td>Limited to areas above 900 m elevation with the presence of it's host plant <em>Bursaria spinosa ssp. lasiophylla</em> (NPWS 2001b). It is distributed from Yetholme on the Great Dividing Ranger to the area of the Central Tablelands between Oberon, Hartley and Bathurst (NPWS 2001b).</td>
</tr>
<tr>
<td><strong>MIGRATORY SPECIES LISTED UNDER EPBC ACT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haliaeetus leucogaster</td>
<td>White-bellied Sea-Eagle</td>
<td>—</td>
<td>M</td>
<td>Forages over large open fresh or saline waterbodies, coastal seas</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
<td>Conservation significance</td>
<td>Habitat associations</td>
<td>Likelihood of Occurrence</td>
</tr>
<tr>
<td>------------------------------</td>
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<td>--------------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Hirundapus caudacutus</td>
<td>White-throated Needletail</td>
<td>— M</td>
<td>Forages aerially over a variety of habitats usually over coastal and mountain areas, most likely with a preference for wooded areas (Marchant &amp; Higgins 1993; Simpson &amp; Day 1999). Has been observed roosting in dense foliage of canopy trees, and may seek refuge in tree hollows in inclement weather (Marchant &amp; Higgins 1993).</td>
<td>Unlikely. Suitable habitat absent.</td>
</tr>
<tr>
<td>Myiagra cyanoleuca</td>
<td>Satin Flycatcher</td>
<td>— M</td>
<td>Associated with drier eucalypt forests, absent from rainforests (Blakers et al. 1984), open forests, often at height (Simpson &amp; Day 1999).</td>
<td>Unlikely. Suitable habitat absent.</td>
</tr>
</tbody>
</table>

**Table 3-2: Assessment of likelihood of occurrence of threatened fauna species**

**KEY:** E = Endangered, E2 = Endangered population, V = Vulnerable, M = Migratory
4. Discussion

4.1  Box-Gum Grassy Woodland Endangered Ecological Community

4.1.1  Extent of Box-Gum Woodland within study area

The main ecological constraint to future development within the study area is that posed by remnant vegetation, in particular the White Box Yellow Box Blakeley’s Red Gum Woodland EEC (hereafter referred to as Box-Gum Grassy Woodland). Field investigations revealed small remnants of treed Box-Gum Grassy Woodland within, and adjacent to, the study area. These results correlate with Box-Gum Woodland EEC mapping in the Bathurst VMP, which was based on the occurrence of overstorey (tree) species.

It is considered likely that, historically, Box-Gum Grassy Woodland occurred across the study area but is now in a generally treeless condition due to past clearing practices. This is based on the fact that the density of trees is not relevant to the existence of the EEC (NPWS undated). In fact, the Final Determination for the EEC specifically includes treeless areas in the EEC “as a result of past clearing or thinning.” In areas subject to past disturbance the mid-layer may contain large numbers of regenerating trees. In some locations, the tree overstorey may be absent as a result of past clearing or thinning, and only a herbaceous understorey is present.

According to NPWS (undated), there are five main features that govern whether the EEC exists at a site:

- Whether the site is within the area defined in the Determination.
- Whether the characteristic trees of the site are (or are likely to have been) White Box, Yellow Box or Blakely’s Red Gum.
- Whether the site is mainly grassy.
- Whether any of the listed characteristic species occur (including as part of the seedbank in the soil).
- If the site is degraded, whether there is potential for assisted natural regeneration of the overstorey or understorey.

The study area satisfies the first three of the above criteria. With regards to the occurrence of listed characteristic species, very few native species were recorded in the study area, with introduced grasses, herbaceous weeds and ornamental plantings dominating the vegetation.

Typically, Box-Gum Grassy Woodland is characterised by a discontinuous cover of trees of medium height (10 to 30 m) in which the canopies are clearly separated. The community has a species-rich understorey of native tussock grasses, herbs and scattered shrubs. Grasses and sedges are common as are pea plants, daisies and lilies. In contrast, Box-Gum Grassy Woodland within the study area comprises scattered, isolated trees and small remnants, with the understorey dominated by exotic species.

NPWS (undated) states that at any one time, seeds of some species may only be present in the soil seed bank with no above-ground individuals present. Hence the potential of the seedbank must be considered when assessing degraded sites (NPWS undated). Highly disturbed sites that have few if any native species in the understorey are specifically included in the community provided vegetation, either understorey or overstorey or both, would, under appropriate management, respond to assisted natural regeneration, such as where the natural soil and associated seed bank are still at least partially intact (NPWS undated).

4.1.2  Significance of Box-Gum Grassy Woodland within the study area

Box-Gum Woodland within the study area is considered to be a relatively poor example of Box-Gum Grassy Woodland for the following reasons:
generally speaking, only the overstorey species are representative of the vegetation occurring prior to clearing
seedling regeneration is almost non-existent
the remnants consist of a few scattered trees and one patch less than one hectare in size
the trees and remnants have no connectivity with other remnants

This condition, however, is typical of Box-Gum Woodland where agricultural practices have been more intensive (e.g., pasture improvement over long periods) (NPWS undated). The condition of remnants of Box-Gum Woodland across its NSW distribution varies, for example the community may occur as degraded remnants that have few, if any, native species in the understorey.

The conservation value of a remnant, whatever its condition, will vary according to the locality. For example, whilst Box-Gum Woodland persisting as isolated paddock trees may be of limited conservation value in some areas, in highly modified agricultural landscapes they may be all that remain and thus their loss would be significant. In this regard, the remnant Box-Gum Grassy Woodland within the study area is considered to be highly significant, with the EEC now occurring as small, isolated remnants in the Bathurst LGA, an area which has been extensively cleared for agricultural purposes. Such remnants and isolated trees are likely to be providing an important link across the landscape, acting as ‘stepping stones’ for fauna, particularly woodland birds.

4.1.3 Threats to Box-Gum Grassy Woodland

As is typical of many of the smaller patches of woodland across NSW, the box-gum trees and remnants within the study area consist of mature senescing trees, without a regenerating understorey. Grazing by stock suppresses tree seedling regeneration. Seedlings of Yellow Box and Red Gum are particularly attractive to sheep and cattle, and although mature trees may be present in many woodland areas, there is often little regeneration of seedlings or a range of age classes to effect tree replacement (Environment ACT 1987). Lindemayer et al (2002) report that 90% of unfenced woodland in southern NSW had no regenerating trees. Because of this impact on habitat, stock grazing is seen as the single biggest risk factor in the continued decline of woodland birds (Reid 1999).

Gibbons (2002) has estimated that isolated paddock trees and small clumps are disappearing at a rate of 0.54% to 2.5% per annum, which means a substantial proportion of the Box-Gum Grassy Woodland community will be lost within 40-185 years.

In addition to grazing, the viability of Box-Gum Grassy Woodland remnants is threatened by:

- rising groundwater tables and salinity
- nutrient enrichment
- weed invasion
- altered fire regime
- firewood collecting and tidying up of woodlands
- dieback

Threatening processes currently listed on Schedule 3 of the TSC Act that may impact on, or occur in, Box-Gum Woodland include:
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition
- Clearing of native vegetation
- Competition and grazing by the feral European Rabbit \((Oryctolagus cuniculus)\)
- Predation by the European Red Fox \((Vulpes vulpes)\)
- Predation by the Feral Cat, \((Felis catus)\)

Within the study area, the main threats to the viability of box-gum woodland trees and remnants appear to be dieback and clearing of native vegetation.

### 4.1.4 Value of native vegetation remnants in local context

In the Bathurst area, remnant vegetation is mainly represented by semi-intact woodlands and scattered or isolated trees with a highly altered or degraded understorey. The Box-Gum Grassy Woodland EEC is the predominant vegetation community in the Bathurst LGA. Grasslands and sedgelands also occur, as fragmented clumps or growing within a mix of grass and herb species (Terra Consulting 2003).

The remaining remnant native vegetation in Bathurst has considerable value to landholders, downstream properties and the broader Central West community from the range of ecological, social, cultural, educational and recreational benefits it provides (Terra Consulting 2003).

In the Bathurst area, it is critical that all native vegetation remnants are conserved and appropriately managed. This includes small remnants outside conservation areas such as nature reserves, as these are the last vestiges in a highly fragmented landscape (Terra Consulting 2003). In addition, the current estimate of tree cover for the Bathurst LGA has been estimated at approximately six per cent (Terra Consulting 2003), further adding to the imperative to retain native trees, whether in remnants or as isolated paddock trees.

### 4.1.5 Distribution of Box-Gum Grassy Woodland in NSW

Box-Gum Grassy Woodland was once an extensive ecosystem covering in excess of 25,000 square kilometres, in a belt stretching from Melbourne to South Queensland. Over 90% of its former range has been cleared. Within NSW, less than 0.5 per cent of the Box-Gum Grassy Woodland is estimated to retain pre-European levels of diversity and species composition (NPWS 2002a). Its distribution has been most severely reduced on the Western Slopes of NSW and across Central Victoria. The level of clearance has been least in Northern NSW, particularly in the rugged gorge country, and the Australian Capital Territory. Box-Gum Grassy Woodland is poorly represented in conservation reserves. There are only a few small occurrences of Box-Gum Woodland in national parks and nature reserves.

### 4.1.6 Habitat value of Box-Gum Woodland in NSW

Box-Gum Grassy Woodland provides habitat for a diverse range of fauna including birds, arboreal mammals, macropods and reptiles. In particular, Box-Gum Grassy Woodland supports a diverse bird fauna of both sedentary and nomadic species. Growing on deep rich soils the woodland provides both a rich nectar resource and productive leaf and insect output. The woodland bird community is considered to be in crisis. Populations of bird species dependent on natural habitat have been devastated. Several species such as the Hooded Robin \((Melanodryas cucullata)\) and Speckled Warbler \((Chthonicola sagittata)\) are now only regularly found in large patches of over 100 ha, which are now few and far between. At the same time, a smaller number of opportunistic native and a few exotic species have benefited from wholesale landscape changes. Common species include the Crimson Rosella \((Platycercus elegans)\) Grey Faintail \((Rhipidura fulignosa)\), Noisy Miner \((Manorina melanoleuca)\), Crested Pigeon...
(Ocyphaps lophotes), Galah (Cacatua roseeicapilla), Australian Magpie (Gymnorhina tibicen) and Yellow-rumped Thornbill (Acanthiza chrysorrhoa) (Er 1998, Reid 1999, Fisher and Goldney 1997).

Many sites may be degraded and yet remain important for fauna. Fauna habitat value of individual trees is dependent on a number of features. Generally large old trees have greater value to fauna. Such trees support a diverse and abundant array of insects and the animals that feed upon them, and have numerous hollows, cracks or fissures that provide shelter and nesting sites.

Mature box and gum trees readily form hollows and thus provide important habitat for hollow-dependent fauna such as Squirrel Gliders, Barking Owls and Superb Parrots. Critically, in some areas, White Box and Yellow Box provide significant nectar flows during winter when such resources are crucial for threatened species such as the Regent Honeyeater and Swift Parrot. Large old trees on more fertile sites have been observed to produce more significant nectar flows for fauna than nearby trees on poorer sites such as hillsides.

4.2 Weed occurrence across the study area

The most notable occurrence of environmental weeds within the study area is that of Weeping Willow (Salix babylonica) along Saltram Creek (Figure 3-1). Willows (Salix spp.) are particularly problematic along waterways. Willows change stream morphology and function, cause bank erosion, modify water quality (they drop all their leaves in winter) and fauna habitat, and compete with indigenous plants. Willows invade riparian vegetation and freshwater wetland (seasonal and permanent). Some species also invade warm or cool temperate rainforest, and alpine and subalpine vegetation. Willows generally reproduce vegetatively (via stem fragments), and are spread by water (mainly downstream), wind, in dumped garden waste, machinery and inappropriately planted for revegetation. In storm events, one willow at the head of a stream can shed enough branchlets to infest many kilometres of stream bank. Willows are able to root and grow from very small stem fragments and growth is very rapid (Blood 2003).
5. **Recommendations**

As discussed in Section 4, the main ecological constraint to future development within the study area is that posed by remnant vegetation, in particular the Box-Gum Grassy Woodland Endangered Ecological Community. In order to protect and enhance the remnant Box-Gum Grassy Woodland within the study area, and to rehabilitate the riparian corridor along Saltram Creek, it is recommended that:

- A 100 m wide corridor linking remnant box-gum woodland and isolated woodland trees along the northern boundary of the study area with remnant box-gum woodland to the north-west is fenced off and appropriately managed.
- A conservation zoning over the 100 m wide corridor is established and the area set aside as a reserve to be rehabilitated and managed by Council.
- Assisted regeneration of grassy woodland within the 100 m wide corridor is undertaken.
- A 40 m wide riparian corridor along both sides of Saltram Creek is established and rehabilitated by eradicating Weeping Willow (*Salix babylonica*) and replanting with River She Oak (*Casuarina cunninghamiana*) and other suitable indigenous native species.
- Developing and implementing a Management Plan for the remnant Box-Gum Grassy Woodland corridor. Issues to be addressed in the Plan should include, but not be limited to, weed management, appropriate revegetation techniques, and use of endemic native species, including overstorey (tree) and groundcover species.

Establishing the woodland and riparian corridors as described above will serve to:

- protect an occurrence of an Endangered Ecological Community, namely Box-Gum Grassy Woodland
- increase the extent, and ensure the ecological sustainability and wildlife corridor function of fragmented remnants in the local area
- facilitate the connectivity of gene pools of native plants and animals
- provide connectivity between vegetation remnants and the riverine system
- increase habitat area for native fauna
- protect and enhance remnant vegetation for the conservation of threatened fauna species known to occur in the Bathurst LGA, particularly the Regent Honeyeater
- increase the extent and ensure the ecological sustainability and wildlife corridor function of fragmented remnants in the local area.

Buffers, corridors and areas of native vegetation to be retained are illustrated in Figure 5-1. A width of 100 m has been recommended for the Box-Gum Woodland corridor so as to establish a minimum corridor area of 10 ha. A rebirding program being undertaken by Greening Australia recognises that, to reoccupy an area, birds need a minimum of 10 to 20 ha of native vegetation with a dense understorey (which in this case would comprise a dense grassy understorey), and perhaps 100 hectares to settle and breed (ECOS 2002). Woodland birds are vital in maintaining healthy woodlands and productive agriculture. They act as controllers of insect populations on trees, and also in crops and pastures. This can be crucial in maintaining a sustainable landscape. For example, trees provide shelter for stock, act as windbreaks and in many areas are vital for lowering salty water tables. A diversity of woodland birds is important in keeping insect numbers on trees under control and preventing dieback.

The 40 m wide riparian buffer along Saltram Creek has been recommended in accordance with the NSW Government’s *Draft Environmental Outcomes Assessment Methodology* (DIPNR 2005).
Figure 5-1: Vegetation Remnants, Buffers and Corridors to be Retained
FIGURE 5.1
VEGETATION REMNANTS, BUFFERS AND CORRIDORS TO BE RETAINED
6. References


Bathurst City Council (2003) *Vegetation Management Plan*, Bathurst City Council


DIPNR (2005). *Draft Environmental Outcomes Assessment Methodology*. NSW Dept of Infrastructure, Planning and Natural Resources


Appendix A

Species list
<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acacia baileyana</em></td>
<td>Cootamundra Wattle</td>
</tr>
<tr>
<td><em>Andropogon virginicus</em></td>
<td>Whisky Grass*</td>
</tr>
<tr>
<td><em>Bromus catharticus</em></td>
<td>Prairie Grass*</td>
</tr>
<tr>
<td><em>Bromus molliformis</em></td>
<td>Soft Broome*</td>
</tr>
<tr>
<td><em>Bursaria spinuosa var spinuosa</em></td>
<td>Tick Bush</td>
</tr>
<tr>
<td><em>Cyperus eragrostis</em></td>
<td>Umbrella Sedge*</td>
</tr>
<tr>
<td><em>Eleusine tristachya</em></td>
<td>Crabgrass*</td>
</tr>
<tr>
<td><em>Eragrostis sp.</em></td>
<td></td>
</tr>
<tr>
<td><em>Eucalyptus melliodora</em></td>
<td>Yellow Box</td>
</tr>
<tr>
<td><em>Eucalyptus polyanthemos</em></td>
<td>Red Box</td>
</tr>
<tr>
<td><em>Eucalyptus viminalis</em></td>
<td>White Gum</td>
</tr>
<tr>
<td><em>Hypochoeris radicata</em></td>
<td>Catsear*</td>
</tr>
<tr>
<td><em>Juncus sp.</em></td>
<td>Juncus</td>
</tr>
<tr>
<td><em>Malva parviflora</em></td>
<td>Smallflower Mallow*</td>
</tr>
<tr>
<td><em>Onopodium acanthium</em></td>
<td>Scotch Thistle*</td>
</tr>
<tr>
<td><em>Panicum maximum</em></td>
<td>Guinea Grass*</td>
</tr>
<tr>
<td><em>Phalaris sp (probably aquatica)</em></td>
<td>Phalaris*</td>
</tr>
<tr>
<td><em>Phragmites australis</em></td>
<td>Common Reed</td>
</tr>
<tr>
<td><em>Plantago lanceolata</em></td>
<td>Lamb’s Tongue*</td>
</tr>
<tr>
<td><em>Plantago major</em></td>
<td>Greater Plantain*</td>
</tr>
<tr>
<td><em>Poa annua</em></td>
<td>Winter Grass*</td>
</tr>
<tr>
<td><em>Rubus ulmifolius</em></td>
<td>Blackberry*</td>
</tr>
<tr>
<td><em>Salix babylonica</em></td>
<td>Weeping Willow*</td>
</tr>
<tr>
<td><em>Trifolium repens</em></td>
<td>White Clover*</td>
</tr>
<tr>
<td><em>Xanthium sp.</em></td>
<td>Burr*</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common name</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Acanthiza nana</td>
<td>Yellow Thornbill</td>
</tr>
<tr>
<td>Bos taurus*</td>
<td>Cattle*</td>
</tr>
<tr>
<td>Gymnorhina tibicen</td>
<td>Australian Magpie</td>
</tr>
<tr>
<td>Lepus capensis*</td>
<td>Brown Hare*</td>
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<td>Malurus cyaneus</td>
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<td>Ovis aries*</td>
<td>Sheep*</td>
</tr>
<tr>
<td>Rhipidura leucophrys</td>
<td>Willie Wagtail</td>
</tr>
</tbody>
</table>

* Exotic species
Appendix H
Heritage assessment
Cultural Heritage Study and Archaeological Assessment

Proposed Expansion Eglinton Village (near Bathurst), NSW.

By
Charles Dearling

September 2005

Report to:
Connell Wagner
2 Palmer Street
North Parramatta NSW 2151
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SUMMARY

The City of Bathurst Council is investigating the possible extension of the boundaries of Eglinton Village located about 3 km north west of Bathurst NSW.

The study area consists of 347 ha located to the north, west and east of the existing Eglinton Village.

This report documents the results of the Cultural Heritage Study commissioned by Connell Wagner on behalf of the Bathurst Regional Council. The aims of the study were to:

- Carry out a preliminary desktop study, and field based surveys aimed at identifying Aboriginal and European archaeological sites and associated features within the proposed development area.
- Assess the significance of any sites and features (Aboriginal or European) identified during the study; and
- Identify management options for sites and sensitive areas based on predicted impacts.

This report documents the results of the above study, and includes:

- Discusses the survey methodology, surveys, and survey results.
- Outlines management options for Aboriginal and European sites and cultural heritage material within the study area.

Eglinton Village falls within the boundaries of the Bathurst Local Aboriginal Land Council. During the field surveys, the Bathurst LALC was represented by Mr Warwick Peckham.

During the field surveys a single Aboriginal Isolated Find was recorded. In addition six European heritage items were also recorded. The European items consisted of three extant structures/ruins and three items of removable heritage. The latter category consists of old farm implements that appear in remarkably good condition.

It is recommended that:

**Aboriginal Cultural Heritage**

- There are no long term Aboriginal archaeological constraints to the proposed expansion of Eglinton Village proceeding.
- No further archaeological research with regard to Aboriginal cultural heritage issues is necessary.
- If the expansion proposal goes ahead consent to destroy the single Aboriginal site, EV 1, should be made to the Director General of DEC.

**European Cultural Heritage**

- There are no long term European archaeological constraints to the proposed expansion of Eglinton Village proceeding.
- Prior to proceeding with the expansion of Eglinton Village an archival recording of sites EV H3 and EV H5 should be carried out and a reassessment of site EV H 4. Prior to the reassessment the site should be cleared of vegetation and rubbish.
- Negotiation should be carried out between the local government authorities and the owners for the conservation of the movable heritage items at site EV H1, EV H2, and possibly EV H4.
Cultural Heritage Study, Proposed Expansion, Eglinton Village (near Bathurst), NSW

- Prior to the proposed extension proceeding approval should be sought from the NSW Heritage Council for the destruction of all sites and the removal of any items of movable heritage.
1. INTRODUCTION

The Project

The City of Bathurst Council is investigating the possible extension of the boundaries of Eglinton Village located about 3 km north west of Bathurst NSW. The need for the study was highlighted in both the City of Bathurst Housing Strategy 2001 and the Bathurst City Structure Plan 1994 (BCC 2004). The area surrounding Eglinton was identified in the later document as warranting further investigation in terms of providing for future low-density village style housing development around Bathurst. It is envisaged that any future development at Eglinton would entail low-density detached residential housing and associated infrastructure such as schools, open spaces and neighbourhood shops. As a result of the above a Cultural Heritage Assessment of the proposed development area was commissioned by Connell Wagner on behalf of the City of Bathurst Council.

Study Area

The study area consists of 347 ha and includes the following blocks to the north, west and east of the existing Eglinton Village:

- Lot 11 DP 872964 (44.6 ha)
- Part lot 2 DP 16832 (42.7 ha)
- Lots 2 and 3 DP 786760 (20.22 ha)
- Lot 12 DP 825612 (44.45 ha)
- Lots 1 to 8 DP 795012 (41 ha)
- Lots 3 to 15, 30 and 33 DP 983884 (72.15 ha)
- Lot 11 DP 825612
- Lot 100 DP 710096
- Lot 991 DP 777671
- Lot 1 DP 1047811
- Lot 2 DP 786471

European occupation of the area around Bathurst, including the study area, dates to the early years of European settlement of NSW. The first settlers arriving shortly after a route over the Blue Mountains from Port Jackson was identified in 1813. The land comprising the present study area was taken up by George Ranken (to the west of Duramana Road) and Thomas Icely (area to east of Duramana Road). The holdings were taken up in 1823 as land grants from Governor Macquarie. The nascent village of Eglinton dates from sometime in the 1890s.

The Report

This report documents the results of the Cultural Heritage Study commissioned by Connell Wagner on behalf of the Bathurst Regional Council. The aims of the study were to:

- Carry out a preliminary desktop study, and field based surveys aimed at identifying Aboriginal and European archaeological sites and associated features within the proposed development area.
- Assess the significance of any sites and features (Aboriginal or European) identified during the study; and
- Identify management options for sites and sensitive areas based on predicted impacts.
Cultural Heritage Study, Proposed Expansion, Eglinton Village (near Bathurst), NSW

This report documents the results of the above study, and includes:

- Discusses the survey methodology, surveys, and survey results.
- Outlines management options for Aboriginal and European sites and cultural heritage material within the study area

Personnel

The project was managed by Mr Charles Dearling who also conducted the field surveys. In the field Mr Tom Taverner, an experienced field assistant and trainee archaeologist, was employed as a field assistant. Mr Taverner has a BSc degree and is currently undertaking a course of study for a Grad Dip in Archaeology at The Australian National University.
Figure 1 – Map Showing the Study Area and Previously Recorded Aboriginal Sites and Both the Aboriginal and Historical Sites Recorded During Present Study.
(Base Maps: 1:25k Topographical Survey 2nd Edition - Bathurst Sheet 8831-3-S and Peel Sheet 8831-3-N)
2. ABORIGINAL CONSULTATION

Eglinton Village falls within the boundaries of the Bathurst Local Aboriginal Land Council. Prior to the field surveys taking place the LALC was contacted and informed of the survey and the reasons it was being carried out. The Land Council was also invited to participate in the surveys. All contacts with the Land Council prior to the surveys were done by Fax or Telephone conversation.

About a week before the surveys the Bathurst LALC was contacted and arrangements made for two of their representatives to take part in the survey. At that time a place and time was made for the survey party to meet.

During the field surveys, the Bathurst LALC was represented by Mr Warwick Peckham who is both the Coordinator of the Land Council and one of its Sites Officers. Mr Peckham was present when the single Aboriginal cultural heritage location was recorded. Discussion with Mr Peckham following the survey centred on the management of the find.

During the discussions Mr Peckham informed the consultant that he was happy with the conduct of the surveys and the results obtained. He also stated that as far as the single find was concerned the Bathurst LALC was happy that the artefact had been recorded and concurred with a suggestion that if the proposed development went ahead that Consent to Destroy the site should be obtained from DEC. Mr Peckham also stated that in the vicinity of the find careful note should be taken in case more cultural heritage material was uncovered. If such was the case, the Bathurst LALC would need to be informed.

A report by Mr Peckham on behalf of the Bathurst LALC is attached at Appendix 1. That report states that the Bathurst LALC is happy with the conduct of the study and has no objections to the proposed extension of the village of Eglinton from proceeding.
3. METHODOLOGY

Study Methodology

A range of documentation was consulted during the study. Much of this material was perused prior to field surveys being undertaken. The material was reviewed to ascertain if there were any known sites within or close to the various reserves included in the present study. Resources consulted during the study included:

- Australian Heritage Commission (AHC) (Register of the National Estate);
- National Library of Australia (NLA);
- State Heritage Register and Inventory;
- Department of Environment and Conservation (Cultural Heritage Division);
- Various Maps (Topographical, Geological); and
- Various databases maintained by different organisations including the Land and Information Centre.

Also reviewed was a corpus of information (reports and theses) that was within the consultant’s collection, or was loaned by other archaeological consulting organisations.

Results of Searches

Exempting the Cultural Heritage Division (Aboriginal Heritage Information Management System), no Aboriginal sites or areas of significance appeared on any of the databases consulted. There was however a number of European Heritage or Natural Heritage items listed within the vicinity of Bathurst and Eglinton. These include:

- **Register of the National Estate** (RNE) -: 69 items in the Bathurst District were identified on the RNE. In addition two items were identified as being in Eglinton. Those listed as being in Eglinton were:
  - *Blackdown Homestead Complex.* This homestead is one of the oldest in the Bathurst District and dates from the 1820/1830 period.
  - *Kelloshiel Creek Bridge.* The bridge lies 1.4 km west of Eglinton Village and is possibly old as the 1830s. It is believed by some that the bridge was constructed by George Ranken. The road now crossing the bridge was surveyed in 1876 and gazetted in 1878. The bridge is described as a “Segmented Masonry Arch Road Bridge”.

- **State Heritage Register (SHR)** -: 29 items are listed on the SHR for the Bathurst Regional Council Area.

- **State Heritage Inventory (SHI)** -: 204 items including five that are close to or in Eglinton Village were identified on the SHI. The item within the Village is a “single story late Victorian homestead”. The house is located at 35 Loren Street and appears to have been the Cox family home (Barry Cox pers comm). The other four items are:
  - *Blackdown Homestead* at 90 Eleven Mile Drive
  - *Blackdown Mill*
  - *Kelloshiel* at 20 Mill Lane, and
  - *St Lukes Anglican Church*, Alexander Street.
Bathurst Local Environment Plan (LEP) :- eight items in or near Eglinton Village were found to be listed on Schedule 3 of the Bathurst LEP. Details of the items are outlined in Table 1.

### Table 1 – Items Listed on Bathurst LEP for Eglinton

<table>
<thead>
<tr>
<th>Item No</th>
<th>Item name</th>
<th>DP</th>
<th>Street Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Westbourne</td>
<td>Lot 6 DP 594198</td>
<td>192 Mill Lane</td>
</tr>
<tr>
<td>19</td>
<td>Kelloshiel</td>
<td>Lot Pt 4 DP 16832</td>
<td>20 Mill Lane</td>
</tr>
<tr>
<td>20</td>
<td>St Luke Anglican Church</td>
<td>Por Pt 72 DP 755779</td>
<td>27 Alexander Street</td>
</tr>
<tr>
<td>21</td>
<td>Late Victorian Homestead</td>
<td>Lot 55 DP 829571</td>
<td>Loren Street</td>
</tr>
<tr>
<td>22</td>
<td>Alloway Bank</td>
<td>Lot 1 DP 855150</td>
<td>135 Thomas Street</td>
</tr>
<tr>
<td>23</td>
<td>Cangoura</td>
<td>Lot 1 DP 745859</td>
<td>310 Eleven Mile Drive</td>
</tr>
<tr>
<td>27</td>
<td>Former Blackdown Mill</td>
<td>Lot 21 DP 804072</td>
<td>158 Eleven Mile Drive</td>
</tr>
<tr>
<td>28</td>
<td>Blackdown</td>
<td>Lot 22 DP 804072</td>
<td>90 Eleven Mile Drive</td>
</tr>
</tbody>
</table>

No European Heritage Items were identified on any of the databases as being within the study area boundaries.

**AHIMS Search**

The Cultural Heritage Division, through its Aboriginal Heritage Information Management System (AHIMS), maintains a register of all recorded Aboriginal Sites within the state of New South Wales. A search of the register was requested prior to the survey to ascertain if any sites were known to be in the area of the present study, and to identify all previously recorded sites in the surrounding area. The areas searched encompassed the two 1:25k Topographical Map Sheets on which the study area are located. These were:

- Peel - Sheet 8331-3-N;
- Bathurst - Sheet 8331-3-S;

The area requested to be searched generally encompassed an area 5 km out from the study area boundaries. The search indicated that there were at least 8 recorded Aboriginal sites within the area covered by the search area. Of the sites six were open artefact scatters (sometimes referred to as campsites), a Bora or Ceremonial Ground, and a Stone Arrangement. The last two sites were located south of the Macquarie River in the vicinity of Mount Stewart.

Associated with the register is a collection of archaeological reports, theses and papers dealing with previous archaeological studies. A selection of these relevant to the Bathurst Region were consulted to ascertain site location data, site content data, predictive models of site location, and any data that may be considered relevant to the present study. These reports were examined at the Cultural Heritage Division at Hurstville, NSW.

The closest previously recorded sites to the present study area, and which could impact on the finding of Aboriginal cultural heritage material within the study area, are:

- Site No 44-3-54 an open artefact scatter located about 1 km northwest of the study area, and
- Site No 44-3-37 also an open artefact scatter located about 2 km east of the study area.
Two further sites, Site No 44-3-83 and Site No 44-3-82 are located further out at about 5 km northeast and northwest of the study area. Both these sites were recorded by L. Cables (1982) as part of a proposal to construct a power transmission line from Wallerawang to Wellington, NSW.

No Aboriginal Sites or Cultural Heritage items were identified as being known to exist within the boundaries of the study area.

Field Investigation

Field investigations of the study area were undertaken on 29 and 30 August 2005. The surveys involved a visual examination of any areas of disturbance that might provide a window into the archaeological record. Experienced archaeologists, supported by representatives of the Local Aboriginal Community, undertook all surveys. The surveys were generally conducted on foot and in some cases by vehicle.

Where Aboriginal cultural material in the form of flaked stone artefacts, or European cultural material, was identified additional, detailed inspection of the immediate area was undertaken to determine, to the greatest degree possible whether or not further such material might be present. All artefacts identified were recorded and an assessment was made on the likelihood of additional artefacts being present and whether or not there was potential for undisturbed archaeological deposits to be spatially associated with the exposed and disturbed artefacts recorded at the site.

The details of the field survey methodology are included in the individual sections of this report dealing with the individual parts of the study area.
4. HISTORICAL BACKGROUND

Introduction

European settlement of the area around Bathurst occurred soon after a route over the Blue Mountains had been found. The first references to the area in which the present study area is located was when the land was taken up as Land Grants issued by Governor Macquarie. This last event occurred in 1822. The following details on the history of Bathurst have been taken from a number of sources including: Barker (1992; 1998); Hughes Trueman Ludlow (nd); Lawson (1938); Salisbury and Gressor (1971), White (1923); The Sydney Morning Herald and The Age (2004).

Bathurst – A Short History

The area of Bathurst was discovered in 1813 by William Evans the Deputy Surveyor General of the colony. Evans was acting under directions from Governor Macquarie to explore westward from the point reached by Blaxland, Lawson and Wentworth when they successfully crossed the Blue Mountains earlier in the year. At the time of “discovery” the plains about Bathurst were noted as stretching for some distance either side of the river, with the tree covering “thinly scattered”. Acting on the report submitted by Evans Macquarie decided to establish an outpost beside the river at Bathurst. Macquarie himself visited the site in May 1815 and selected a site for the new town.

Earlier, in 1814, William Cox was sent by the Governor with a party of soldiers and convicts to construct a road across the mountains to the Bathurst Plain. It was Cox who chose the site of Bathurst which was the last camp, or depot, he set up along the new road.

The settlement of Bathurst was not free from trouble. Between 1822 and 1824 an insurrection by the local Wiradjuri people was quelled using harsh measures. Similarly in 1829 a rebellion by 80 convicts was also put down. The convict rebellion resulted from punishment (flogging) meted out to a convict for swimming within view of Governor Darling and his party. On 20 August 1825 “Saltram” (see below) was raided by a group of armed convicts who stole food, guns and ammunition. The escaped convicts were pursued by armed police, government employees and local land owners. The convicts were tracked down, and following some shots being fired, successfully escaped. Most of the stolen property, including six muskets, were recovered. The notorious Bushranger Ben Hall was married in St Michaels Church Bathurst in 1856. In October 1863 Hall and his gang raided the town robbing a jeweller’s shop and the Sportsman’s Arms Hotel.

Bathurst grew as an administrative and business centre following the discovery of gold at Ophir and Turon in 1851. In 1852 Bathurst was proclaimed a Town and in 1862 a Municipality. In 1881 the population of the town of Bathurst was about 7,000 and the surrounding district 20,000. The railway arrived in Bathurst in 1876. In 1885 Bathurst was declared a City.

Towards the end of the 19th Century wool production was giving way to other commodities such as cattle, agriculture, market gardening and fruit orchards. The larger land holdings were also being reduced with the new land owners holding smaller blocks of land.

Ben Chifley, the son of a local blacksmith, train driver and Prime Minister of Australia was born in Bathurst in 1885.

Black White Relations

Prior to settlement by Europeans the area of Bathurst had been inhabited by the Wiradjuri people. The Wiradjuri was one of the largest tribes, or language groups, in NSW, with their territory stretching to the west towards the Darling River, and to the south to the Murray
River. Initially relations between the early settlers and the local Wiradjuri appear to have been good. Problems developed however when more and more Europeans arrived and took up more of the Wiradjuri land. Several accounts point to the initial killings being carried out by white settlers. From the early 1920s trouble between the two sides increased resulting in a declaration of Martial Law in the district by Governor Brisbane in 1824. To try and quell the disturbances, and to suppress the Aboriginal warriors, a force of mounted police and volunteers was stationed at Bathurst for the duration of the conflict. It is estimated that at least 120 Aboriginal people of all ages and both sexes were killed during the conflict. The Aboriginal insurrection was led by an outstanding warrior named Windradyne. At the height of the trouble 5,000 acres (2,000 ha) of land was offered for the capture of Windradyne.

Eglinton – A Short History

The present study area, and the Village of Eglinton, is located north of the Macquarie River in the Parish of Jedburgh, County of Roxburgh. The area is located in Portion 71 and Portion 72 Parish of Jedburgh (see Fig 2). European holding of these two Portions dates back to 1822 when both were given as land grants by Governor Macquarie. Portion 71 of 2000 acres was given to George Ranken with confirmation by the Governor occurring on 30 June 1823. Portion 72 was granted to Thomas Icely with confirmation occurring on the same date. Both Portions were selected by Ranken who acted on behalf of his neighbour Icely.

George Ranken was a native of Ayrshire in Scotland who migrated to New South Wales with his wife in 1821. The couple spent a short time in Van Dieman’s Land before proceeding to NSW. Following his arrival Ranken leased some land at Petersham in Sydney and in 1822 selected 2,000 acres (800 ha) near Bathurst. Ranken also selected two further blocks – one for Captain John Piper and one for Thomas Icely. Ranken was appointed a magistrate in 1824 by Governor Brisbane. Thomas Icely was also appointed to the bench in April 1831 by Governor Darling.

Icely, from Devonshire, arrived in Australia in 1820 with a land order which allowed him to select a portion of land. Icely sold his holding at Bathurst (named Saltram) to Ranken in about 1831 and established himself at Coombing Park Estate at Carcoar.

In about 1855 Ranken had a bridge constructed over the Macquarie River. The bridge was opened on 12 January 1856. In addition Ranken also had a flour mill constructed on his property at Kellogshiel.

Based on evidence that in 2005 the Community of Eglinton is celebrating its 150th anniversary, it is assumed that the nascent village was established in 1845. Various editions of the parish maps for the Parish of Jedburgh indicate that:

- Two acres (0.8 ha) of land was gazetted for a school on 3 June 1866. The school was established two years later in 1868.
- Further land was resumed for the school on 8 August 1880.
- A public park was established in the Village on 25 February 1901.
- A Public Hall was established at about the same time (no date known).

In 1899 a Union Church was built at Eglinton (Barker 1998:282). According to the source the church was named the Muller Memorial Church after Johann Muller a German immigrant who was a carpenter and Superintendent of Eglinton (Union) Sunday School.

From about the 1880s the larger holdings within the district, including Portions 71 and 72, began to be broken up. It would appear that smaller holdings of about 40 acres were available to small farmers and pastoralists. It was not possible in the time frame of the project to determine if these smaller holdings resulted from the Land Acts of 1885 or from the sub-
division of the two larger holdings – Kelloshiel and Saltram. Some idea of the beginnings of this “sub-divisions is evident in the hand notations on the 3\textsuperscript{rd} Edition of the Map of the Parish of Jedburgh (see Fig 2.).
Figure 2: Part of the 2nd Edition Map of the Parish of Jedburgh, County of Roxburgh showing Portions 71 (Kelloshiel) and 72 (Saltram). Also shown are early subdivisions that had taken place within Eglinton and the two properties.

Charles Dearling Archaeological and Cultural heritage Consultants, September 2005
5. ENVIRONMENTAL SETTING

Introduction.

The Eglinton Village study area has been highly modified since European settlement began in the District in about 1820. The area has been repeatedly ploughed since that time and is currently generally used for either sheep or cattle grazing, or horse agistment. Because of the disturbance caused to the soil deposits in the last 200 odd years it is assessed that at least 200 mm, and most likely much more, of the soil layer has been removed due to water or wind erosion. There is very little native vegetation left within the study area boundaries.

Geology.

The underlying geology of the area in and around Eglinton Village is granite. The presence of this granite is mirrored in some of the soil deposits in the area. These deposits are quartz rich sands. In most cases this is the material that has been stripped off by the actions of wind and water. Spread across the study area is an extensive, though sparse covering of riverine gravels and pebbles. This material ranges from less than 10 mm in size up to 250 mm. This material would have provided a ready source of stone raw materials for Aboriginal people provided the stone was not covered by soil. The geology of a particular area is important for the distribution of Aboriginal sites and cultural heritage material. Some geological areas provide a richer resource base than others. It has been found elsewhere, that areas with granite geology have a higher density of such material than do areas composed of sedimentary geology (Dearling 2003). Along the major stream corridors are recent alluvial deposits.

Topography.

The study area consists of rolling terrain with broad flat spurs and ridges. These spurs and ridges have a general north south axis. The streams and drainage lines within the area are within the Macquarie River catchment. Those in the eastern half of the study area generally flow into Saltram Creek, a major tributary of the Macquarie. The ground rises from approximately 640 metres asl in the south along the Macquarie River to approximately 680 metres asl at the northern end of the study area.

Vegetation.

The vegetation within the study area consists almost exclusively of pasture type grasses. There were extensive tracts of new Lucerne crops in the north of the study area, notably within Lot 11 DP 825612. The southern half of Lot 11 DP 872964 had a new oat crop growing. Most of the extant trees within the study area were exotic plantings. There were some native trees extant along Saltram Creek to the east of the present Village.

Disturbance.

The disturbance within the vicinity of Eglinton Village has been extensive. The area has been subjected to extensive grazing and farming activities for almost 200 years. Disturbance within the study area has been caused by:

- repeated plowing of the land;
- movement and grazing of stock;
- erosion;
- fence, road, and utilities construction;
- dam construction; and
Cultural Heritage Study, Proposed Expansion, Eglinton Village (near Bathurst), NSW

- construction of the existing buildings within the village and farm land.

In addition to the above, the north western part of the study area (Lot 11 and 12 DP 825612), has had a number of horse training tracks and horse holding yards constructed. The main use of this part of the study area is for horse training and agistment. The construction of these facilities has seen a large quantity of foreign fill brought in.

Another equally disturbed area is Lot 2 DP 786760 which has a number of Radio Transmitting Towers constructed within it. During the survey it was noted that a grid pattern of “crop marks” were present around the masts. These marks are assessed as resulting from the laying of earthing cables and straps associated with the masts.

The area between the existing village and Saltram Creek is also used for horse agistment. The area is highly disturbed with artificial terraces along the creek. There are also some fill dumps within the area. Rubbish and rubble from the village construction is also encroaching into the area.

Water Availability.

The area around Bathurst, as with most of the Australian continent, is susceptible to drought. Despite this water would have been permanently available from the Macquarie River just to the south of the study area. At the time of the survey water was also available in Saltram Creek. It is not known how drought would affect this supply. The majority of drainage lines within the open paddocks were generally dry. There was however water present in storage tanks (dams) constructed since European Settlement. Based on the evidence of this water availability it is assessed that water would have been available generally all year round to Aboriginal people exploiting the area prior to European settlement.

Conclusions.

The area in and around the Village of Eglinton would have been an ideal locality for Aboriginal people to exploit. Permanent water would have been available nearby. In addition it is considered that reliable food and other resources would have been available. Since European settlement severe disturbance of the area has occurred. It is assessed that this disturbance will have affected the survivability of any Aboriginal cultural heritage material that may have been present in the area. Alternatively European settlement and the land use practices adopted since that time, plus the rural nature of the study area, will enhance the chances of items of European cultural heritage being found.
6. FIELD INVESTIGATIONS

Introduction.

During the field investigations two methods were employed to survey the area: by foot or by vehicle. The first method was used to survey most of the area covered including the entire area east of Hamilton Street as well as the area north of the village. The area west of the existing village was covered by combined foot and vehicle survey. The later method saw the survey team driving the area and stopping whenever suitable ground exposure was found. The team then dismounted and conducted foot surveys of the exposure.

During the surveys the biggest problem faced by the survey teams was the availability of suitable surface exposure. Generally ground surface exposure across the study area was poor. This poor exposure resulted from a number of factors including grass coverage, stock damage, introduced soil and stone material, erosion, and ploughing. The visibility and exposure levels for each part of the study area will be discussed individually for each section of the survey.

For ease of discussion description of the surveys carried out in the study area will be discussed with the area divided into its DP and Lot numbers (see Fig 2).

During the field surveys it was noted that riverine pebbles were spread across the study area. The pebble scatters were extensive, though sparse. Some had been damaged and broken by plough action. It was considered that the presence of these pebble, which varied in size, did not hinder the ability to locate Aboriginal Cultural Heritage Material.

DP 825612.

Lot 11. Lot 11 within this DP was not surveyed during the present study. The reasons being that the area was considered to have very low potential, a large part of the area was excluded at the request of the owner, and the remainder was considered highly disturbed. The reason the owner requested the survey team not to enter the areas was due to a new lucerne crop. In addition a horse training track had been constructed at the eastern end of the Lot.

Lot 12. Lot 12 DP 825612 is primarily used for horse agistment and training. Two horse training tracks have been constructed in the north west part of the Lot, and a large number of horse enclosures in the southern part. In addition a number of roads and sheds have been built. The construction of the roads and training tracks has seen large amounts of imported soil and stone material brought in. The area was assessed as having been highly disturbed. The surface exposures that were available were provided by track/road verges, stock tracks, and areas disturbed by horses. The later were mostly near the gates to the various enclosures. Very little native vegetation was noted in the area. Visibility across the less disturbed areas was hindered by grass coverage. Overall surface exposure across these areas represented less than 5% of the total area. However archaeological visibility within the exposures was assessed at approximately 80%. Outside the exposure it was considered less than 5%. All surveys were carried out on foot.

No Aboriginal or European Cultural Heritage Material was found within Lot 12.

DPs 786760, 777671, 872964.

Neither of these properties was entered during the surveys. The reasons being that: the areas were considered to have very low potential, and the areas were considered highly disturbed. Disturbance was caused by the construction of buildings on all three, especially DP 777671 and DP 872964 (RFS Facility), the construction of radio masts and associated infrastructure on DP 786760, and a lack of visibility due to grass coverage. It was possible, due to the slope...
of the land to observe the area of the radio masts from the west. This view indicated that there was very little exposure due to near continuous vegetation cover.

**DP 872964 and DP 16832.**

Visibility was the major problem within these two DPs. The area is currently used for cattle grazing. There was a near continuous grass coverage across the entire area. The major exception to this was the southern third of Lot 11 DP 872964 which had been recently ploughed and had a new oat crop growing. This area was not entered at the request of the owner to prevent damage to the crop. Exposures available for survey consisted of a number of stock paths, and the margins of two water tanks (dams) within the area. Some surface exposure was present along the eastern side of the property on the margins of the existing Village. Archaeological visibility however was hindered by the intrusion of rubbish and builders rubble from the village. Overall available surface exposure was assessed as being less than 2% with archaeological visibility within those exposures being 70%. Outside the exposures archaeological visibility fell to less than 1%. The surveys in these DPs were carried out by vehicle and on foot.

No Aboriginal or European Cultural Heritage Material was found within DPs 872964 and 16832.

**DP 795012.**

During the survey this property was surveyed in two parts: the western side (Lots 1, 2, 3, and 4), and the eastern side (Lots 5, 6, 7, and 8). The western side had been recently cultivated and had a new crop of lucerne growing. At the request of the owner the centre of this part of the survey area was not entered. However the survey teams were able to survey the margins of the paddock along the boundary fences. Overall visibility on the margins was poor with surface exposure being less than 10% and archaeological visibility less than 5%. The eastern side of the property is currently used for cattle grazing. Again available exposure was generally poor due to an extensive covering of grass. Exposure that was present was generally on the margins of the paddock and consisted of fire breaks and stock paths. The area with the best surface exposure was along the eastern margin. Overall exposure within the enclosure was approximately 15% with archaeological visibility being about 80%. The surveys were carried out on foot.

No Aboriginal Cultural Heritage Material was found within DP 795012. There were however two European Cultural Heritage sites found. These were sites EV H4 and EV H5. A description of these two sites is outlined below under the results of the surveys.

**DP 1064156.**

This DP was not surveyed during the present study. The reasons being that the area was considered to have very low potential, there appeared to be very little surface exposure and the area was considered highly disturbed. A large number of buildings have been built on the DP and there was also a near continuous vegetation cover, including a new lucerne crop.

It should be noted that a possible European movable heritage item may exist within DP 1064156. This item is an old truck located within a tree line in the middle of the DP. The truck may date to the 1940s.

**DP 740403.**

As with most of the study area the area of DP 740403 has been subjected to extensive disturbance over the last 200 years. Currently the area is utilised for sheep grazing. In the past cultivation has occurred with the most recent crops being oats and lucerne. There was a new crop of this later commodity growing on part of the property. Exposure over much of
the area was very poor averaging between 1% and 5%. Archaeological visibility outside these exposures was very low being less than 1%. As with the rest of the study area a sparse scatter of river pebbles was present within the area encompassed by the DP. Soils in the area were noted as being light grey clayey loams which in places were overlain by a thin covering of coarse quartz rich sand. The sand is assessed as being remnant soils the majority of which has disappeared due to erosion. It is assessed that across the entire eastern side of the study area at least 200 mm of such material has been removed by the action of water and wind. A number of stock waters tanks (dams) have been constructed in the area, all of which interfere with the natural drainage. The southern part of the DP, which in fact may be Crown land, has been severely disturbed. The disturbance has been caused by construction of a stock water tank, road easement, and dumping of rubbish and other material. A borrow pit also exists in the vicinity. Surveys within the DP were carried out on foot.

No Aboriginal Cultural Heritage Material was found within DP 7740403. There was however a single European Cultural Heritage site found. This site EV H2 is described below under in the section dealing with the results of the surveys.

DP 983884.

The area encompassed by DP 983884 comprises the majority of the north eastern part of the study area. The area is closely associated with Saltram Creek which passes along the southern and eastern parts of the DP. Topographically the area has a north to south trending fall. Overall archaeological visibility within the area of the DP was poor, due to the extensive grass covering. Evidence suggests that at least 350 mm of topsoil had been stripped from the area of the DP. The soils in the area were noted as being a compacted sandy clayey loam with, in places, minor deposits of coarse quartz rich sand. The sand deposits were more extensive on the margins of Saltram Creek near the eastern boundary. In this area the sand was at least 2 metres deep.

It was assessed that surface exposure was less than 1% and archaeological visibility across the area less than 2%. Archaeological visibility along the southern part of the DP rose to approximately 10%. What exposure was present was provided mainly by stock paths. In addition further exposure was available along stream and drainage lines and on the margins of erosion gullies. Disturbance within the area of DP 983884 has been extensive and has been caused by soil erosion, repeated ploughing of the area, stock treadage, and fence and dam construction. All surveys in the area were carried out on foot.

Within DP 983884 a single Aboriginal artefact was found. The site at which the item was found is described below under in the section dealing with the results of the surveys. In addition two European Cultural Heritage sites, EV H3 and EV H6 were recorded.

DP 1047011, DP 786472, and DP 1077306.

The area encompassed by these three DPs is located close to Saltram Creek. Disturbance in the area has been extensive, with the environment highly modified. The area is probably the most highly disturbed within the entire study area. Overall surface visibility was less than 1% due to a thick covering of vegetation on the ground. In addition some areas, especially in the north near Eleven Mile Drive modification to the stream terrace has occurred. This modification has included the introduction of fill and other rubble. Fill has also been introduced along Hamilton Street to form level platforms for house construction. Debris from construction of existing houses within the village has also encroached into the area. No native vegetation was noted in the area. All surveys were undertaken on foot.

No Aboriginal Cultural Heritage Material was found within the DPs. There was however a single European Cultural Heritage site found. This site EV H1 is described below under in the section dealing with the results of the surveys.
Discussion.

The archaeological surveys carried out within the study area have generally supported the assumptions made in the conclusions dealing with the environmental factors which are outlined above. The area under investigation proved to be very highly disturbed due to European land use practices. The result of that disturbance is that any Aboriginal cultural heritage material that may have been present has been destroyed, relocated, or hidden. The material may still be within the study area, but due to the disturbance, especially ploughing, is assessed as not being *insitu.*
Figure 3 – Map Outlining the Properties Within the Study Area.
(Base Map provided by Connell Wagner)
7. RESULTS OF INVESTIGATIONS

Introduction

During the field surveys a single Aboriginal Isolated Find was recorded. In addition a number of European heritage items were also recorded. The European items consisted of three extant structures/ruins and three items of removable heritage. The later category consists of old farm implements that appear in remarkably good condition.

Aboriginal Cultural Heritage Items

During the study a single Aboriginal artefact was recorded. The item, a quartz flake, was found in a highly disturbed area in the north eastern part of the study area. Details of the find are outlined below.

Site Eglinton Village (EV) 1 Isolated Find GR 737518 6304918

The isolated find was found in a mid slope context above a minor drainage line which forms part of the Saltram Creek catchment. The exposure in which the find was located was formed by the junction of a number of stock tracks which converge near the corner of the paddock. The vegetation in the area of the site occurs consists of pasture grasses and is used for sheep grazing.

The exposure containing the site was approximately 5 metres by 1 metre in size (discounting the stock tracks) with archaeological visibility within the exposure being 95%. Outside the exposure visibility dropped to less than 2% due to the grass covering the ground. The soils in the vicinity of the site consisted of a thin layer of coarse sand overlying a compacted, but friable, clayey sandy material. The area of the site is well drained.

It was assessed that the site had moderate to low potential to be larger, both spatially and in the number of artefacts, and as having low potential to have *insitu* sub-surface artefacts.

Artefacts

<table>
<thead>
<tr>
<th>Artefact No</th>
<th>Artefact Type</th>
<th>Raw Material</th>
<th>Length (mm)</th>
<th>Width (mm)</th>
<th>Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flake</td>
<td>Quartz (White)</td>
<td>20</td>
<td>17</td>
<td>5</td>
</tr>
</tbody>
</table>

Bipolar – crushing on distal end; focal platform; 2 major neg scars & several minor; at least 1 rotation

European Cultural Heritage Items

European cultural heritage items within the study area consist of three standing structure/ruins and three items of removable heritage. The removable heritage items consist of a number of old farm implements that in most cases are in reasonably good condition. The items include two Sunshine Headers, a Sunshine Suntyne Grain and Fertiliser Drill and Spring Tyne Cultivator. In the vicinity of one of the Headers are a number of other implements which could not be identified. The header at this site is in an old farm shed of indeterminate age and which is in the process of decay.
Plate 1: Site EV 1 from the north east. The single artefact was found in the exposure to the right of the figure in centre of frame.

Figure 4: Plan of Aboriginal isolated find EV 1 copied from archaeologist’s note book.
Site EV Historical 1  Drill and Cultivator  GR 737162 6303684 (GDA/WGS 84)

This site consists of a single farm implement which has been identified as a Sunshine Suntyne Grain and Fertiliser Drill and Spring Tyne Cultivator. This type of seed drill was developed by a NSW farmer Raimond Squire in 1916. The new machine allowed the farmer in a single operation, to cultivate his land to control weeds and prepare the seed bed, drill both seed and fertiliser into the soil, and harrow the soil to cover the grain and kill germinating weeds.

The manufacturing rights of the machines were sold to H.V. McKay who manufactured the machines at his Sunshine Harvester Works at Sunshine in Victoria. The vehicle located at this site is assessed as being a later version of the Suntyne due mainly to the wider wheels than were noted on earlier machines. It is assessed on appearances that the machine most likely dates to the late 1940s early 1950s period.

The machine is located in an enclosure close to standing farm buildings, none of which are considered to have heritage value. All probably date to the later half of the 20th Century. The enclosure in which the machine is stored is overgrown with weeds (see Plate 1) which inhibited detailed photography.

The machine is assessed as being in reasonably good condition and has many items of the original tool kit present. The items include spare cogs etc that allowed changes in the depth and speed of drilling to be made.

Plate 2: View of the Suntyne Grain and Fertiliser Drill and Spring Tyne Cultivator from the front. No makers' plates or any other form of identification was found on the item. This resulted in the machine being identified by comparing photographs of known machines.
Cultural Heritage Study, Proposed Expansion, Eglinton Village (near Bathurst), NSW

Site EV Historical 2  Sunshine Header  GR 737551 6305290 (GDA/WGS 84)

The Sunshine Header Harvester was invented over a number of years by Headlie Taylor of Henty NSW. Taylor met with success in 1915 when his machine went into production. Initial production was carried out by the designer using various contractors to complete the work. After a successful demonstration to H.V. McKay, owner of the Sunshine Harvester Works at Sunshine in Victoria, the manufacturing rights were sold to McKay. Over the years the machines were improved resulting in Self propelled versions being developed in 1924. Australian farmers preferred unpowered models which were hauled by teams of horses or by tractors. Tractor haulage was seen as more versatile as the tractor could be used for other farm tasks when not hauling the harvester. The machines were made, in various models, up to at least the mid 1950s.

The version of the machine recorded at the site has been modified for tractor haulage. In Plate 2, the area of the stand on the A frame was the point where a third steerable wheel was located when hauled by horses. The Header Harvester at the site is in good condition, showing signs of weathering, but according to the land owners (Kelahan pers comm) is still in working order. Not so long ago the machine was used to harvest 12 bags of oats grown on the property. It was noted during the visit that many of the original tools and spare fittings for the machine are present.

Plate 3: The Sunshine header Harvester located at sit EV H2. According to the land owners the machine is still in working order.
Site EV H3 is identified as a water supply and storage site. The site comprises two concrete lined brick water tanks/troughs connected to a nearby well head by cast iron pipes. The well head has been modernised, as has some of the piping. The newer piping consists of black 50 mm poly pipe. In addition a third plastic open storage tank has been established at the site. It is highly likely, based on the use of pitch at some of the joints, that the older brick tanks may not be water tight.

The bricks used in the construction of the tanks are rough, but machine made.

Overall the site is considered as being in good condition, but highly modified since first built. Located close by are two dilapidated fence lines that are represented by a line of posts. It was not possible to determine the date the site was constructed, but is assessed as dating at least from the mid to late 1950s. Most likely earlier.

Plate 4: Site EV H3 from the north west. The two concrete lined brick tanks/troughs are clearly evident as is one of the old fence lines. The pump head for the well is located in the fenced area at left of the photo. The green item behind the second tank/trough is the modern water tank.
Figure 5: Plan of European Cultural heritage Site EV H3 copied from archaeologist’s note book.

Figure 6: Plan of European Cultural heritage Site EV H4 copied from archaeologist’s note book.
This site consists of an old farm shed (minus sections of roof), a Sunshine Header, and assorted pieces of farm machinery and junk spread about in front of the shed. During the study it was not possible to closely examine the site due to extensive trip hazards within the site. The hazards were caused by small and large pieces of metal lying in the grass and a large number of logs similarly lying in the grass.

The shed is constructed from timber with corrugated sheeting on the walls and roof. The poles supporting the shed are made from sawn hardwood, while the roof rafters are made from rough hewn hardwood logs. The shed is in poor condition. Large sections of the roof are missing. The rear of the shed is also missing, if it was ever there in the first place. As well as the Header old pieces of furniture are also stored in the shed. The large item at the left of Plate 4, is some form of Seed Drill. Type is unknown due to problems in reaching the machine.

Plate 5: Site EV H4 from the north east. The condition of the shed and the lack of visibility in the area are clearly visible. The area between shed and site boundary was closely littered with trip hazards.
This site was identified on the advice of the land owner Mr Barry Cox (pers comm). Cox told the consultant that an old well once existed on the property and indicated its location. He stated that the well collapsed and filled in long ago. During the surveys undertaken on Cox’s property the site of the well was found.

The site manifests itself as a depression in the ground with pieces of broken branches lying around (see Plate 5). According to Cox an old willow tree was once located at the site. The willow did not survive a major drought and the dead tree removed. The broken pieces of wood are all that remain of the tree. The site is located on the eastern boundary of the property close to Hamilton Road.

Plate 6: Site EV H 5, remains of an old well. According to the land owner the well collapsed in on itself and was eventually filled in.
Site EV Historical 6 Sheep Dip Site  GR 737154 6304411 (GDA/WGS 84)

Site EV H 6 is located within Lot 15 DP983884 near its boundary with Eleven Mile Road. The site has a number of features including a concrete sheep dip (see Plate 6), a concrete base around the dip, footings of a probable shed adjacent to the dip, a 5 m x 5 m square depression located just to the south east, and a number of exotic tree plantings. The only part of the site that is readily identifiable as to its purpose is the sheep dip trough itself.

The trough consists of a concrete lined trough dug into the ground. At the entrance end of the dip is a steep step from ground level. The exit end comprises a relatively steep ramp for the sheep to climb out of the dip. The concrete base extends for up to 1.5 metres around the dip.

It was not possible to date the period in which the dip was in use, but may be of the same age as the troughs at site EV H3. The site is in relatively poor condition. The lack of recognisable features across the site, with the exception of the sheep dip itself, hinders the ability to interpret the site. The ground to the north and east of the dip itself falls away sharply and drains directly into Saltram Creek.

Plate 7: Sheep dip at site EV H6. The exit ramp is located toward the top of the photo. The bottom of the dip is filled with various types of debris. The clear plastic "bottle" visible near the centre of the dip is a home made “Bong”. The ground drops away sharply to the left of and at the top of the photo.
8. SIGNIFICANCE ASSESSMENT

Introduction

The *Burra Charter of Australia* defines cultural significance as the “… aesthetic, historic, scientific, or social value for past present and future generations (Marquis-Kyle and Walker 1992:69).” Generally the cultural significance of Aboriginal sites are assessed using the following criteria:

- its significance to contemporary Aboriginal people
- its scientific (or archaeological) value (including representativeness);
- aesthetic value;
- historic value; and
- education value;

Movable Heritage

Within the present study area a number of European cultural heritage items have been identified that fall into the category of Movable Heritage. “Movable Heritage” is defined as any natural or manufactured object or collection of historical significance (NSW heritage Office and NSW Ministry for the Arts 2000). Movable heritage ranges from significant everyday objects to antiques and may be a single item, a group of items or a whole collection and includes:

- machinery from industry, such as tractors, ploughs and the contents of sheds;
- furniture, domestic collections, letters and accounts books and other items in heritage places;
- transport items, such as trams and ferries;
- collections and archives relating to sporting and community organisations;
- religious or ceremonial objects which are important to indigenous people or other cultural groups;
- natural items such as fossils and botanical specimens; and
- museum objects and collections.

Determining Aboriginal Significance

Many areas will be significant according to several of the above category (Navin and Dearling 1998). Despite this Aboriginal open campsites are generally only assessed based on their significance to contemporary Aboriginal people; and their scientific value. The level of significance placed on the Aboriginal isolated find recorded during the present study is an issue for the local Aboriginal communities to determine. These views are outlined in a report from the local Aboriginal community and is enclosed at Appendix 1.

Determining Archaeological Significance – Aboriginal Sites

There are two criteria generally used in assessing the scientific significance: firstly the potential of a site or place to provide information which is of value in the scientific analysis of potential research questions. This is generally seen as being in sites that are undisturbed with *insitu* archaeological material and that are still in good condition. The second criterion is the representativeness of a place. Representativeness is the measure of the degree a place is...
characteristic of its type, content or location. A place may also be significant under this criterion if it is rare or provides a good example of such a place.

When assessing the Archaeological Significance of an Aboriginal place or site, that assessment is normally carried out at three levels: local, regional, and state. A site can be deemed to have high local significance, but low regional and state significance.

Significance Assessment – Aboriginal Sites within Study Area

The single Aboriginal artefact recorded during the present study is assessed as having no cultural heritage value based on Archaeological significance. The type of artefact and the type of site are extremely common throughout NSW and Australia. The only value that the artefact has is very minor when used at a regional level to determine the level of Aboriginal exploitation of that region. That the artefact has been recorded fulfills this minor role.

Determining Heritage Significance – European Sites

The NSW Heritage Office and Department of Urban Affairs and Planning have defined a set of criteria for the assessment of European cultural heritage significance for items and places (NSW Heritage Office & DUAP 1996; NSW Heritage Office 2000). The assessment provided in this report follows this methodology.

The heritage assessment criteria are set out below and are the same criteria used for listing on the State Heritage Register. In many cases items will be significant under only one or two criteria. Environmental heritage means those places, buildings, works, relics, movable objects, and precincts (curtilages), of state or local heritage significance (Section 4, Heritage Act 1977).

An item will be considered to be of State or local heritage significance if it meets one or more of the following criteria:

- **Criterion (a) (Historical)** – an item is important in the course of NSW’s cultural or natural history (or the cultural or natural history of the local area).
- **Criterion (b) (Associative)** – an item has a strong or special association with the life or works of a person, or group of persons, of importance in NSW’s cultural or natural history (or the cultural or natural history of the local area).
- **Criterion (c) (Aesthetics)** – an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).
- **Criterion (d) (Contemporary Community values)** – an item has strong or special association with a particular community or cultural group in NSW (or the local area).
- **Criterion (e) (Educational)** – an item has potential to yield information that will contribute to an understanding of NSW’s cultural or natural history (or the cultural or natural history of the local area).
- **Criterion (f) (Rarity)** – an item possesses uncommon, rare, or endangered aspects of NSW’s cultural or natural history (or the cultural or natural history of the local area).
- **Criterion (g)** an item is important in demonstrating the principal characteristics of a class of NSW’s cultural or natural places; or cultural or natural environments; or, a class of the local area’s cultural or natural places; or cultural of natural environment.

Different components of a place may make a different relative contribution to its heritage value. For example, loss of integrity or condition may diminish significance. In some cases it is constructive to note the relative contribution of an item or its components. The grading that
can be applied to an item are exceptional, high, moderate, low, nil. An item with high significance fulfils the criteria for listing on either state or local heritage listings. One with no heritage significance does not fulfil the criteria.

Significance Assessment – European Sites Within Present Study Area

Individually and collectively the six European sites recorded during the study have different levels of significance at a Local, Regional or State level. The various levels are outlined in Table 2.

Table 2: Significance Levels for European Cultural Heritage Sites Eglinton Village.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Site Type</th>
<th>Local Significance</th>
<th>Regional Significance</th>
<th>State Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>EV H1</td>
<td>Suntyne Drill and Cultivator</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>EV H2</td>
<td>Sunshine Header Harvester</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>EV H3</td>
<td>Water storage and supply system</td>
<td>Low</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>EV H4</td>
<td>Shed and Assorted Machinery</td>
<td>Moderate*</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>EV H5</td>
<td>Old Well</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>EV H6</td>
<td>Sheep Dip Complex</td>
<td>Low</td>
<td>Nil</td>
<td>Nil</td>
</tr>
</tbody>
</table>

The moderate rating at a local level for site EV H4 is considered transitional. The rating would need to be reassessed once a decision is made whether to go ahead with the village expansion is taken. The reassessment will require a closer inspection to be made of all items of machinery at the site to determine their condition and previous use. The structure at the site is assessed as having no cultural heritage significance due in the main to its poor condition.

Site EV H1. Site EV H1 the Suntyne drill and cultivator is considered significant under a number of criterion: Criterion (a), (c), (e), (f), and (g). The high rating is due to the relatively good condition of the machine and the fact that such items are becoming rare and their survival endangered by decay and urbanisation.

Site EV H2. Site EV H2 the Sunshine header and harvester is considered significant under a number of criterion: Criterion (a), (c), (e), (f), and (g). The high rating is due to the relatively good condition of the machine and the fact that such items are becoming rare and their survival endangered by decay and urbanisation. In addition that the machine is still in working order is unusual. For this reason the educative value (Criterion (e)) is enhanced.

Site EV H4. Site EV H4 Shed and associated machinery is considered significant under a number of criterion: Criterion (a), (e), and (f). The rating is moderate due to the unknown condition of the equipment, as well as the function of most. The significance of this item may rise or fall depending on the outcome of a closer inspection of the items. The moderate rating is based on the perceived condition of the header harvester in the shed and the fact that such items are becoming rare and their survival endangered by decay and urbanisation.
Historical Themes.

The NSW Heritage Office (2001) has also identified a number of historical themes under which a place or item of Cultural heritage significance can be identified. Within the present study area the historical theme/s that has been identified for the six European cultural heritage items area is identified in Table 3.

<table>
<thead>
<tr>
<th>Australian Theme</th>
<th>NSW Theme</th>
<th>Local Theme</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing local, regional and national economies</td>
<td>Agriculture</td>
<td>Agriculture</td>
<td>Activities relating to the cultivation and rearing of plant and animal species, usually for the commercial purposes.</td>
</tr>
</tbody>
</table>

Examples cited by the NSW HO (2001) include hay barns, wheat harvesters, sheds, irrigation ditch etc.
9. LEGISLATIVE OBLIGATIONS

Introduction

At the State level Aboriginal cultural heritage is specifically afforded legislative protection in New South Wales under the following legislation:

- National Parks and Wildlife Act (1974) (As Amended); and
- Environmental Planning and Assessment Act 1979.

At the Commonwealth level, significant heritage places and values including Aboriginal heritage places are protected under the:

- Australian Heritage Commission Act (1975); and
- Aboriginal and Torres Strait Islander Heritage Protection Act (1984).

At the state level European Cultural Heritage is specifically afforded legislative protection in New South Wales under the following legislation:

- The NSW Heritage Act (19177)
- Environment Planning and Assessment Act (1979)

National Parks and Wildlife Act

In NSW Aboriginal cultural heritage is afforded legislative protection under Part 6 of the National Parks & Wildlife Act. The Act makes provision for the protection of Aboriginal relics throughout NSW and allows for the responsible Minister to declare places of special significance with respect to Aboriginal culture to be an Aboriginal place for the purpose of the Act.

Under Section 90 it is an offence to knowingly destroy, deface or damage a relic or Aboriginal place without having first obtained the consent of the Director of the NSW NPWS. Unlike Section 86, Section 90 is applicable to all Aboriginal relics across NSW regardless of land tenure.

Environmental Planning and Assessment Act

Indirect protection of Aboriginal heritage is afforded by the Environmental Planning and Assessment Act 1979 through a requirement to consider the potential environmental impacts, including impacts upon Aboriginal heritage, of certain activities including construction and development activities.

Whilst this protection is associated with specific activities rather than more general or blanket protections, it does result in the consideration of potential impacts upon Aboriginal heritage through the requirement for impact assessment. Aboriginal heritage places and values identified during this assessment process can then be more readily managed under the provisions of the National Parks & Wildlife Act.

Australian Heritage Commission Act

The Australian Heritage Commission Act 1975 is an Act of the Commonwealth parliament that establishes the Australian Heritage Commission (AHC) and the Register of the National Estate (RNE). A place may be listed on the Register if it is found to have met one or more of the criteria for places with significant natural, historic or Indigenous heritage values described under Section 4 of the Act.

Under Section 30(1) of the Act places listed on the RNE are protected against actions of the Commonwealth, its Departments or any other Commonwealth body, that adversely affects a
listed place unless there is no feasible and prudent alternative and that all measures that can reasonably be taken to minimize adverse effects have been undertaken.

**Aboriginal and Torres Strait Islander Heritage Protection Act**

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* is an act of the Commonwealth Parliament. It binds the Crown, State and Territory Governments and their agencies, bodies corporate and private individuals.

Under Section 9 of the Act the responsible Commonwealth Minister may, on receipt of an application by an Indigenous person or an organization representing Indigenous people, make a declaration with respect to any place or item that:

(a) Is considered to have significance to Indigenous Australians; and

(b) Is under serious and immediate threat of injury or desecration.

These emergency declarations generally require all actions likely to pose an immediate deleterious threat at the site to cease until such time as a more detailed evaluation of potential impacts and possible outcomes can be made.

Declarations under Section 10 are generally ongoing and designed to provide long-term protection for places or items of significance to Indigenous Australians.

In practice, the Commonwealth has applied the *Aboriginal and Torres Strait Islander Heritage Protection Act* as a measure of last resort after all other legislated protective mechanisms, including State and Territory legislation have been exhausted.
10. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The area encompassed by the present study area has been extensively disturbed by European land use practices. Those practices included clearance of native vegetation, repeated ploughing and cultivation, stock grazing and agistment, and the construction of various items of infrastructure. This activity has affected the survivability of any Aboriginal cultural heritage material that may have been in the area. It is likely that such material is still present. The vegetation cover and lack of surface visibility prevented the material being found. If such material is present it is assessed that it would not be *insitu* due to the repeated ploughing and cultivation. It is also assessed that enough of the ground surface was exposed, especially along the eastern side of the study area, for Aboriginal cultural heritage material, if present in significant numbers, to be found.

In the end only a single Aboriginal artefact was found.

All Aboriginal sites and relics are protected from destruction and may only be destroyed, or interfered with, after the Director General of the DEC has given consent. Such destruction or interference should only occur after consultation with the local Aboriginal community. Such consultation took place during the field surveys. The management strategies for the single Aboriginal relic recorded during the study are outlined below.

The severe disturbance caused by European land use practices, as well as hindering the ability to locate Aboriginal cultural heritage material, increases the chances of finding European cultural heritage material. In all a total of six European cultural heritage items were recorded. These items include three that have been identified as movable heritage items. All three such items have been given high or moderate cultural heritage significance at a state, regional and local level. These high ratings are due in the main to the relatively good condition of the items.

All historical items recorded during the study are protected by legislation. The predominant legislation in NSW is the NSW Heritage Act and the regulations made under that Act. The Heritage Act 1977 defines any item older than 50 years as being a historical item. All the items identified as having a high or moderate rating are assessed as being at least 50 years old. The age of the other three items is indeterminate, with the old well at site EV H5, most likely being older than 50 years. The other items probably date at least to the 1950s.

Management Options

**Aboriginal Cultural Heritage Items.** The single Aboriginal relic found during the study is assessed as having nil archaeological and low Aboriginal significance. Based on this assessment two management options are available:

1. Collect the item prior to the proposed development proceeding.
2. Leave the item in place and seek Consent to Destroy from the Director General of DEC.
3. Leave the item in place and identify and place a buffer zone around the location of the artefact.

**European Cultural Heritage Items.** The six European cultural heritage items identified during the present study have differing levels of heritage significance. As a result there are different management options available for each. For ease of discussion the following options will be outlined for groups or individual items. The management options available are:
1. Do nothing and let the items, especially the items of movable heritage, deteriorate beyond recovery.
2. Identify and place a buffer zone around all items.
3. In conjunction with their owners conserve the items, especially the movable items, *insitu*.
4. Negotiate with owners for either purchase or donation of the movable heritage items and their removal into a secure area, preferably under cover, such as a local museum or heritage area for conservation.
5. Seek consent to destroy the items from the NSW Heritage Council.
6. Carry out archival recording of the three static sites (especially sites EV H 3 and EV H5) and then allow their destruction.
7. Carry out further research into site EV H4 to accurately determine its significance. Reassess the management options for the site following the assessment. As part of the assessment the grass cover and rubbish would need to be removed.

The preferred option for each of the items is:
- EV H1 – Option 4
- EV H2 – Option 4
- EV H3 – Option 6
- EV H4 – Option 7
- EV H5 – Option 1
- EV H6 – Option 6

**Recommendations**

Recommendations in this report are made after consideration of the following:
- Legal requirements under the terms of the relevant Acts. These acts are designed to protect both Aboriginal and European cultural heritage material from unwarranted and needless destruction.
- Consideration of the proposed development on both the Aboriginal and European cultural heritage sites and items.
- Background research into both the Aboriginal and European exploitation of the study area.
- The results of the investigations documented in this report.
- Consultation with the Bathurst Local Aboriginal Land Council.

It is recommended that:

**Aboriginal Cultural Heritage**
- There are no long term Aboriginal archaeological constraints to the proposed expansion of Eglinton Village proceeding.
- No further archaeological research with regard to Aboriginal cultural heritage issues is necessary.
- If the expansion proposal goes ahead consent to destroy the single Aboriginal site, EV 1, should be made to the Director General of DEC.
Cultural Heritage Study, Proposed Expansion, Eglinton Village (near Bathurst), NSW

- Two copies of this report should be sent to:
  Mr Phil Purcell
  Archaeologist
  Environment Protection and Regulation Division
  Department of Environment and Conservation – NW Branch
  PO Box 2111
  DUBBO, NSW 2830

- One copy of this report should be sent to:
  Mr Warwick Packham
  Coordinator/Sites Officer
  Bathurst Local Aboriginal Land Council
  149 Russell Street
  BATHURST NSW 2795

European Cultural Heritage

- There are no long term European archaeological constraints to the proposed expansion of Eglinton Village proceeding.

- Prior to proceeding with the expansion of Eglinton Village an archival recording of sites EV H3 and EV H5 should be carried out and a reassessment of site EV H4. Prior to the reassessment the site should be cleared of vegetation and rubbish.

- Negotiation should be carried out between the local government authorities and the owners for the conservation of the movable heritage items at site EV H1, EV H2, and possibly EV H4.

- Prior to the proposed extension proceeding approval should be sought from the NSW Heritage Council for the destruction of all sites and the removal of any items of movable heritage.

- Two copies of this report should be sent to the NSW Heritage Office/NSW Heritage Council at:
  NSW Heritage Council/Heritage Office
  Locked Bag 5020,
  Parramatta NSW 2124
11. REFERENCES


Gressor, 1979. Sites Cards Prepared by Gressor for Sites 44-3-37 and 44-3-54.

Hughes, Trueman Ludlow, *City of Bathurst Heritage Study Vol 1: Report*, Hughes Trueman Ludlow, Newcastle West, NSW.


NSW Heritage Office, 2001. *New South Wales Historical Themes: Table showing correlation between national, state and local themes with revised annotations and examples*, NSW Heritage Office Pamphlet downloaded from NSW HO Website.


*The Sydney Morning Herald* and *The Age*, February 8, 2004. Bathurst: Major Historic City on the Western Side of the Great Dividing Range


Appendix 1 – Record of Aboriginal Consultation
Appendix I

Advice from Bathurst Soaring Club
PROPOSED EGLINGTON DEVELOPMENT

COMMENTS FROM BATHURST SOARING CLUB

INTRODUCTION

This is the response to a request from Consultant Connell Wagner dated 7/2/06 for comments on the potential impact of Bathurst Soaring Club’s operation for a Local Environmental Study for Bathurst City Council to consider the suitability of an area of rural land surrounding Eglinton village for future urban development.

The Club undertakes flying operations at Pipers Field located 1.5 km west of Eglinton and south of the Freemantle Road. The Club has been located at Pipers Field for about 30 years and provides a local tourist attraction advertised by Council and contributes to the economy of the City.

FLYING OPERATIONS

The club operates primarily unpowered gliders launched by powered tug aircraft.

It also operates some powered gliders, general aviation powered aircraft and ultralight powered aircraft at Pipers Field.

The club operates weekends and public holidays, plus occasional weekdays and blocks of full weeks during the hours of sunrise to sunset, weather permitting.

We have 5 runways (fig 1).

Take-offs are primarily (about 90%) on runway 21 (ie. Aligned 210 degrees magnetic). In particular weather conditions we conduct take-offs on runways 03 and occasionally runway (caravan).
Landings are normally on runway 03 (about 65%) and runway 21 (about 25%) with the remainder on the other runways.

Peak movements occur in the summer months and would be up to 100 per day split approximately evenly between powered and unpowered aircraft. Activity in winter is less than the other seasons.

Flightpaths on take off and landing for the main runway 03/21 are on both the western or eastern side of the strip depending on operational needs:

- The usual flight profile on take-off is an initial climb to above 1000 ft AGL, following one of the approximate flightpaths shown on fig. 2, operations permitting, after which the aircraft will depart in the desired direction of usually continuing to climb.

- The usual flight profile on approach is for the aircraft to approach from any direction usually descending to approximately 1000 ft AGL by the circuit joining point and will then follow the standard landing circuit in the reverse direction of the approximate flightpath as shown on fig. 2, operations permitting.

**NOISE**

Significant noise is generated only from the powered aircraft operating at Pipers Field and at times ambient noise levels are low in the area.

On the ground there will be frequent noise from ground starts, engine 'run-ups', taxiing and take-offs.

On take-off run and during climb, powered aircraft operate at full throttle and generate considerable noise. On descent the noise is less but still significant.

Noise impacts occur particularly in the environs of the airfield and the area underneath the aircraft flightpaths. We endeavor as far as operations permit to fly neighbourly.

The rural lands between the existing Eglington Village and Pipers Field provide a good noise buffer zone of about 1.5 km between concentrated residential development and the airfield. Current flightpaths only come near isolated residential properties.

A new development between the existing village and the airfield will put concentrated development significantly closer to the airfield (~ 500 m at Mill Lane) exposing them to airfield noise and at times directly underneath the flightpath for take-offs and landings where aircraft will be lower than 1000 ft AGL and thus be noisier at ground level (the lower the aircraft the louder the noise in general).

**Summary - It is expected that a significant noise impact would occur to any development west of Eglington when the airfield is in operation.**
Appendix J

Traffic and transport assessment
Eglinton Village Expansion LES

Traffic and Transport Assessment

16 March 2006
Reference P713/
Revision 1
<table>
<thead>
<tr>
<th>Rev No</th>
<th>Date</th>
<th>Revision Details</th>
<th>Typist</th>
<th>Author</th>
<th>Verifier</th>
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<td>Final Traffic Report</td>
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A person using Connell Wagner documents or data accepts the risk of:

a) Using the documents or data in electronic form without requesting and checking them for accuracy against the original hard copy version; and

b) Using the documents or data for any purpose not agreed to in writing by Connell Wagner.
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<td>4.5 Public Transport</td>
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<tr>
<td>5.2 Routes to Access Eglinton Village</td>
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</tr>
<tr>
<td>5.3 Pedestrian and Cyclists</td>
<td>17</td>
</tr>
<tr>
<td>5.4 Public Transport</td>
<td>17</td>
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**Appendix A**
Summary Results of Intersection Surveys

**Appendix B**
Detailed Results of Intersection Analysis – Existing Situation

**Appendix C**
Predicted Traffic Volumes – Eglinton Village

**Appendix D**
Detailed Results of Intersection Analysis – High Growth Scenario – Option 2

**Appendix E**
Predicted traffic volumes for Stewart Street/Durham Street intersection
Appendix F
Detailed Results of Intersection Analysis – Durham St/Stewart St intersection
Detailed Results of Intersection Analysis – Stewart Street/Durham Street intersection
1. **Introduction**

1.1 **Background to the Study**

Bathurst Regional Council is currently investigating the possible expansion of the Eglinton village boundaries. The following Council documents highlighted the need for study to investigate possible expansion of Eglinton Village:

- Bathurst City Structure Plan (1994)
- City of Bathurst Housing Strategy 2001

Based on the 1994 City Structure Plan, the village of Eglinton would be expanded in the long term to cater for total population of approximately 4000 persons. The existing land stocks in the outer fringe areas of Bathurst would last at least 28 years based on the 2001 Housing Strategy which also stated that the areas intended for future residential expansion have not changed considerably since the 1994 City Structure Plan was adopted. The Bathurst Housing Strategy listed the possible expansion of Eglinton Village as number two priority and has relative ease in extending services.

This report addresses the issues in relation to traffic and transport associated with the possible expansion of Eglinton Village, and in particular examines the existing and future performance of the road network with and without the possible expansion.

1.2 **Study Methodology**

The following general study methodology has been adopted to examine the traffic and transport issues associated with the expansion of the Eglinton Village:

- **Analysis of Existing Traffic and Transport Conditions (Section 2)**
  
  This section of the study provides an analysis of existing traffic volumes along the roads situated within Eglinton Village based on traffic surveys carried out in September 2005. Also included is an assessment of the existing public transport, pedestrian, and cyclist conditions in the area, and an analysis of the levels of service provided.

- **Details of Possible Village Expansion Scenarios (Section 3)**
  
  The details of proposed Eglinton village expansion options that have been developed as part of the study is provided in this section.

- **Analysis of Future Traffic and Transport Conditions (Section 4)**
  
  This section outlines the methodology and assumptions adopted for the prediction of future traffic volumes and provides the traffic forecasts along the roads within Eglinton village and road connections to Bathurst. An assessment of the future operational performance of the roads based on these forecasts is provided, with the proposed village expansion, and the future traffic and transport conditions are examined.

- **Assessment of Impacts (Section 5)**
  
  This section analyses the assessment on impacts due to the proposed village expansion on the road network, public transport and parking.
2. Existing Traffic and Transport Situation

2.1 Existing Road Network within Eglinton Village

Eglinton village is located northwest of Bathurst CBD. All streets situated within the built-up area of Eglinton village are two-lane two-way roads with parking allowed along both sides of the road. All intersections are priority controlled intersections except for the Logan Street/Hamilton Street intersection which is controlled by a roundabout. All roads located within Eglinton Village are signposted at 50km/hr speed limit. The locality plan for the study area is shown in Figure 2.1.

The following key intersections are located within the study area, all of which are currently unsignalised.

- Hamilton Street/Logan Street/Hobson Close
- Hamilton Street/Wellington Street/Eleven Mile Drive
- Alexander Street/Logan Street
- Alexander Street/Wellington Street
- Wellington Street/Duramana Road

2.2 Existing Landuses

The predominant land use is residential within Eglinton village. A primary school and a convenience store is provided in Eglinton village. However, the residents of Eglinton village need to use the shopping, hospital and educational facilities (high school and TAFE) in Bathurst.

2.3 Key Routes to access Eglinton Village

The following key routes provide access between Eglinton village and the Great Western Highway which is the main arterial route that provide access to Bathurst, Sydney and other country towns.

Route No 1: Eglinton Road and Durham Street

This route is a two-way two-lane road with parking allowed both sides of the road. The section between the Great Western Highway and Easrom Street has a posted speed limit of 50 km/hr. The road section west of Easrom St through to Ranken Bridge has a posted speed limit of 60 km/hr. This route provides access to the following key land uses and amenities:

- All Saints’ College on Eglinton Road
- Bathurst Base Hospital on Durham Street
- Bathurst CBD
- Bathurst High School on Peel Street (off Durham Street)

Most of the traffic generated by any proposed development in Eglinton Village would be expected to use this route since it provides the most direct access to the Bathurst CBD for commuting traffic as well as providing access to the above amenities for Eglinton residents.

Route No 2: Eleven Mile Drive and Gilmour Street

This route is a two-way two-lane road with parking allowed between Sofala Road and the Great Western Highway. The road section between Hamilton Street (in Eglinton Village) and a point west of the Tyers Park Racecourse (on Eleven Mile Drive) has a posted speed limit of 80 km/hr. Between the Tyers Park Racecourse and Hereford Street (on Gilmour St) the posted speed limit reduces to 60 km/hr. South of Hereford St through to the Great Western Highway the posted speed limit reduces...
further to 50 km/hr. This route bypasses Bathurst CBD to access Sydney and the Blue Mountains from Eglinton Village. This route would be used by some residents of any proposed development to access the eastern side of Bathurst and Kelso, as well as for long distance trips to those locations east of Bathurst.

2.4 Existing Traffic Volumes at Midblock Locations

Intersection surveys were undertaken at the following intersections on Wednesday 21 September 2005 to provide information on the current morning and afternoon peak hour traffic volumes using the road network within Eglinton Village:

- Hamilton Street/Logan Street/Hobson Close
- Hamilton Street/Wellington Street/Eleven Mile Drive
- Alexander Street/Logan Street
- Alexander Street/Wellington Street
- Wellington Road/Duramana Road

In addition to the above intersections, the morning and afternoon peak hour traffic volumes of the Durham Street/Stewart Street intersection were also surveyed. A summary of the results for the intersection surveys is included in Appendix A.

Table 2.1 shows the existing peak hour traffic volumes and estimated average daily traffic volumes at selected midblock locations at Eglinton and Bathurst. The estimated average daily traffic volumes were derived from the results of peak hour intersection surveys using the results of the midblock surveys which were undertaken by Bathurst Regional Council at Ranken Bridge and on Logan Road.
### Table 2.1
**Existing Midblock Traffic Volumes – 2005**

<table>
<thead>
<tr>
<th>Location</th>
<th>Direction</th>
<th>Peak Hour Traffic Volumes (veh/hr)</th>
<th>Estimated Average Daily Traffic Volume (veh/day)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>AM Peak</td>
<td>PM Peak</td>
</tr>
<tr>
<td>Eglinton Rd – at Ranken Bridge</td>
<td>NB</td>
<td>134</td>
<td>397</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>370</td>
<td>212</td>
</tr>
<tr>
<td>Logan St – West of Hamilton St</td>
<td>EB</td>
<td>130</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>52</td>
<td>105</td>
</tr>
<tr>
<td>Hamilton St - North of Logan St</td>
<td>NB</td>
<td>84</td>
<td>303</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>237</td>
<td>158</td>
</tr>
<tr>
<td>Eleven Mile Dr – East of Hamilton St</td>
<td>EB</td>
<td>73</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>39</td>
<td>78</td>
</tr>
<tr>
<td>Wellington St – West of Hamilton St</td>
<td>EB</td>
<td>161</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>42</td>
<td>173</td>
</tr>
<tr>
<td>Cox lane - North of Wellington Street</td>
<td>NB</td>
<td>9</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>50</td>
<td>21</td>
</tr>
<tr>
<td>Alexander St – North of Logan St</td>
<td>NB</td>
<td>50</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>84</td>
<td>39</td>
</tr>
<tr>
<td>Alexander St – South of Wellington St</td>
<td>NB</td>
<td>38</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>59</td>
<td>29</td>
</tr>
<tr>
<td>Logan St – West of Alexander St</td>
<td>EB</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Wellington St – East of Duramana Rd</td>
<td>EB</td>
<td>163</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>34</td>
<td>177</td>
</tr>
<tr>
<td>Duramana Rd – North of Freemantle Rd</td>
<td>NB</td>
<td>21</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>SB</td>
<td>73</td>
<td>41</td>
</tr>
<tr>
<td>Freemantle Rd – West of Duramana Rd</td>
<td>EB</td>
<td>93</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>14</td>
<td>92</td>
</tr>
<tr>
<td>Durham St – West of Stewart St</td>
<td>EB</td>
<td>588</td>
<td>445</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>255</td>
<td>682</td>
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<tr>
<td>Durham St – East of Stewart St</td>
<td>EB</td>
<td>951</td>
<td>774</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>600</td>
<td>1240</td>
</tr>
</tbody>
</table>
From Table 2.1 the following observations are made:

- Ranken Bridge currently carries approximately 5,000 vehicles/day.
- The average daily traffic volume west of Durham Street is approximately 10,400 vehicles/day.
- All streets situated within Eglinton village currently carry less than 3,000 vehicles/day except on Hamilton Street where the average daily traffic volume is approximately 3,500 vehicles/day.

2.5 Existing Performance of Midblock Sections

The existing performance of midblock sections for the locations specified in Table 2.1 has been assessed based on the level of service criteria set out for an urban road in the RTA Guide to Traffic Generating Developments in Table 2.2.

<table>
<thead>
<tr>
<th>Level of Service (LOS)</th>
<th>One Lane (veh/hr)</th>
<th>Two Lanes (veh/hr)</th>
</tr>
</thead>
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<tr>
<td>A</td>
<td>200</td>
<td>900</td>
</tr>
<tr>
<td>B</td>
<td>380</td>
<td>1400</td>
</tr>
<tr>
<td>C</td>
<td>600</td>
<td>1800</td>
</tr>
<tr>
<td>D</td>
<td>900</td>
<td>2200</td>
</tr>
<tr>
<td>E</td>
<td>1400</td>
<td>2800</td>
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</tbody>
</table>

Using the above information, the level of service for the road sections specified in Table 2.1 are shown in Table 2.3.

<table>
<thead>
<tr>
<th>Location</th>
<th>Maximum Peak Hour Traffic Volume in One Direction (veh/hr)</th>
<th>Level of Service (LOS)</th>
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<tbody>
<tr>
<td>Eglinton Rd – at Ranken Bridge</td>
<td>397</td>
<td>B</td>
</tr>
<tr>
<td>Logan St – West of Hamilton St</td>
<td>130</td>
<td>A</td>
</tr>
<tr>
<td>Hamilton St – North of Logan St</td>
<td>296</td>
<td>B</td>
</tr>
<tr>
<td>Eleven Mile Dr – East of Hamilton St</td>
<td>78</td>
<td>A</td>
</tr>
<tr>
<td>Wellington St – West of Hamilton St</td>
<td>173</td>
<td>A</td>
</tr>
<tr>
<td>Cox lane - North of Wellington Street</td>
<td>50</td>
<td>A</td>
</tr>
<tr>
<td>Alexander St – North of Logan St</td>
<td>81</td>
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<tr>
<td>Alexander St – South of Wellington St</td>
<td>59</td>
<td>A</td>
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<td>Logan St – West of Alexander St</td>
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<td>Wellington St – East of Duramana Rd</td>
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<tr>
<td>Duramana Rd – North of Freemantle Rd</td>
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<td>93</td>
<td>A</td>
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<tr>
<td>Durham St – West of Stewart St</td>
<td>682</td>
<td>D</td>
</tr>
<tr>
<td>Durham St – East of Stewart St</td>
<td>1240</td>
<td>B</td>
</tr>
</tbody>
</table>
From Table 2.3 it is evident that the performance of the existing road network within the Eglinton Village is good (LOS A or B) and the performance of Durham Street west of Stewart Street is unsatisfactory (LOS D or worse). However, no upgrades are required for Durham Street west of Stewart Street at this stage due to the following reasons:

- The performance of the urban road network is mainly governed by intersections and the performance of the Durham Street/Stewart Street intersection is good.

- Maximum peak hour traffic volume (682 veh/hr) does not exceed the typical capacity of the single travel lane (900 veh/hr) in an urban environment based on the AUSTROADS Guide to Traffic Engineering Practice Part 2 – Roadway Capacity.

### 2.6 Existing Performance of Intersections

The existing performance of the key intersections in the study area has been assessed using the SIDRA intersection analysis software. The results of the analysis are summarised in Table 2.4. The detailed results of the intersection analysis are attached in Appendix B.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>AM Peak</th>
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<th>PM Peak</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>DS</td>
<td>LOS</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay (sec/veh)</td>
<td></td>
<td></td>
<td>Delay (sec/veh)</td>
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<tr>
<td>Hamilton St/Logan St/Hobson Cl</td>
<td>Roundabout</td>
<td>12.5</td>
<td>0.17</td>
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<td>11.7</td>
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<tr>
<td>Wellington St/Duramana Rd</td>
<td>Priority</td>
<td>10.0</td>
<td>0.08</td>
<td>A</td>
<td>11.1</td>
</tr>
<tr>
<td>Durham St/Stewart St</td>
<td>Traffic Signal</td>
<td>18.0</td>
<td>0.62</td>
<td>B</td>
<td>20.3</td>
</tr>
</tbody>
</table>

Note: DS Degree of Saturation
      LOS Level of Service

From Table 2.4, it is evident that the existing performance of all major intersections is good (LOS A or B). Since the performance of the existing road sections with priority intersections is good, sufficient gaps are available for traffic to enter into the traffic stream travelling along the road network.

### 2.7 Traffic Growth along Great Western Highway

Since most of the traffic generated by any proposed expansion of the Eglinton Village would use Durham Street/Stewart Street (Great Western Highway) to access Bathurst CBD, traffic growth along Great Western Highway needs to be considered to assess the impact on Durham Street/Stewart Street. Table 2.5 shows the historical traffic volumes along the highway based on the RTA Traffic Volume Data.
### Table 2.5

#### Traffic Growth along Great Western Highway

<table>
<thead>
<tr>
<th>Station No</th>
<th>Location along Great Western Highway in Bathurst</th>
<th>Annual Average Daily Traffic Volumes (AADT in axle pairs)</th>
<th>Growth Rates (compound)</th>
</tr>
</thead>
<tbody>
<tr>
<td>94.151</td>
<td>East of Boyd Road</td>
<td>13110 12380 10854 14024 19491 18801 19713</td>
<td>1.87%</td>
</tr>
<tr>
<td>94.144</td>
<td>West of Gilmour Street</td>
<td>17820 16250 14138 18965 16881 27891 22242</td>
<td>1.01%</td>
</tr>
<tr>
<td>94.152</td>
<td>North of Vittoria St</td>
<td>9790 8700 9256 12102 11188 12391 11225</td>
<td>0.62%</td>
</tr>
</tbody>
</table>

Based on historical growth rates as per Table 2.5 a 2% annual compound growth rate has been adopted for the Great Western Highway for the purpose of estimating the potential future daily and peak hour traffic volumes.

#### 2.8 Pedestrians and Cyclists

Cycle paths are not provided within the Eglinton village. However, an off-road cycle path is provided between Eglinton Village and Eglinton Road east of Bradwardine Road. No footpaths are provided within the Eglinton village including for Alexander Street which provides access to Eglinton Primary School.

#### 2.9 Public Transport

Bus services are provided by a private bus operator (Jones Bros) for the Eglinton area from Bathurst. The details of bus services (Route No 523) are given below:

- The bus route includes Eglinton Road – Logan Street – Alexander Street – Wellington Street and Hamilton Street within Eglinton Village.
- A total of 9 bus services during Weekdays and 6 bus services during Saturdays are timetabled. This bus service does not operate either on Sundays or Public Holidays.
3. Possible Expansion Options

A total of 5 options have been developed for the possible expansion of the Eglinton village as part of the LES. The options are summarised below:

- Low Growth Scenario: predominantly 2000sqm lots.
- Moderate Growth Scenario – Option 1: 1000sqm size lots only.
- Moderate Growth Scenario – Option 2: various lot sizes.
- High Growth Scenario – Option 1: 1000sqm size lots only.
- High Growth Scenario – Option 2: Various lot sizes.

The total number of additional lots proposed and the estimated period of land supply for each option are provided in Table 3.1.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Number of Additional Lots</th>
<th>Estimated Period of Supply of Residential Land (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Growth Scenario</td>
<td>153</td>
<td>8</td>
</tr>
<tr>
<td>Moderate Growth Scenario – Option 1</td>
<td>292</td>
<td>16</td>
</tr>
<tr>
<td>Moderate Growth Scenario – Option 2</td>
<td>445</td>
<td>25</td>
</tr>
<tr>
<td>High Growth Scenario – Option 1</td>
<td>558</td>
<td>30</td>
</tr>
<tr>
<td>High Growth Scenario – Option 2</td>
<td>768</td>
<td>40</td>
</tr>
</tbody>
</table>

From Table 3.1 the number of additional lots that could be provided with the Eglinton village, is in the range of 153 – 768 lots. The estimated land supply would last for up to 40 years if High Growth Scenario – Option 2 is adopted by Bathurst Regional Council. It is estimated that the rate of increase in lots within Eglinton village is in the range of 18-19 lots per annum based on historical take-up rates.
4. Future Traffic and Transport Conditions

An analysis of the future traffic volumes predicted to use the road network of Eglinton Village and the road connection (Durham St and Eglinton Rd) between Eglinton and Bathurst has been undertaken in this section. This section also includes an analysis of level of service of future traffic and transport conditions with and without possible expansion.

4.1 Traffic Forecasting Methodology

The following methodology/assumptions have been adopted to predict the future traffic volumes:

- The generated peak hour traffic volumes from the proposed developments were estimated based on the traffic generation rates specified in the RTA Guide to Traffic Generating Developments as follows:
  - Weekday peak hour vehicle trips = 0.85 per dwelling
- 90% of the generated traffic has a destination outside the Eglinton Village.
- Generated traffic volumes were distributed based on the existing traffic pattern at the intersections.
- 80% of total generated traffic would leave Eglinton and 20% of total generated traffic would arrive to Eglinton during the morning peak hour period.
- 80% of total generated traffic would arrive to Eglinton and 20% of total generated traffic would leave Eglinton during the afternoon peak hour period.
- 80% of traffic leaving/arriving via Ranken Bridge would use Durham Road to access Bathurst CBD.

4.2 Eglinton Village

Midblock Traffic Volumes

Table 4.1 shows the maximum predicted peak hour traffic volumes at selected locations within Eglinton Village for all scenarios provided in section 3. The predicted peak hour traffic volumes are attached in Appendix C. Table 4.1 also provides the performance of midblock sections. The level of service assessment has been undertaken based on Table 2.2.
Table 4.1

Midblock Traffic Volumes and Level of Service Assessment

<table>
<thead>
<tr>
<th>Location</th>
<th>Maximum Peak Hour Traffic Volume - veh/hr (Level of Service)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Growth</td>
</tr>
<tr>
<td>Eglinton Rd – at Ranken Bridge</td>
<td>480 (C)</td>
</tr>
<tr>
<td>Logan St – West of Hamilton St</td>
<td>160 (A)</td>
</tr>
<tr>
<td>Hamilton St – North of Logan St</td>
<td>356 (B)</td>
</tr>
<tr>
<td>Eleven Mile Dr – East of Hamilton St</td>
<td>95 (A)</td>
</tr>
<tr>
<td>Wellington St – West of Hamilton St</td>
<td>207 (B)</td>
</tr>
<tr>
<td>Cox lane – North of Wellington Street</td>
<td>50 (A)</td>
</tr>
<tr>
<td>Alexander St – North of Logan St</td>
<td>92 (A)</td>
</tr>
<tr>
<td>Alexander St – South of Wellington St</td>
<td>67 (A)</td>
</tr>
<tr>
<td>Logan St – West of Alexander St</td>
<td>43 (A)</td>
</tr>
<tr>
<td>Wellington St – East of Duramana Rd</td>
<td>205 (B)</td>
</tr>
<tr>
<td>Duramana Rd – North of Freemantle Rd</td>
<td>86 (A)</td>
</tr>
<tr>
<td>Freemantle Rd – West of Duramana Rd</td>
<td>122 (A)</td>
</tr>
</tbody>
</table>

From Table 4.1 it is evident that the performance of all roads situated within the Eglinton Village is acceptable (LOS C or better) for all options except for the road section on the Ranken Bridge where the level of service is not acceptable (LOS D) for Moderate Growth Scenario – Option 2 and High Growth Scenario – Options 1 and 2. However, Ranken Bridge upgrades are not required to accommodate the traffic generated by the proposed developments for the following reasons:

- The performance of the urban road network is mainly governed by intersections and the performance of intersections situated within the Eglinton Village is predicted to be good with the possible proposals for expansion.
- Maximum peak hour traffic volume (822 veh/hr) would not exceed the typical capacity of the single travel lane (900 veh/hr).
Predicted Daily Traffic Volumes

Table 4.2 shows the predicted average daily traffic volumes for all options that have been considered for this study.

Table 4.2
Predicted Average Daily Traffic Volumes

<table>
<thead>
<tr>
<th>Location</th>
<th>Predicted Average Daily Traffic Volume (veh/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Growth</td>
</tr>
<tr>
<td>Eglinton Rd – at Ranken Bridge</td>
<td>5819</td>
</tr>
<tr>
<td>Logan St – West of Hamilton St</td>
<td>1841</td>
</tr>
<tr>
<td>Hamilton St – North of Logan St</td>
<td>4064</td>
</tr>
<tr>
<td>Eleven Mile Dr – East of Hamilton St</td>
<td>1301</td>
</tr>
<tr>
<td>Wellington St – West of Hamilton St</td>
<td>2358</td>
</tr>
<tr>
<td>Cox lane – North of Wellington Street</td>
<td>563</td>
</tr>
<tr>
<td>Alexander St – North of Logan St</td>
<td>1224</td>
</tr>
<tr>
<td>Alexander St – South of Wellington St</td>
<td>869</td>
</tr>
<tr>
<td>Logan St – West of Alexander St</td>
<td>486</td>
</tr>
<tr>
<td>Wellington St – East of Duramana Rd</td>
<td>2394</td>
</tr>
<tr>
<td>Duramana Rd – North of Freemantle Rd</td>
<td>1017</td>
</tr>
<tr>
<td>Freemantle Rd – West of Duramana Rd</td>
<td>1395</td>
</tr>
</tbody>
</table>

From Table 4.2 the following observations can be made:

- The average daily traffic volumes along Eglinton Road at Ranken Bridge are predicted to increase to approximately 5800 veh/day for Low Growth Scenario and for High Growth Scenario – Option 2 traffic volumes would increase to approximately 9400 veh/day.
- The average daily traffic volumes along Hamilton Street north of Logan St are predicted to increase to approximately 4000 veh/day for Low Growth Scenario the and for High Growth Scenario – Option 2 traffic volumes would increase to approximately 6900 veh/day.
- The average daily traffic volumes along Wellington Street are predicted to increase to approximately 2400 veh/day for the Low Growth Scenario and for High Growth Scenario – Option 2 traffic volumes would increase to approximately 4200-4400 veh/day.
- The average daily traffic volumes are predicted to be less than 3,000 veh/day even for the High Growth Scenario – Option 2 for all roads within the Eglinton Village except along Hamilton Street and Wellington Street.
Intersection Performance

The future performance of the key intersections in the study area has been assessed using the SIDRA intersection analysis software for High Growth Scenario – Option 2 which is the worst case scenario. The results of the analysis are summarised in Table 4.3 and the detailed results of the intersection analysis are attached in Appendix D.

### Table 4.3

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Control</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamilton St/Logan St/Hobson CI</td>
<td>Roundabout</td>
<td>12.9 0.39 A</td>
<td>16.2 0.42 B</td>
</tr>
<tr>
<td>Hamilton St/Wellington St/Eleven Mile Dr</td>
<td>Priority</td>
<td>14.4 0.25 A</td>
<td>13.4 0.59 A</td>
</tr>
<tr>
<td>Alexander St/Logan St</td>
<td>Priority</td>
<td>11.3 0.11 A</td>
<td>11.4 0.09 A</td>
</tr>
<tr>
<td>Alexander St/Wellington St</td>
<td>Priority</td>
<td>13.2 0.21 A</td>
<td>14.7 0.22 B</td>
</tr>
<tr>
<td>Wellington St/Duramana Rd</td>
<td>Priority</td>
<td>11.2 0.20 A</td>
<td>11.0 0.23 A</td>
</tr>
</tbody>
</table>

**Note:** DS Degree of Saturation, LOS Level of Service

From Table 4.3 it is evident that the performance of intersections situated within Eglinton village is predicted to be good (LOS A or B) with the possible expansion options including the highest growth option.

#### 4.3 Routes to Access Eglinton Village

Since most of the generated traffic from the proposed options would use the Eglinton Road/Durham Street route to access Bathurst CBD and Great Western Highway, traffic assessment needs to be undertaken for the Eglinton Road/Durham Street route to assess the impact on this route.

**Midblock Performance along Durham Street**

Table 4.4 shows the performance of midblock sections along Durham Street east and west of Stewart Street. The predicted traffic volumes at the Durham Street and Stewart Street intersection are attached in Appendix E. A compound growth rate of 2% has been applied to the turning volumes between Stewart Street and Durham Street (South).
Table 4.4
Performance of Midblock Sections

<table>
<thead>
<tr>
<th>Location</th>
<th>Maximum Peak Hour Traffic Volume -veh/hr (Level of Service)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2013</td>
</tr>
<tr>
<td>Without expansion</td>
<td></td>
</tr>
<tr>
<td>Durham Street – East of Stewart Street*</td>
<td>1344 (B)</td>
</tr>
<tr>
<td>Durham Street – West of Stewart Street</td>
<td>681 (D)</td>
</tr>
<tr>
<td>With expansion</td>
<td></td>
</tr>
<tr>
<td>Durham Street – East of Stewart Street*</td>
<td>1394 (B)</td>
</tr>
<tr>
<td>Durham Street – West of Stewart Street</td>
<td>735 (D)</td>
</tr>
</tbody>
</table>

Note: *A 2% traffic growth (compound) has been applied for traffic volumes along Great Western Highway

From Table 4.4 the following observations are made:

**Durham Street – East of Stewart Street**

- The performance of the midblock section with the proposed expansion would remain as the same as without proposed expansion along Durham Street for the Low Growth Scenario and Moderate Growth Scenario – Option 1.
- The performance of the midblock section would deteriorate to an unacceptable level (LOS D) from an acceptable level (LOS C) with the proposed expansion for Moderate Growth Scenario – Option 2 and High Growth Scenario – Option 1.
- The performance of the midblock section would deteriorate further to LOS E (close to capacity) for High Growth Scenario – Option 2.

**Durham Street – West of Stewart Street**

- The performance of the midblock section with the proposed expansion would remain as the same as without proposed expansion for Options Low Growth Scenario and Moderate Growth Scenario – Options 1 and 2.
- The performance of the midblock section would deteriorate further to LOS E (close to capacity) for High Growth Scenario – Options 1 and 2.

**Performance of Stewart Street/Durham Street Intersection**

Table 4.5 shows the performance of the Durham Street and Stewart Street intersection that has been assessed using the SIDRA intersection analysis software. The performance of the Durham Street and Stewart Street intersection has been analysed for the scenarios with and without proposed village expansion.
Table 4.5
Performance of Durham Street/Stewart Street intersection

<table>
<thead>
<tr>
<th>Scenario</th>
<th>AM Peak</th>
<th></th>
<th>PM Peak</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average Delay (sec/veh)</td>
<td>DS</td>
<td>LOS</td>
<td>Average Delay (sec/veh)</td>
</tr>
<tr>
<td>Without expansion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>18.6</td>
<td>0.62</td>
<td>B</td>
<td>21.3</td>
</tr>
<tr>
<td>2021</td>
<td>19.5</td>
<td>0.65</td>
<td>B</td>
<td>22.2</td>
</tr>
<tr>
<td>2030</td>
<td>20.6</td>
<td>0.67</td>
<td>B</td>
<td>23.5</td>
</tr>
<tr>
<td>2035</td>
<td>21.0</td>
<td>0.67</td>
<td>B</td>
<td>26.4</td>
</tr>
<tr>
<td>2045</td>
<td>22.7</td>
<td>0.74</td>
<td>B</td>
<td>58.3</td>
</tr>
<tr>
<td>With expansion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Growth – 2013</td>
<td>18.9</td>
<td>0.69</td>
<td>B</td>
<td>21.9</td>
</tr>
<tr>
<td>Mod. Growth 1 – 2021</td>
<td>19.9</td>
<td>0.75</td>
<td>B</td>
<td>24.6</td>
</tr>
<tr>
<td>Mod. Growth 2 – 2030</td>
<td>21.3</td>
<td>0.84</td>
<td>B</td>
<td>29.4</td>
</tr>
<tr>
<td>High Growth 1 – 2035</td>
<td>22.8</td>
<td>0.87</td>
<td>B</td>
<td>41.7</td>
</tr>
<tr>
<td>High Growth 2 – 2045</td>
<td>30.3</td>
<td>0.93</td>
<td>C</td>
<td>102.4</td>
</tr>
</tbody>
</table>

Note: DS Degree of Saturation
LOS Level of Service

From Table 4.5 the following observations are made:

- The performance of the intersection of Durham Street and Stewart Street is acceptable (LOS C or better) for all options during the morning and afternoon peak hour periods until 2035 with and without the proposed expansion except for High Growth Scenario – Option 2 during the afternoon peak hour period. However, Degree of Saturation is more than 0.90 for Moderate Growth Scenario – Option 2 and High Growth Scenario – Option 1 with the proposed expansion during the afternoon peak hour period. Therefore, potential queuing would occur for through movement along Durham Street at the southern approach of Durham Street.

- The performance of the intersection is predicted to be unacceptable (LOS D or worse) for High Growth Scenario – Option 2 during the afternoon peak hour period in 2045 with and without the expansion.

Performance of Eglinton Road/Bradwardine Road Intersection

The performance of the Eglinton Road and Bradwardine Road intersection has not been analysed at this stage. Further traffic studies are required to assess the performance of this intersection with the proposed expansion options.

Midblock Performance along Gilmour Street

The midblock traffic volume along Gilmour Street was approximately 4310 veh/day in 2002 based on the RTA Traffic Volume Data 2002. The increase in daily traffic volumes at Eleven Mile Drive east of Hamilton Street is predicted to be approximately 1,390 veh/day for High Growth Scenario – Option 2 which is the worst case scenario. Therefore, the average daily traffic volume along Gilmour Street with the expansion would be approximately 5700 veh/day assuming that no other developments would occur during this analysis period. The performance of two-lane, two-way midblock sections along Gilmour Street is predicted to be good for a road section that would carry approximately 5700 veh/day.
Performance of Great Western Highway/Gilmour Street intersection

The performance of the Great Western Highway/Gilmour Street intersection has not been analysed at this stage. Further traffic studies are required to assess the performance of this intersection with the proposed expansion options.

4.4 Pedestrians and Cyclists

The proposal for all options provides off-road cycle paths within the Eglinton village which connects with on-street cycle paths. No proposal has been provided to construct footpaths within the Eglinton Village.

4.5 Public Transport

The existing bus route needs to be reviewed to service the proposed expansion area. The following routes are recommended:

- Low Growth Scenario, Moderate Growth Scenario – Options 1 and 2 and High Growth Scenario – Option 1:
  Eglinton Road – Logan Street – Alexander Street – Wellington Street – Duramana Road – Loren St – Cox Lane and Hamilton Street within Eglinton Village.

- High Growth Scenario – Option 2:
  Eglinton Road – Logan Street – Alexander Street – Wellington Street – Duramana Road – Parallel Road north of Loren Street – Cox Lane and Hamilton Street within Eglinton Village.
5. **Assessment of Impacts**

5.1 **Eglinton Village**

No significant impacts are expected within the Eglinton village for all expansion options considered as part of this study.

5.2 **Routes to Access Eglinton Village**

**Midblock Locations along Durham Street**

Based on Section 4.3, High Growth Scenario – Options 1 and 2 would have significant impacts along Durham Street within Bathurst CBD. The following measures are recommended to improve the performance of the midblock sections of Durham Street to an acceptable level of service if High Growth Scenario – Option 2 is adopted.

- Provide line marking to accommodate 4 lanes between Stewart Street and Easrom Street
- Ban parking during the peak hour between Stewart Street and Easrom Street
- Widen the road section to provide 4 lanes between Easrom Street and Bradwardine Road along Eglinton Road. (This measure needs be to confirmed by further traffic studies)

The following measures are recommended for High Growth Scenario – Option 2 in addition to the above measures to improve the performance of midblock sections of Durham Street and reduce the private car trips between Eglinton and Bathurst.

- Provision of shops and other local facilities within the Eglinton Village. This measure would reduce the car trips along Eglinton Road/Durham Street.
- Provision of a bicycle path between Eglinton and Bathurst CBD
- Increase the frequency of bus services between Eglinton and Bathurst

**Durham Street and Stewart Street Intersection**

Based on Section 4.3, Moderate Growth Scenario – Option 2 and High Growth Scenario – Options 1 and 2, would have significant impacts on the performance of the Durham Street and Stewart Street intersection. The following measures are recommended to improve the performance of the Durham Street and Stewart Street intersection;

**Moderate Growth Scenario – Option 2 and High Growth Scenario – Option 1**

- Ban parking on southern side of Durham Street from the intersection to 200m west of Stewart Street during the afternoon peak hour period.

**High Growth Scenario – Option 2**

- Ban parking on southern side of Durham Street from the intersections to 200m west of Stewart Street during the afternoon peak hour period.
- Replace controlled left lane with free flowing left lane from Durham Street (south) to Stewart Street. (This measure is required regardless of proposed developments)
- Widen the southern approach of Durham Street to accommodate a short 100m through lane.

**Eglinton Road/Bradwardine Road Intersection**
Further studies are required to assess the potential impacts on this intersection. The increased traffic volumes along Eglinton Road due to the proposed expansion would potentially increase the delays of turning traffic from the approach to Bradwardine Road.

**Midblock Location along Gilmour Street**

No significant impacts are expected on the midblock location along Gilmour Street for all options considered as part of this study.

**Great Western Highway/Gilmour Street intersection**

Further studies are required to assess the potential impacts on this intersection. The increased traffic volumes would potentially block the through traffic volumes (westbound) along Great Western Highway due to the short sub-standard right turn bay for right turning movements from the Great Western Highway onto Gilmour Street (which is constrained by a back-to-back right turn bay into Lee St).

### 5.3 Pedestrian and Cyclists

The increase in traffic volumes along the road network within Eglinton area would potentially cause conflicts between pedestrians/cyclists and vehicles since no footpath is currently provided. It is recommended that off-road footpath/cycle paths need to be provided within the study area.

### 5.4 Public Transport

No significant impacts on bus operation are expected since a minor deviation to the existing bus route would adequately cover the proposed expansion areas.

### 5.5 Parking

No significant parking impacts are expected within the Eglinton village since off-street parking would be provided for the proposed developments. However, the parking impact due to the proposed expansion within the Bathurst CBD needs to be investigated since the residents of the Eglinton village would use the shops in Bathurst CBD due to the lack of local facilities (e.g., shops) available within the Eglinton village.
6. **Summary and Conclusions**

The following conclusions can be drawn from the traffic assessment:

- The performance of the existing road network within the Eglinton Village is good and the performance of Durham Street west of Stewart Street is unsatisfactory. However, no upgrades are required for Durham Street west of Stewart Street at this stage since maximum peak hour traffic volume does not exceed the typical capacity of the single travel lane. The existing performance of all major intersections located within the study area is good.

- Cycle paths and footpaths are not provided within the Eglinton village. Bus services are provided for the Eglinton area from Bathurst.

- The performance of all roads situated within the Eglinton Village is acceptable for all proposed expansion options except for the road section on the Ranken Bridge where the level of service is not acceptable for Moderate Growth Scenario – Option 2 and High Growth Scenario – Options 1 and 2. However, Ranken Bridge upgrades are not required to accommodate the traffic generated by the proposed developments since maximum peak hour traffic volume does not exceed the typical capacity of the single travel lane. The performance of intersections situated within Eglinton village is predicted to be good with the possible expansion options including the highest growth option.

- For the road section east of Stewart Street, the performance of the midblock section with the proposed expansion would remain as the same as without proposed expansion along Durham Street for the Low Growth Scenario and Moderate Growth Scenario – Option 1 and would deteriorate to an unacceptable level (LOS D) from an acceptable level (LOS C) with the proposed expansion for Moderate Growth Scenario – Option 2 and High Growth Scenario – Option 1. The performance of the midblock section would deteriorate further to LOS E (close to capacity) for High Growth Scenario – Option 2. For the road section west of Stewart Street, the performance of the midblock section with the proposed expansion would remain as the same as without proposed expansion for Low Growth Scenario and Moderate Growth Scenarios – Option 1 and 2 and would deteriorate further to LOS E (close to capacity) for High Growth Scenario – Options 1 and 2. The performance of two-lane, two-way midblock sections along Gilmour Street is predicted to be good.

- The performance of the intersection of Durham Street and Stewart Street is acceptable for all expansion options during the morning and afternoon peak hour periods until 2035 with and without the proposed expansion except for High Growth Scenario – Option 2 during the afternoon peak hour period. However, Degree of Saturation is more than 0.90 for Moderate Growth Scenario – Option 2 and High Growth Scenario – Option 1 during the afternoon peak hour period with the proposed expansion. Therefore, potential queuing would occur for through movement along Durham Street at the southern approach of Durham Street. The performance of the intersection is predicted to be unacceptable for High Growth Scenario – Option 2 during the afternoon peak hour period in 2045 with and without the expansion.

- The proposal for all options provides off-road cycle paths within the Eglinton village which connects with on-street cycle paths. No proposal has been provided to construct footpaths within the Eglinton Village. Any route deviation for the buses has not been proposed to include proposed expansion areas.

- No significant impacts are expected within the Eglinton village for all expansion options considered as part of this study. High Growth Scenario – Options 1 and 2 would have significant impacts along Durham Street within Bathurst CBD. The following measures are recommended to improve...
the performance of the midblock sections of Durham Street to an acceptable level of service if High Growth Scenario – Option 2 is adopted:

- Provide line marking to accommodate 4 lanes between Stewart Street and Easrom Street
- Ban parking during the peak hour between Stewart Street and Easrom Street
- Widen the road section to provide 4 lanes between Easrom Street and Bradwardine Road along Eglinton Road. (This measure needs be to confirmed by further traffic studies)

The following measures are recommended for High Growth Scenario – Option 2 in addition to the above measures to improve the performance of midblock sections of Durham Street and reduce the private car trips between Eglinton and Bathurst:

- Provision of shops and other local facilities within the Eglinton Village. This measure would reduce the car trips along Eglinton Road/Durham Street.
- Provision of a bicycle path between Eglinton and Bathurst CBD
- Increase the frequency of bus services between Eglinton and Bathurst

• Moderate Growth Scenario – Option 2 and High Growth Scenario – Options 1 and 2 would have significant impacts on the performance of the Durham Street and Stewart Street intersection. The following measures are recommended to improve the performance of the Durham Street and Stewart Street intersection:

- Ban parking on southern side of Durham Street from the intersection to 200m west of Stewart Street during the afternoon peak hour period for Moderate Growth Scenario – Option 2 and High Growth Scenario – Options 1 and 2.
- Replace controlled left lane with free flowing left lane from Durham Street (south) to Stewart Street. (This measure is required regardless of proposed developments) for High Growth Scenario – Options 2.
- Widen the southern approach of Durham Street to accommodate a short 100m through lane for High Growth Scenario – Options 2.

• The performance of the Eglinton Road and Bradwardine Road and Great Western Highway/Gilmour Street intersections has not been analysed at this stage. Further traffic studies are required to assess the performance of this intersection with the proposed expansion options.

• The increase in traffic volumes along the road network within Eglinton area would potentially cause conflicts between pedestrians/cyclists and vehicles since no footpath is currently provided. It is recommended that off-road footpath/cycle paths need to be provided within the study area. No significant impacts on bus operation are expected since a minor deviation to the existing bus route would adequately cover the proposed expansion areas. No significant parking impacts are expected within the Eglinton village since off-street parking would be provided for the proposed developments. However, the parking impact due to the proposed expansion within the Bathurst CBD needs to be investigated since the residents of the Eglinton village would use the shops in Bathurst CBD due to the lack of local facilities (eg: shops) available within the Eglinton village.
Appendix A

Summary Results of Intersection Surveys
AFTERNOON PEAK HOUR TRAFFIC VOLUMES (5.15PM-6.15PM) - 2005
MORNING PEAK HOUR (8.15AM - 9.15AM) - 2005

AFTERNOON PEAK HOUR (4.45 PM - 5.45PM) - 2005

Legend

- Light vehicles
- Heavy vehicles
- Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWARD ST INTERSECTION
Logan St/Hamilton St/Hobson Pl Intersection
Existing AM Peak
Intersection ID: Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Logan St/Hamilton St/Hobson Pl Intersection
Existing PM Peak
Intersection ID:

**RUN INFORMATION**

* Basic Parameters:
  Intersection Type: Roundabout
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  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

---

### Table S.15 - CAPACITY AND LEVEL OF SERVICE

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<th>Mov Typ</th>
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<th>Total Cap (veh/h)</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Alexander Street and Logan Street Intersection
Existing AM Peak
Intersection ID: Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

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<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Alexander Street and Logan Street Intersection
Existing_PM Peak
Intersection ID:

RUN INFORMATION
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* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

Alexander Street and Logan Street Intersection
Existing_PM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE
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<tr>
<th>Mov No.</th>
<th>Typ</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Alexander St
Existing AM Peak
Intersection ID:

RUN INFORMATION
-------------
* Basic Parameters:
  - Intersection Type: Unsignalised - Give Way
  - Driving on the left-hand side of the road
  - Input data specified in Metric units
  - Default Values File No. 1
  - Peak flow period (for performance): 30 minutes
  - Unit time (for volumes): 60 minutes (Total Flow Period)
  - Delay definition: Control delay
  - Geometric delay included
  - aaSIDRA Standard Delay and Queue models used
  - Level of Service based on: Delay (RTA NSW)
  - Queue definition: Back of queue, 95th Percentile

Wellington St/Alexander St
Existing AM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Alexander St
Existing PM Peak
Intersection ID:

RUN INFORMATION
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* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

Wellington St/Alexander St
Existing PM Peak
Intersection ID:
Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Hamilton St/Eleven Mile Dr Intersection
Existing AM Peak
Intersection ID:

RUN INFORMATION
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* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

Wellington St/Hamilton St/Eleven Mile Dr Intersection
Existing AM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. Delay (v/c)</th>
<th>Aver. Delay (sec)</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria),
independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Hamilton St/Eleven Mile Dr Intersection
Existing PM Peak
Intersection ID:

RUN INFORMATION
---------------------
* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

Wellington St/Hamilton St/Eleven Mile Dr Intersection
Existing PM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
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<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. Delay (s/veh)</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria),
independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Freemantle Road and Duramana Road Intersection
Existing AM Peak
Intersection ID:

**RUN INFORMATION**

* Basic Parameters:
  - Intersection Type: Unsignalised - Give Way
  - Driving on the left-hand side of the road
  - Input data specified in Metric units
  - Default Values File No. 1
  - Peak flow period (for performance): 30 minutes
  - Unit time (for volumes): 60 minutes (Total Flow Period
  - Delay definition: Control delay
  - Geometric delay included
  - aaSIDRA Standard Delay and Queue models used
  - Level of Service based on: Delay (RTA NSW)
  - Queue definition: Back of queue, 95th Percentile

---

Freemantle Road and Duramana Road Intersection
Existing AM Peak
Intersection ID:
Give-Way Sign Controlled Intersection

**Table S.15 - CAPACITY AND LEVEL OF SERVICE**

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Flow (veh/h)</th>
<th>Cap (veh/h)</th>
<th>Total Deg. Delay (Satn v/c) (sec)</th>
<th>Aver. LOS</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Freemantle Road and Duramana Road Intersection
Existing_PM Peak
Intersection ID:

RUN INFORMATION

Intersection Type: Unsignalised - Give Way
Driving on the left-hand side of the road
Input data specified in Metric units
Default Values File No. 1
Peak flow period (for performance): 30 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
aSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (RTA NSW)
Queue definition: Back of queue, 95th Percentile

Freemantle Road and Duramana Road Intersection
Existing_PM Peak
Intersection ID:
Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
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<th>Mov No.</th>
<th>Mov Typ</th>
<th>Total Flow (veh/h)</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aSIDRA Output ---
RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 4
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
      (Max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
Existing AM Peak
Intersection ID:

Actuated Isolated Signals, Cycle Time = 53

Table S.15 - CAPACITY AND LEVEL OF SERVICE

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<tr>
<th>Mov No.</th>
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<th>Total Flow (veh/h)</th>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum V/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Existing Street and Stewart Street Intersection

Existing_PM Peak

Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
  - Any maximum cycle time specification
  - Any user-given cycle time (unless phase times also given)
  - User-given cycle and phase times (if variable flow scale run)
  - Any variable cycle time specification
  - Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 3
  Comparison of last two iterations:
  - Difference in intersection degree of satn = 0.0 %
  - Difference in total vehicle capacity = 0.0 %
  - Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
Existing_PM Peak

Intersection ID:
  Actuated Isolated Signals, Cycle Time = 75

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>No.</th>
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<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (sec)</th>
<th>Aver. Delay (sec)</th>
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South: Durham Street (South)
1 L  0.760  610  1199  0.509  13.2  A
2 T  0.427*  630  806  0.782*  21.0  B

1240 2005 0.782 17.2  B

North: Durham Street (North)
8 T  0.587  403  1090  0.370  9.1  A
9 R  0.080*  42  132  0.318  48.2  D

445 1222 0.370 12.8  A

West: Stewart Street
10 L  0.253*  52  97  0.535  37.6  C
12 R  0.253  371  694  0.535  37.3  C
<table>
<thead>
<tr>
<th></th>
<th>423</th>
<th>791</th>
<th>0.535</th>
<th>37.4</th>
<th>C</th>
</tr>
</thead>
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<tr>
<td>ALL VEHICLES:</td>
<td>2108</td>
<td>4018</td>
<td>0.782</td>
<td>20.3</td>
<td>B</td>
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<td>INTERSECTION (persons):</td>
<td>3162</td>
<td>4018</td>
<td>0.782</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Appendix C

Predicted Traffic Volumes – Eglinton Village
MORNING PEAK HOUR TRAFFIC VOLUMES (8.00AM-9.00AM) WITH PROPOSED DEVELOPMENTS - OPTION 1
Legend

40] Light vehicles
2] Heavy vehicles
[45] Total vehicles
[50] Traffic generated from the proposed developments
[50] Estimated number of proposed dwelling that would use this road

Afternoon peak hour traffic volumes (5.15PM-6.15PM) with proposed developments - Option 1
MORNING PEAK HOUR TRAFFIC VOLUMES (8.00AM-9.00AM) WITH PROPOSED DEVELOPMENTS - OPTION 2A
AFTERNOON PEAK HOUR TRAFFIC VOLUMES (5.15PM-6.15PM) WITH PROPOSED DEVELOPMENTS - OPTION 2A

Legend

- L1: Light vehicles
- H1: Heavy vehicles
- T1: Traffic generated from the proposed developments
- D1: Estimated number of proposed dwelling that would use this road

DURAMANA ROAD

WELLINGTON STREET

ELEVEN MILE DRIVE

COX LANE

ALEXANDER STREET

HAMILTON STREET

LOGAN STREET

HOBSON CLOSE

RANKEN BRIDGE

EGLINTON ROAD

Legend

- L1: Light vehicles
- H1: Heavy vehicles
- T1: Traffic generated from the proposed developments
- D1: Estimated number of proposed dwelling that would use this road
MORNING PEAK HOUR TRAFFIC VOLUMES (8AM-9AM) WITH PROPOSED DEVELOPMENTS - OPTION 3A
MORNING PEAK HOUR TRAFFIC VOLUMES (8AM-9AM) WITH PROPOSED DEVELOPMENTS - OPTION 3B
AFTERNOON PEAK HOUR TRAFFIC VOLUMES (5.15PM-6.15PM) WITH PROPOSED DEVELOPMENTS - OPTION 3B
Appendix D

*Detailed Results of Intersection Analysis – High Growth Scenario – Option 2*
Logan St/Hamilton St/Hobson Pl Intersection
Option 3B AM Peak
Intersection ID: Roundabout

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Delay Satn (v/c)</th>
<th>Delay (sec)</th>
<th>Deg. Aver. LOS</th>
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</thead>
<tbody>
<tr>
<td>South: Eglinton Road 1</td>
<td>LTR</td>
<td>225</td>
<td>1943</td>
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<td>6.2</td>
<td>A</td>
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<tr>
<td></td>
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<td>225</td>
<td>1943</td>
<td>0.116</td>
<td>6.2</td>
<td>A</td>
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<tr>
<td></td>
<td></td>
<td>8</td>
<td>662</td>
<td>0.012</td>
<td>12.9</td>
<td>A</td>
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<tr>
<td></td>
<td></td>
<td>8</td>
<td>662</td>
<td>0.012</td>
<td>12.9</td>
<td>A</td>
</tr>
<tr>
<td>North: Hamilton Street</td>
<td>7</td>
<td>524</td>
<td>1342</td>
<td>0.390*</td>
<td>6.6</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>524</td>
<td>1342</td>
<td>0.390</td>
<td>6.6</td>
<td>A</td>
</tr>
<tr>
<td>West: Logan Street</td>
<td>10</td>
<td>231</td>
<td>1353</td>
<td>0.171</td>
<td>12.9</td>
<td>A</td>
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<tr>
<td></td>
<td></td>
<td>231</td>
<td>1353</td>
<td>0.171</td>
<td>12.9</td>
<td>A</td>
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<tr>
<td>ALL VEHICLES:</td>
<td>988</td>
<td>5300</td>
<td>0.390</td>
<td>8.0</td>
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</table>

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Logan St/Hamilton St/Hobson Pl Intersection
Option 3B_PM Peak
Intersection ID: Roundabout

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. Del (sec/v/c)</th>
<th>Aver. Del (sec/v/c)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>South: Eglinton Road 1 LTR</td>
<td>822</td>
<td>1957</td>
<td>0.420*</td>
<td>5.8</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>East: Hobson Close 4 LTR</td>
<td>11</td>
<td>984</td>
<td>0.011</td>
<td>9.3</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>North: Hamilton Street 7 LTR</td>
<td>212</td>
<td>1586</td>
<td>0.134</td>
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<td>West: Logan Street 10 LTR</td>
<td>86</td>
<td>764</td>
<td>0.113</td>
<td>16.2</td>
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</table>

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods
Alexander Street and Logan Street Intersection
Option 3B AM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

---

Alexander Street and Logan Street Intersection
Option 3B AM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Typ</th>
<th>Flow (veh/h)</th>
<th>Cap. (veh/h)</th>
<th>Delay (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>South: Logan Street (West)</td>
<td>1 L</td>
<td>14</td>
<td>130</td>
<td>0.108*</td>
<td>11.3</td>
<td>A</td>
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<tr>
<td></td>
<td>2 R</td>
<td>69</td>
<td>643</td>
<td>0.107</td>
<td>11.2</td>
<td>A</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>83</td>
<td>773</td>
<td>0.108</td>
<td>11.2</td>
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<td>East: Logan Street (East)</td>
<td>4 L</td>
<td>14</td>
<td>303</td>
<td>0.046</td>
<td>9.0</td>
<td>A</td>
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<tr>
<td></td>
<td>5 T</td>
<td>63</td>
<td>1362</td>
<td>0.046</td>
<td>0.0</td>
<td>A</td>
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<td>A</td>
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<td></td>
<td>77</td>
<td>1665</td>
<td>0.046</td>
<td>1.6</td>
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</table>

West: Alexander Street
11 TR | 127 | 1710 | 0.074 | 0.7 | A |
|     |     |     |     |     |     | A |
|     |     |     | 127 | 1710 | 0.074 | 0.7 | A |
|     |     |     |     |     |     | A |
| ALL VEHICLES: | 287 | 4149 | 0.108 | 4.0 | A |

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Alexander Street and Logan Street Intersection
Option 3B PM Peak
Intersection ID:

Alexander Street and Logan Street Intersection
Option 3B PM Peak
Intersection ID: Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
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<th>Mov No.</th>
<th>Mov Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Delay Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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<tr>
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<td>1 L</td>
<td>7</td>
<td>184</td>
<td>0.038</td>
<td>11.4</td>
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<td>2 R</td>
<td>22</td>
<td>578</td>
<td>0.038</td>
<td>11.2</td>
<td>A</td>
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<tr>
<td></td>
<td></td>
<td>29</td>
<td>762</td>
<td>0.038</td>
<td>11.3</td>
<td>A</td>
</tr>
<tr>
<td>East:</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Logan Street (East)</td>
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<td>4 L</td>
<td>59</td>
<td>645</td>
<td>0.091</td>
<td>9.1</td>
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<td>96</td>
<td>1049</td>
<td>0.092*</td>
<td>0.0</td>
<td>A</td>
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<td>155</td>
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<td>Alexander Street</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Alexander St
Option 3B_AM Peak
Intersection ID:

RUN INFORMATION
---------------------
* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

Wellington St/Alexander St
Option 3B_AM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE
---------------------------------------------

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Typ</th>
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<th>Cap. (veh/h)</th>
<th>Satn (v/c)</th>
<th>LOS / (sec)</th>
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<tr>
<td>South: Alexander Street</td>
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<tr>
<td>1 L</td>
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<td>269</td>
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<td>2 R</td>
<td>36</td>
<td>334</td>
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<td></td>
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<td>603</td>
<td>0.108</td>
<td>A 13.0</td>
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<td>East: Wellington Street (East)</td>
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<td></td>
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<td>A 2.0</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Alexander St
Option 3B PM Peak
Intersection ID:

**RUN INFORMATION**

* Basic Parameters:
  - Intersection Type: Unsignalised - Give Way
  - Driving on the left-hand side of the road
  - Input data specified in Metric units
  - Default Values File No. 1
  - Peak flow period (for performance): 30 minutes
  - Unit time (for volumes): 60 minutes (Total Flow Period)
  - Delay definition: Control delay
    - Geometric delay included
  - aaSIDRA Standard Delay and Queue models used
  - Level of Service based on: Delay (RTA NSW)
  - Queue definition: Back of queue, 95th Percentile

---

**Table S.15 - CAPACITY AND LEVEL OF SERVICE**

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Flow (veh)</th>
<th>Cap. (veh/h)</th>
<th>Total Delay (h)</th>
<th>Deg. (v/c)</th>
<th>Aver. LOS</th>
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<tr>
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<td>1 L</td>
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<td>406</td>
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<td>140</td>
<td>0.143</td>
<td>14.7</td>
<td>B</td>
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<td>78</td>
<td>546</td>
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<td>East: Wellington Street (East)</td>
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<td>38</td>
<td>173</td>
<td>0.220*</td>
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<td>5 T</td>
<td>341</td>
<td>1550</td>
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<td>0.0</td>
<td>A</td>
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<td>379</td>
<td>1723</td>
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<td>0.9</td>
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<td>1647</td>
<td>0.084</td>
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<td>A</td>
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<td></td>
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<td>139</td>
<td>1647</td>
<td>0.084</td>
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<td>3916</td>
<td>0.220</td>
<td>3.2</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Hamilton St/Eleven Mile Dr Intersection
Option 3B AM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

Wellington St/Hamilton St/Eleven Mile Dr Intersection
Option 3B AM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
</tr>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South: Hamilton Street</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 L</td>
<td>38</td>
<td>189</td>
<td>0.201</td>
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<td></td>
</tr>
<tr>
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<td>0.200</td>
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<td>1565</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria),
independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Wellington St/Hamilton St/Eleven Mile Dr Intersection
Option 3B PM Peak
Intersection ID:

RUN INFORMATION
-----------------
* Basic Parameters:
  Intersection Type: Unsignalised - Give Way
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

---

Wellington St/Hamilton St/Eleven Mile Dr Intersection
Option 3B PM Peak
Intersection ID:
  Give-Way Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE
----------------------------------------------
<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Typ</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
<th>Aver. LOS (sec)</th>
</tr>
</thead>
</table>

South: Hamilton Street
1 L 324 551 0.588* 13.4 A
2 TR 160 272 0.588* 12.1 A

Total 484 823 0.588 12.9 A

East: Eleven Mile Drive
4 L 55 603 0.091 9.2 A
5 TR 96 1052 0.091 3.8 A

Total 151 1655 0.091 5.8 A

North: Cox Lane
7 L 9 158 0.057 11.2 A
8 TR 29 508 0.057 8.9 A

Total 38 666 0.057 9.5 A

West: Wellington Street
10 L 14 153 0.092 9.6 A
11 TR 128 1401 0.091 6.8 A

Total 142 1554 0.092 7.1 A

ALL VEHICLES: 815 4697 0.588 10.4 A

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria).
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Freemantle Road and Duramana Road Intersection
Option 3B AM Peak
Intersection ID:

**RUN INFORMATION**

* Basic Parameters:
  - Intersection Type: Unsignalised - Give Way
  - Driving on the left-hand side of the road
  - Input data specified in Metric units
  - Default Values File No. 1
  - Peak flow period (for performance): 30 minutes
  - Unit time (for volumes): 60 minutes (Total Flow Period)
  - Delay definition: Control delay
    - Geometric delay included
  - aasIDRA Standard Delay and Queue models used
  - Level of Service based on: Delay (RTA NSW)
  - Queue definition: Back of queue, 95th Percentile

---

**Freemantle Road and Duramana Road Intersection**
Option 3B AM Peak
Intersection ID:
Give-Way Sign Controlled Intersection

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Typ</th>
<th>Flow (veh/h)</th>
<th>Cap. (Satn/h)</th>
<th>Total Delay (sec)</th>
</tr>
</thead>
</table>
| East: Wellington Road
| 5 TR   | 86   | 1554         | 0.055        | 5.1 A             |
|        |      |              |              |                   |
|        |      |              |              | 86 1554           | 0.055 5.1 A |
| North: Duramana Road
| 7 L    | 153  | 769          | 0.199        | 11.6 A            |
| 8 R    | 1    | 5            | 0.200*       | 11.7 A            |
|        |      |              |              |                   |
|        |      |              |              | 154 774           | 0.200 11.6 A |
| West: Freemantle Road
| 10 L   | 2    | 15           | 0.133        | 11.0 A            |
| 11 T   | 220  | 1703         | 0.129        | 0.0 A             |
|        |      |              |              |                   |
|        |      |              |              | 222 1718          | 0.133 0.1 A |

**ALL VEHICLES:**
462 4046 0.200 4.9 A

---

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aasIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aasIDRA Output ---
Freemantle Road and Duricana Road Intersection
Option 3B PM Peak
Intersection ID:

**RUN INFORMATION**

* Basic Parameters:
  - Intersection Type: Unsignalised - Give Way
  - Driving on the left-hand side of the road
  - Input data specified in Metric units
  - Default Values File No. 1
  - Peak flow period (for performance): 30 minutes
  - Unit time (for volumes): 60 minutes (Total Flow Period)
  - Delay definition: Control delay
    - Geometric delay included
  - aaSIDRA Standard Delay and Queue models used
  - Level of Service based on: Delay (RTA NSW)
  - Queue definition: Back of queue, 95th Percentile

Freemantle Road and Duricana Road Intersection
Option 3B PM Peak
Intersection ID:
Give-Way Sign Controlled Intersection

**Table S.15 - CAPACITY AND LEVEL OF SERVICE**

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Typ</th>
<th>Flow (veh/h)</th>
<th>Cap. (veh/h)</th>
<th>Total (veh)</th>
<th>Total (veh/h)</th>
<th>Degree (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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</thead>
<tbody>
<tr>
<td>East: Wellington Road</td>
<td>5 TR</td>
<td>382</td>
<td>1697</td>
<td>0.225*</td>
<td>4.3</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>382</td>
<td>1697</td>
<td>0.225*</td>
<td>4.3</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North: Duricana Road</td>
<td>7 L</td>
<td>58</td>
<td>795</td>
<td>0.073</td>
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<td>A</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>8 R</td>
<td>6</td>
<td>82</td>
<td>0.073</td>
<td>11.0</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>64</td>
<td>877</td>
<td>0.073</td>
<td>10.4</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West: Freemantle Road</td>
<td>10 L</td>
<td>3</td>
<td>71</td>
<td>0.042</td>
<td>10.3</td>
<td>A</td>
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<td></td>
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<tr>
<td></td>
<td>11 T</td>
<td>68</td>
<td>1611</td>
<td>0.042</td>
<td>0.0</td>
<td>A</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>71</td>
<td>1682</td>
<td>0.042</td>
<td>0.4</td>
<td>A</td>
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<tr>
<td>ALL VEHICLES:</td>
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<td>517</td>
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<td>0.225</td>
<td>4.5</td>
<td>A</td>
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</tbody>
</table>

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Appendix E

Predicted traffic volumes for Stewart Street/Durham Street intersection
DURHAM STREET

588 43 545

254 34 220

36 5 31

202 26 228

384 50 435

18 396 415

8 71 55

26 467 471

587 76 683

MORNING PEAK HOUR (8.15AM - 9.15AM) - WITHOUT DEVELOPMENTS - 2013

DURHAM STREET

445 18 427

681 14 667

403 14 389

42 4 38

623 6 629

658 56 715

420 44 376 696

67 8 59 60

487 52 435 757

1282 62 1344

STEWART STREET

Legend

40 Light vehicles
0 Heavy vehicles
48 Total vehicles

AFTERNOON PEAK HOUR (4.45 PM - 5.45PM) - WITHOUT DEVELOPMENTS - 2013

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWART ST INTERSECTION OPTION 1
MORNING PEAK HOUR (8.15AM - 9.15AM) - WITHOUT DEVELOPMENTS - 2021

AFTERNOON PEAK HOUR (4.45PM - 5.45PM) - WITHOUT DEVELOPMENTS - 2021

Legend

40 | Light vehicles
0  | Heavy vehicles
46 | Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWART ST INTERSECTION OPTION 2A
PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWARD ST INTERSECTION
OPTION 2B

Legend
- 40 Light vehicles
- 0 Heavy vehicles
- 46 Total vehicles
MORNING PEAK HOUR (8:15AM - 9:15AM) - WITHOUT DEVELOPMENTS - 2035

AFTERNOON PEAK HOUR (4:45 PM - 5:45PM) - WITHOUT DEVELOPMENTS - 2035

Legend
- 40 Light vehicles
- 0 Heavy vehicles
- 46 Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWART ST INTERSECTION OPTION 3A
MORNING PEAK HOUR (8.15AM - 9.15AM) - WITHOUT DEVELOPMENTS - 2045

AFTERNOON PEAK HOUR (4.45 PM - 5.45PM) - WITHOUT DEVELOPMENTS - 2045

Legend
- 40 Light vehicles
- 0 Heavy vehicles
- 46 Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWART ST INTERSECTION OPTION 3B
MORNING PEAK HOUR (8.15AM - 9.15AM) - WITH DEVELOPMENTS - 2013

AFTERNOON PEAK HOUR (4.45 PM - 5.45PM) - WITH DEVELOPMENTS - 2013

Legend

- 40 Light vehicles
- 0 Heavy vehicles
- 46 Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWARD ST INTERSECTION WITH PROPOSED DEVELOPMENTS - OPTION 1
MORNING PEAK HOUR (8.15AM - 9.15AM) - WITH DEVELOPMENTS - 2021

AFTERNOON PEAK HOUR (4.45 PM - 5.45PM) - WITH DEVELOPMENTS - 2021

Legend
- 40 Light vehicles
- 0 Heavy vehicles
- 46 Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWARD ST INTERSECTION WITH PROPOSED DEVELOPMENTS - OPTION 2A
MORNING PEAK HOUR (8.15AM - 9.15AM) - WITH DEVELOPMENTS - 2030

AFTERNOON PEAK HOUR (4.45 PM - 5.45PM) - WITH DEVELOPMENTS - 2030

Legend
- 40 Light vehicles
- 0 Heavy vehicles
- 46 Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWART ST INTERSECTION WITH PROPOSED DEVELOPMENTS - OPTION 2B
PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWARD ST INTERSECTION WITH PROPOSED DEVELOPMENTS - OPTION 3A

**MORNING PEAK HOUR (8.15AM - 9.15AM) - WITH DEVELOPMENTS - 2035**

- Durham Street: 1336, 148, 1485
- Stewart Street: 257, 26, 283, 594, 78, 672, 851, 104, 955

**AFTERNOON PEAK HOUR (4.45PM - 5.45PM) - WITH DEVELOPMENTS - 2035**

- Durham Street: 487, 18, 469
- Stewart Street: 441, 14, 427, 46, 4, 42, 849, 6, 855, 1018, 87, 1105, 1867, 93, 1959

Legend:
- 40 Light vehicles
- 0 Heavy vehicles
- Total vehicles
DURHAM STREET

841 38 803
54 5 49

STEWART STREET

337 34 303
771 143 914
25 746 873
135 881

MORNING PEAK HOUR (8.15AM - 9.15AM) - WITH DEVELOPMENTS - 2045

506 18 488

DURHAM STREET

458 14 444
47 4 43

STEWART STREET

1017 14 1003
775 118 893
66 74 819
709 110 1394
1284 110

AFTERNOON PEAK HOUR (4.45 PM - 5.45PM) - WITH DEVELOPMENTS - 2045

Legend

- 40 Light vehicles
- 0 Heavy vehicles
- 48 Total vehicles

PEAK HOUR TRAFFIC VOLUMES - DURHAM ST/STEWART ST INTERSECTION WITH PROPOSED DEVELOPMENTS - OPTION 3B
Appendix F

Detailed Results of Intersection Analysis – Durham St/Stewart St intersection
Durham Street and Stewart Street Intersection
No Developments_2013_AM Peak
Intersection ID:

RUN INFORMATION
-------------
* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    * Any maximum cycle time specification
    * Any user-given cycle time (unless phase times also given)
    * User-given cycle and phase times (if variable flow scale run)
    * Any variable cycle time specification
    * Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    * Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 5
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
No Developments_2013_AM Peak
Intersection ID:
Actuated Isolated Signals, Cycle Time = 55

Table S.15 - CAPACITY AND LEVEL OF SERVICE
----------------------------------------------
<table>
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<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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<td>893</td>
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<td>175</td>
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<td>1068</td>
<td>0.618</td>
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<td>A</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
No Developments_2013_Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 2
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
      (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
No Developments_2013_Peak
Intersection ID:

Actuated Isolated Signals, Cycle Time = 78

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. Satn (v/c)</th>
<th>Deg. of Delay (sec)</th>
<th>Aver. LOS</th>
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<td>South: Durham Street (South)</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street: Intersection
No Developments_2021_AM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 4
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
No Developments_2021_AM Peak
Intersection ID:
Actuated Isolated Signals, Cycle Time = 58

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
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<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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<tr>
<td>10</td>
<td>L</td>
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<td>46</td>
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</table>
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
No Developments 2021_PM Peak
Intersection ID:

RUN INFORMATION
* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance) : 30 minutes
  Unit time (for volumes) : 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 2
Comparison of last two iterations:
  Difference in intersection degree of satn = 0.0 %
  Difference in total vehicle capacity = 0.0 %
  Largest difference in eff. green times = 0 secs
  (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
No Developments 2021_PM Peak
Intersection ID:
  Actuated Isolated Signals, Cycle Time = 81

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/hr)</th>
<th>Total Cap. (veh/hr)</th>
<th>Delay of Satn (v/c)</th>
<th>Deg. Aver. Delay (sec)</th>
<th>LOS</th>
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<tbody>
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<td>629</td>
<td>769</td>
<td>0.318*</td>
<td>24.1</td>
<td>B</td>
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<tr>
<td>North: Durham Street (North)</td>
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<td>West: Stewart Street</td>
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<td></td>
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</tr>
<tr>
<td>10</td>
<td>L</td>
<td>0.296*</td>
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<tr>
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<td>510</td>
<td>840</td>
<td>0.607</td>
<td>37.5</td>
<td>C</td>
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</table>
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
No Developments_2030_AM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-acted signal timings, the following specifications will be ignored:
  Any maximum cycle time specification
  Any user-given cycle time (unless phase times also given)
  User-given cycle and phase times (if variable flow scale run)
  Any variable cycle time specification
  Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 4

Comparison of last two iterations:
  Difference in intersection degree of satn = 1.6 %
  Difference in total vehicle capacity = 0.5 %
  Largest difference in eff. green times = 1 secs
  (max. value for stopping = 2 secs)

Information on Previous Iteration:
  Cycle Time = 61
  Phase Times: 0, 22, 49
  Critical Movements: 2, 10, 9

Durham Street and Stewart Street Intersection
No Developments_2030_AM Peak
Intersection ID:
  Actuated Isolated Signals, Cycle Time = 62

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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<td>0.499</td>
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<td>0.558</td>
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<td>North: Durham Street (North)</td>
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<tr>
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| ALL VEHICLES: | 2106 | 3618 | 0.672 | 20.6 | B |

| INTERSECTION (persons): | 3159 | 3618 | 0.672 | 20.6 |

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
No Developments_2030_PM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
  - Any maximum cycle time specification
  - Any user-given cycle time (unless phase times also given)
  - User-given cycle and phase times (if variable flow scale run)
  - Any variable cycle time specification
  - Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 2
Comparison of last two iterations:
  Difference in intersection degree of satn = 0.0 %
  Difference in total vehicle capacity = 0.0 %
  Largest difference in eff. green times = 0 secs
  (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
No Developments_2030_PM Peak
Intersection ID:
  Actuated Isolated Signals, Cycle Time = 85

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/1)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay</th>
<th>Aver. Delay (v/c) (sec)</th>
<th>LOS</th>
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</thead>
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<td>0.833</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
No Developments_2035_AM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
Intersection Type: Signalised - Actuated Isolated
For fully-actuated signal timings, the following specifications will be ignored:
  Any maximum cycle time specification
  Any user-given cycle time (unless phase times also given)
  User-given cycle and phase times (if variable flow scale run)
  Any variable cycle time specification
  Any green split priority specification
Driving on the left-hand side of the road
Input data specified in Metric units
Default Values File No. 1
Peak flow period (for performance): 30 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (RTA NSW)
Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 4
Comparison of last two iterations:
Difference in intersection degree of satn = 1.9 %
Difference in total vehicle capacity = 0.6 %
Largest difference in eff. green times = 1 secs
(max. value for stopping = 2 secs)
Information on Previous Iteration:
Cycle Time = 63
Phase Times: 0, 22, 51
Critical Movements: 2, 10, 9

Durham Street and Stewart Street Intersection
No Developments_2035_AM Peak
Intersection ID:
Actuated Isolated Signals, Cycle Time = 64

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
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<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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<tr>
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### West: Stewart Street

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<td>712</td>
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<td>0.662</td>
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<tbody>
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<td>3666</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
No Developments 2035_PM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 2
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 3 secs)

Durham Street and Stewart Street Intersection
No Developments 2035_PM Peak
Intersection ID:
    Actuated Isolated Signals, Cycle Time = 88

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow 1st (veh/1h)</th>
<th>Total Flow 2nd (veh/1h)</th>
<th>Total Deg. Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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</thead>
<tbody>
<tr>
<td>South: Durham Street (South)</td>
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</tr>
<tr>
<td>1 L</td>
<td>0.795</td>
<td>1135</td>
<td>1255</td>
<td>0.880*</td>
<td>21.0</td>
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<tr>
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<td>0.398*</td>
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<td>751</td>
<td>0.838</td>
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<tr>
<td>North: Durham Street (North)</td>
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<td></td>
</tr>
<tr>
<td>8 T</td>
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<td>403</td>
<td>992</td>
<td>0.406</td>
<td>13.6</td>
<td>A</td>
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<tr>
<td>9 R</td>
<td>0.068*</td>
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<td>1105</td>
<td>0.406</td>
<td>17.6</td>
<td>B</td>
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<tr>
<td>West: Stewart Street</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 L</td>
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<td>74</td>
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<td>672</td>
<td>955</td>
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</table>
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
No Developments_2045_AM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 4
  Comparison of last two iterations:
    Difference in intersection degree of satn = 1.4 %
    Difference in total vehicle capacity = 0.5 %
    Largest difference in eff. green times = 1 secs
      (max. value for stopping = 1 secs)
  Information on Previous Iteration:
    Cycle Time = 69
    Phase Times: 0, 23, 57
    Critical Movements: 2, 10, 9

Durham Street and Stewart Street Intersection
No Developments_2045_AM Peak
Intersection ID:
Actuated Isolated Signals, Cycle Time = 70

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1st</td>
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<tr>
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<td></td>
<td></td>
<td>grn</td>
<td>grn</td>
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</tr>
<tr>
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<td>2</td>
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</tr>
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<td>2 T</td>
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<td>455</td>
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<td>1598</td>
<td>0.716</td>
<td>17.3</td>
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<tr>
<td>North: Durham Street (North)</td>
<td></td>
<td></td>
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<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8 T</td>
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<td>552</td>
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<td>0.708</td>
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<td>917</td>
<td>0.708</td>
<td>20.3</td>
<td>B</td>
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</table>
West: Stewart Street

10 L  0.400*  26  35  0.739*  31.3  C
12 R  0.400  881 1197  0.736  30.6  C

ALL VEHICLES: 2542 3748 0.739 22.7  B

INTERSECTION (persons): 3813 3748 0.739 22.7

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street: Intersection
No Developments_2045_PM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
  - Any maximum cycle time specification
  - Any user-given cycle time (unless phase times also given)
  - User-given cycle and phase times (if variable flow scale run)
  - Any variable cycle time specification
  - Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 3
  Comparison of last two iterations:
  Difference in intersection degree of satn = 0.2 %
  Difference in total vehicle capacity = 0.3 %
  Largest difference in eff. green times = 1 secs
  (max. value for stopping = 1 secs)

Information on Previous Iteration:
  Cycle Time = 101
  Phase Times: 0, 47, 89
  Critical Movements: 2, 10, 3

Durham Street and Stewart Street: Intersection
No Developments_2045_PM Peak
Intersection ID:
Actuated Isolated Signals, Cycle Time = 100

Table S.15 - CAPACITY AND LEVEL OF SERVICE

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<thead>
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<th>Mov No.</th>
<th>Mov Typ</th>
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<th>Total Flow (veh/h)</th>
<th>Total Cap. (v/h)</th>
<th>Deg. of Satn (v/c)</th>
<th>Aver. Delay (sec)</th>
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<td>(sec)</td>
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**South: Durham Street (South)**

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**North: Durham Street (North)**

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</tr>
<tr>
<td>West: Stewart Street</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
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<tr>
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<td>1.041</td>
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Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
Option 1 With Developments_AM Peak
Intersection ID:

RUN INFORMATION
--------
* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 4
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 3 secs)

Durham Street and Stewart Street Intersection
Option 1 With Developments_AM Peak
Intersection ID:
  Actuated Isolated Signals, Cycle Time = 56

Table S.15 - CAPACITY AND LEVEL OF SERVICE
------

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/c)</th>
<th>Total Flow (veh)</th>
<th>Total Cap. (veh)</th>
<th>Deg. of Delay 1st grn/satn (v/c)</th>
<th>Aver. Delay 2nd grn/satn (sec)</th>
<th>LOS</th>
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</thead>
<tbody>
<tr>
<td>South:</td>
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<td>Durham</td>
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<td>(North)</td>
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</table>
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
Option 1 With Developments_PM Peak
Intersection ID:

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 3
  Comparison of last two iterations:
  Difference in intersection degree of satn = 0.0 %
  Difference in total vehicle capacity = 0.0 %
  Largest difference in eff. green times = 0 secs
  (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
Option 1 With Developments_PM Peak
Intersection ID:
  Actuated Isolated Signals, Cycle Time = 80

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/c)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c) (sec)</th>
<th>Aver. LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1st grn 2nd grn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

South: Durham Street (South)
1 L 0.775 | 714 | 1223 | 0.584 | 13.4 | A
2 T 0.425* | 630 | 803 | 0.847* | 24.2 | B

1394 | 2026 | 0.847 | 18.7 | B

North: Durham Street (North)
8 T 0.575 | 411 | 1069 | 0.384 | 10.3 | A
9 R 0.075* | 43 | 124 | 0.347 | 51.3 | D

454 | 1193 | 0.384 | 14.2 | A

West: Stewart Street
10 L 0.275* | 55 | 97 | 0.570 | 38.3 | C
12 R 0.275 | 435 | 763 | 0.570 | 38.1 | C
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
Option 2A With Developments AM Peak
Intersection ID:

**RUN INFORMATION**

* Basic Parameters:
  Intersection Type: Signalled - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
  - Any maximum cycle time specification
  - Any user-given cycle time (unless phase times also given)
  - User-given cycle and phase times (if variable flow scale run)
  - Any variable cycle time specification
  - Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 5
  Comparison of last two iterations:
  Difference in intersection degree of satn = 0.0 %
  Difference in total vehicle capacity = 0.0 %
  Largest difference in eff. green times = 0 secs
  (max. value for stopping = 0 secs)

---

Durham Street and Stewart Street Intersection
Option 2A With Developments AM Peak
Intersection ID:
Actuated Isolated Signals, Cycle Time = 60

---

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<th>Mov No.</th>
<th>Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>South: Durham Street (South)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 L</td>
<td>0.700</td>
<td>509</td>
<td>1077</td>
<td>0.472</td>
<td>14.0</td>
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</tr>
<tr>
<td>2 T</td>
<td>0.283*</td>
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<td>505</td>
<td>0.511</td>
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<td>0.511</td>
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<td></td>
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<tr>
<td>North: Durham Street (North)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 T</td>
<td>0.483</td>
<td>663</td>
<td>885</td>
<td>0.749*</td>
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<td>A</td>
<td></td>
</tr>
<tr>
<td>9 R</td>
<td>0.100*</td>
<td>43</td>
<td>163</td>
<td>0.264</td>
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<td>C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>706</td>
<td>1048</td>
<td>0.749</td>
<td>15.8</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>West: Stewart Street</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 L</td>
<td>0.317*</td>
<td>29</td>
<td>49</td>
<td>0.591</td>
<td>30.1</td>
<td>C</td>
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</tr>
<tr>
<td>12 R</td>
<td>0.317</td>
<td>548</td>
<td>926</td>
<td>0.592</td>
<td>29.5</td>
<td>C</td>
<td></td>
</tr>
<tr>
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<td>577</td>
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<tr>
<td>2050</td>
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<td>0.749</td>
<td>19.9</td>
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<tr>
<td>3075</td>
<td>3605</td>
<td>0.749</td>
<td>19.9</td>
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</tr>
</tbody>
</table>

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
**RUN INFORMATION**

* Basic Parameters:
  - Intersection Type: Signalised - Actuated Isolated
  - For fully-actuated signal timings, the following specifications will be ignored:
    - Any maximum cycle time specification
    - Any user-given cycle time (unless phase times also given)
    - User-given cycle and phase times (if variable flow scale run)
    - Any variable cycle time specification
    - Any green split priority specification
  - Driving on the left-hand side of the road
  - Input data specified in Metric units
  - Default Values File No. 1
  - Peak flow period (for performance): 30 minutes
  - Unit time (for volumes): 60 minutes (Total Flow Period)
  - Delay definition: Control delay
    - Geometric delay included
  - aaSIDRA Standard Delay and Queue models used
  - Level of Service based on: Delay (RTA NSW)
  - Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 3

Comparison of last two iterations:
- Difference in intersection degree of satn = 0.0 %
- Difference in total vehicle capacity = 0.0 %
- Largest difference in eff. green times = 0 secs (max. value for stopping = 3 secs)

---

**Durham Street and Stewart Street Intersection**  
**Option 2A With Developments_PM Peak**  
**Intersection ID:** Actuated Isolated Signals, Cycle Time = 89

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<th>Total Flow (veh/hr)</th>
<th>Total Cap. (veh/hr)</th>
<th>Delay Deg. (sec)</th>
<th>Aver. LOS</th>
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<tr>
<td>2 T</td>
<td>0.438*</td>
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<td>828</td>
<td>0.895*</td>
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<td></td>
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<td>1579</td>
<td>2087</td>
<td>0.895</td>
<td>21.3</td>
<td>B</td>
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<td>North: Durham Street (North)</td>
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<tr>
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<tr>
<td>9 R</td>
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<td>112</td>
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<td>West: Stewart Street</td>
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<td></td>
</tr>
<tr>
<td>10 L</td>
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<td>60</td>
<td>96</td>
<td>0.624</td>
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<tr>
<td>12 R</td>
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<td>510</td>
<td>817</td>
<td>0.624</td>
<td>40.6</td>
<td>C</td>
</tr>
</tbody>
</table>
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street: Intersection
Option 2B With Developments_AM Peak
Intersection ID:

**RUN INFORMATION**

* Basic Parameters:
  - Intersection Type: Signalised - Actuated Isolated
  - For fully-actuated signal timings, the following specifications will be ignored:
    - Any maximum cycle time specification
    - Any user-given cycle time (unless phase times also given)
    - User-given cycle and phase times (if variable flow scale run)
    - Any variable cycle time specification
    - Any green split priority specification
  - Driving on the left-hand side of the road
  - Input data specified in Metric units
  - Default Values File No. 1
  - Peak flow period (for performance): 30 minutes
  - Unit time (for volumes): 60 minutes (Total Flow Period)
  - Delay definition: Control delay
  - Geometric delay included
  - aaSIDRA Standard Delay and Queue models used
  - Level of Service based on: Delay (RTA NSW)
  - Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 3

Comparison of last two iterations:
  - Difference in intersection degree of satn = 0.0 %
  - Difference in total vehicle capacity = 0.0 %
  - Largest difference in eff. green times = 0 secs
  - (max. value for stopping = 0 secs)

---

**Durham Street and Stewart Street Intersection**
Option 2B With Developments_AM Peak
Intersection ID:

Actuated Isolated Signals, Cycle Time = 64

**Table S.15 - CAPACITY AND LEVEL OF SERVICE**

<table>
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<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
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<td>1106</td>
<td>0.551</td>
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<td>A</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>North: Durham Street (North)</td>
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<tr>
<td>8 T</td>
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<td>153</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>West: Stewart Street</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>10 L</td>
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---
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help. * Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 5
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
Option 2B_Hold Developments_PM Peak
Intersection ID:
Actuated Isolated Signals, Cycle Time = 105

<table>
<thead>
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<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. Del (v/c)</th>
<th>Aver. Del (sec)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
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<td>South: Durham Street (South)</td>
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</tr>
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<td>1292</td>
<td>0.774</td>
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<td>2 T</td>
<td>0.457*</td>
<td>806</td>
<td>864</td>
<td>0.932*</td>
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<td>2157</td>
<td>0.932</td>
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<td>1081</td>
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</tr>
<tr>
<td>10 L</td>
<td>0.305*</td>
<td>64</td>
<td>91</td>
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<tr>
<td>12 R</td>
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<td>609</td>
<td>863</td>
<td>0.706</td>
<td>46.3</td>
<td>D</td>
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</table>
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection  
Option 3A With Developments_AM Peak  
Intersection ID: Actuated Isolated Signals, Cycle Time = 69

### Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
<th>Aver. Delay (sec)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1st grn</td>
<td>2nd grn</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>South: Durham Street (South)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1 L</td>
<td>0.739</td>
<td>672</td>
<td>1138</td>
<td>0.591</td>
<td>14.1</td>
<td>A</td>
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</tr>
<tr>
<td>2 T</td>
<td>0.304</td>
<td>233</td>
<td>546</td>
<td>0.519</td>
<td>22.7</td>
<td>B</td>
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<td></td>
<td>955</td>
<td>1683</td>
<td>0.591</td>
<td>16.7</td>
</tr>
</tbody>
</table>

North: Durham Street (North)

|         |         | 1st grn                | 2nd grn            |                    |                     |                  |     |
| 8 T     | 0.478*  | 752                    | 880                | 0.866*             | 19.9               | B                |     |
| 9 R     | 0.087   | 49                     | 143                | 0.343              | 44.9               | D                |     |
|         |         |                        |                    | 811                | 1023               | 0.866            | 21.4 | B   |

West: Stewart Street

|         |         | 1st grn                | 2nd grn            |                    |                     |                  |     |
| 10 L    | 0.348*  | 31                     | 44                 | 0.702              | 32.5               | C                |     |
| 12 R    | 0.348   | 722                    | 1028               | 0.702              | 31.9               | C                |     |
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 3
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.9 %
    Difference in total vehicle capacity = 0.1 %
    Largest difference in eff. green times = 1 secs
    (max. value for stopping = 1 secs)
  Information on Previous Iteration:
    Cycle Time = 113
    Phase Times: 0, 56, 99
    Critical Movements: 2, 10, 9

Durham Street and Stewart Street Intersection
Option 3A With Developments_PM Peak
Intersection ID:
  Actuated Isolated Signals, Cycle Time = 112

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay</th>
<th>Aver. Satn (v/c)</th>
<th>LOS</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td>1st 2nd /h</td>
<td>/h</td>
<td>/h</td>
<td>(veh)</td>
<td>(veh)</td>
<td>Satn</td>
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<tr>
<td>---------</td>
<td>---------</td>
<td>-------------</td>
<td>------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>South: Durham Street (South)</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>1 L</td>
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<td>1296</td>
<td>0.852</td>
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<td></td>
</tr>
<tr>
<td>2 T</td>
<td>0.446*</td>
<td>855</td>
<td>844</td>
<td>1.013*</td>
<td>78.5</td>
<td>F</td>
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<td></td>
<td></td>
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<td>2140</td>
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<tr>
<td>North: Durham Street (North)</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>8 T</td>
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<tr>
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<td>119</td>
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<td></td>
<td>L</td>
<td>R</td>
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<td>----</td>
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<tr>
<td>10</td>
<td>0.321*</td>
<td>68</td>
<td>93</td>
<td>0.735</td>
<td>48.4</td>
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<tr>
<td>12</td>
<td>0.321</td>
<td>672</td>
<td>914</td>
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<td>0.736</td>
<td>48.3</td>
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<td>41.7</td>
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<td>41.7</td>
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</table>

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Actuated Isolated
  For fully-actuated signal timings, the following specifications will be ignored:
    Any maximum cycle time specification
    Any user-given cycle time (unless phase times also given)
    User-given cycle and phase times (if variable flow scale run)
    Any variable cycle time specification
    Any green split priority specification
  Driving on the left-hand side of the road
  Input data specified in Metric units
  Default Values File No. 1
  Peak flow period (for performance): 30 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
    Geometric delay included
  asSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA NSW)
  Queue definition: Back of queue, 95th Percentile

* No. of Main (Timing-Capacity) Iterations = 5
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Difference in total vehicle capacity = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

Durham Street and Stewart Street Intersection
Option 3B With Developments_AM Peak
Intersection ID:

Actuated Isolated Signals, Cycle Time = 90

Table S.15 - CAPACITY AND LEVEL OF SERVICE

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/1)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. of Delay (v/c)</th>
<th>Aver. LOS</th>
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<td></td>
<td></td>
<td>1st grn</td>
<td>2nd grn</td>
<td>Satn</td>
<td>Flow</td>
<td>Cap.</td>
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</table>

South: Durham Street (South)
1 L 0.767 819 1180 0.694 15.3 B
2 T 0.322 364 580 0.524 28.1 B

1123 1760 0.694 18.8 B

North: Durham Street (North)
8 T 0.489* 841 902 0.932* 34.1 C
9 R 0.100 54 165 0.327 53.5 D

895 1068 0.932 35.3 C

West: Stewart Street
10 L 0.378* 53 42 0.787 40.2 C
12 R 0.378 881 1123 0.784 39.6 C
Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---
Durham Street and Stewart Street Intersection
Option 3B With Developments_PM Peak
Intersection ID: Actuated Isolated Signals, Cycle Time = 118

<table>
<thead>
<tr>
<th>Mov No.</th>
<th>Mov Typ</th>
<th>Green Time Ratio (g/C)</th>
<th>Total Flow (veh/h)</th>
<th>Total Cap. (veh/h)</th>
<th>Deg. Satn (v/c) (sec)</th>
<th>Aver. LOS</th>
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West: Stewart Street

<table>
<thead>
<tr>
<th></th>
<th>10 L</th>
<th>12 R</th>
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<tbody>
<tr>
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<td>0.356*</td>
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</tr>
<tr>
<td></td>
<td>D</td>
<td>D</td>
</tr>
</tbody>
</table>

893 1115 0.801 51.0  D

ALL VEHICLES: 3688 4350 1.176 102.4  F

INTERSECTION (persons): 5532 4350 1.176 102.4

Level of Service calculations are based on average control delay including geometric delay (RTA NSW criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---