Project: Bringelly Road Upgrade: Camden Valley Way to The Northern Road
Urban Design + Visual Assessment Report

Project number: SYU-001017
Client: RTA
Prepared by: HBO + EMTB Urban and Landscape Design
Corkery Consulting

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1.0 INTRODUCTION

1.1 PURPOSE

This Urban Design and Visual Assessment Report has been prepared for the Roads and Traffic Authority (RTA) by HBO+EMTB in conjunction with Corkery Consulting, as part of an environmental assessment of the proposed upgrading of Bringelly Road between Camden Valley Way, Leppington and The Northern Road, Bringelly in the Liverpool and Camden Local Government areas. This document is a Technical Paper which supports the RTA’s Review of Environmental Factors (REF) Report. The team has worked on the project in collaboration with the RTA road and bridge designers, the RTA Urban Design Section, road network planners, RTA environmental advisors and road safety and other specialist officers.

The purpose of this report is to achieve the integration of urban and engineering design for Bringelly Road, through the utilisation of visual assessment to identify and summarise the visual and landscape opportunities and issues within the Study Area, which in turn guide the concept development process by avoiding or reducing urban design impacts where possible.

1.2 BACKGROUND

Bringelly Road is located in the South West Growth Centre (SWGC) of Sydney and has been identified by the RTA as a principal arterial in the South West Growth Centre Road Network Strategy (8th June 2011). It extends for approximately ten kilometres and connects Camden Valley Way to The Northern Road and provides the main east-west access route for the existing villages of Bringelly, Rossmore, Leppington, Kemps Creek, Austral, Hornsby Park and in the future Edmondson Park and Leppington Town Centre. Western Sydney Parklands, a major regional park linking the North West and South West Growth Centres is located to the east. The South West Rail Link, forecast to be completed in 2016, will be located parallel to the Bringelly Road alignment to the south and will be accessed by the local community primarily from Bringelly Road.

To accommodate the future growth of this area the RTA is proposing to upgrade Bringelly Road from a currently two lane undivided carriageway to, in the first stage/s:
- Four lane divided carriageway:
  » From Eastwood Road to The Northern Road
  » Camden Valley Way to east of Upper Canal Overbridge
- Six lane divided carriageway:
  » Upper Canal Overbridge to West of Eastwood Road (Leppington Town Centre).

Note: Timing for construction west of King Street is unknown and it is anticipated that it will not commence within the next ten years.

Signalised intersections are planned for Twenty Sixth Avenue (Western Sydney Parklands entry), Cowpasture Road, Browns Road, Edmondson Avenue/Rickard Road, Dickson Road/Fourth Avenue, Eastwood Road, King Street, North Avenue, Masterfield Street, Jersey Road, Kelvin Park Drive and The Northern Road. Pedestrian and cyclist facilities will be provided along the length of Bringelly Road.

The RTA Traffic Planning Section prepared a Corridor Strategy that was finalised in early 2009. A strategic concept design has been produced by the RTA’s Road Design Section. A series of environmental assessments have been carried out in parallel with the road concept design. It should be noted that the intersection of Bringelly Road and The Northern Road at the western end currently does not form part of the road upgrade project as it is envisaged that The Northern Road upgrade will probably be completed earlier and they will need to upgrade this intersection as part of their works. However, this intersection has been included in the Visual Assessment.

1.3 RTA Objectives

Objectives of the Bringelly Road Upgrade are to:
- Cater for projected traffic growth as a result of South West Growth Centre development and provide integrated pedestrian, cycleway and bus passage.
- Reduce the number and severity of road crashes.
- Improve the efficiency of Bringelly Road and the wider road network by reducing delays and improving travel times.
- Improve safety and access for both local and through traffic, pedestrians and cyclists.
- Design intersections to meet local and arterial traffic needs.
- Improve urban landscape and amenity and to guide and influence development adjacent to the road corridor.
- Provide a design acceptable to the community.
- Satisfy environmental legislative requirements and site environmental objectives.

1.4 STUDY METHODOLOGY

The Bringelly Road Study was an iterative process in which key issues, constraints and mitigation from the landscape character and visual impact assessment were integrated into the engineering concept design. This ensured that a consistent character and identity was created for the Bringelly Road Upgrade and will be retained in design processes beyond the REF (Refer Figure 1.4.1 Methodology Diagram).

A detailed landscape character and visual impact assessment of the proposed upgrade involving field surveys and desktop study, was documented to assist in understanding the surrounding context and the existing conditions for the natural and urban setting. This was also used to establish the key attributes of the area which in turn determined the landscape character zones (LCZs) and identified specific site constraints and opportunities. These Zones have a distinct character resulting from a combination of similar landscape, vegetation and land use. The landscape character zones were then assessed for their sensitivity to the proposed changes. Impacts, mitigations and opportunities were identified and the engineering design refined. From the landscape character and visual assessment, objectives and principles were generated which form the urban design framework for the upgrade works. A preferred concept design was prepared to provide a basis for future detailed design works.

The methodology used in the Visual Assessment (refer to Figure 4.1) is based on the RTA ‘Environmental Impact Assessment Guidance Note: Guidelines for landscape character and visual impact assessment’.

Figure 1.4.1 Methodology Diagram
1.5 References


Roads and Traffic Authority of NSW Environmental Services, Bringelly Road Upgrade – Preliminary Environmental Investigation, August 2009.


Roads and Traffic Authority of NSW, Shotcrete Design Guidelines: Design guidelines to avoid, minimize and improve the appearance of shotcrete, June 2005.

Roads and Traffic Authority of NSW, Urban and Regional Design Practice Notes, Beyond the Pavement, 2009.
EXISTING SITE CONDITIONS

2.0 EXISTING SITE CONDITIONS AND ASSESSMENT

2.1 SITE ISSUES AND OPPORTUNITIES

The following text and diagrams identify the issues and opportunities in the Study Area considered in the urban and landscape assessment and design process.

Bringelly Road is a primary east-west arterial road corridor located in the South West Growth Centre (SWGC) of Sydney. (Refer Figure 2.1.1) The SWGC comprises 17,000 hectares, eighteen planned urban precincts with a capacity for approximately 110,000 new dwellings and 300,000 people. Precincts are being released for Precinct Planning progressively. Bringelly Road traverses the precincts of Bringelly, Rossmore and Leppington North. Within this Study Area, a major town centre is proposed at Leppington. Leppington is stated in the Metropolitan Strategy as being the Major Town Centre which “…will service the South West Growth Centre… the employment capacity for the Planned Major Centre at Leppington is 9,000.” (DoP Metro Strategy 2007). Leppington is planned to provide a “…Major shopping and business centre serving the immediate subregional residential population usually with a full scale shopping mall, council offices, taller office and residential buildings, central community facilities and a minimum of 8,000 jobs (DoP Metro Strategy 2007).

Bringelly Road forms the border between Camden Local Government Area and Liverpool Local Government Area to Cowpasture Road and from Cowpasture Road is solely within the Liverpool Local Government Area. (Refer Figure 2.2.1).
The Study Area comprises a predominantly rural-residential landscape characterised by undulating topography created by north-south ridges with low points at creek lines (Refer Figure 2.1.2). There is a prominent ridgeline located between Cowpasture Road and the Water Supply Canal from which views to the Blue Mountains can be seen. Open grassland set within areas of remnant woodland are predominantly located along the road corridor and watercourses. The road corridor character itself is an informal two lane carriageway with no structured drainage/ kerbing with some soil embankments and no formal footpaths or cycle facilities other than provision for cyclists on the road shoulder. Bringelly Road traverses three watercourses – South Creek, Kemps Creek and Bonds Creek as well as the Sydney Water Supply Canal. Other adjacent land uses comprise agricultural (market gardens, grazing), retail/commercial such as a service station and local shops, public recreation including Rossmore Park, the WV Scott Memorial Park and the Western Sydney Parklands, educational facilities – Rossmore Public School and Bringelly Public School, and religious institutions – the Church of the Holy Innocents. The future land use character will be influenced by the area being part of the South West Growth Centre. The Department of Planning and Infrastructure is currently working on the detail for some precincts within this area.

Heritage Items located adjacent (or nearby) to Bringelly Road which are both constraints in terms of the road upgrade and opportunities in terms of cultural landmarks include (Refer Figure 2.1.3):

- Church of the Holy Innocents – Register of the National Estate and Liverpool LEP Heritage Item
- Sydney Water Supply Canal (Prospect Reservoir) - State Heritage Item
- Bringelly Public School – State Heritage Item and Liverpool LEP Heritage Item
- Belfield Farm Group - State Heritage Item and Liverpool LEP Heritage Item
- Row of Bunya Pines, Lot 18, Leppington – Liverpool LEP Heritage Item
- Browns Memorial and Water Trough – Liverpool LEP Heritage Item
- Allenby House, 661 Bringelly Road, Rossmore – Camden LEP Heritage Item
- Rossmore Public School – Camden LEP Heritage Item

Under the Liverpool Local Environment Plan (LLEP), Environmentally Significant Land has been identified and is shown on Refer Figure 2.1.3. This zoning generally coincides with areas of significant tree canopy and may pose a constraint to the road upgrade in terms of needing to minimise the impact on the trees in this location and/or requiring permission from Council to remove trees.

Bringelly Road traverses the following major utilities which provide constraints to the road development (Refer Figure 2.1.3):

- Sydney Water Supply Canal (Prospect Reservoir) which is also a listed State Heritage Item.
- Moomba to Sydney Gas Pipeline
- A 330kV Powerline.

Access roads north and south of Bringelly Road which require consideration in the design process include from west to east:

1. Kelvin Park Drive
2. Jersey Road
3. Masterfield Street
4. Church Street
5. Allenby Road
6. North Avenue
7. Glen Allan Road
8. King Street
9. Kelly Street
10. Fourth Avenue/ Dickson Road
11. Edmondson Avenue/ Rickard Road
12. Browns Road
13. Cowpasture Road/ Camden Valley Way

Existing public transport access is limited and comprises a bus network provided by Busabout. Future access will include rail services at a new Leppington Station to the south of Bringelly Road accessed via Edmondson Avenue/ Rickard Road intersection.

Existing bus routes which currently utilise Bringelly Road are:

- Route 856 - Bringelly to Liverpool via Prestons and Churchill Gardens. Service operates seven days a week.
- Route 855 – Austral to Liverpool via Prestons and Churchill Gardens. Service operates seven days a week.

It is envisaged that whilst Bringelly Road will provide an east-west through route it will not be a major bus destination point.
2.2 DETAILED DESCRIPTION OF THE PROPOSED WORKS

The proposed Bringelly Road upgrade works will involve a combination of activities and outcomes that have potential to produce landscape character, amenity and visual impacts on people living and/or working in areas adjoining the road corridor.

The proposed works will include:

- Widening the road from a single lane to two lanes in each direction, with provision for future widening to three lanes in each direction by narrowing the median to accommodate the additional lanes.
- Creation of a median in which a number of remnant trees will be retained and additional planting carried out.
- Construction of a shared path in the verge.
- Realignment of the road to achieve acceptable gradients along the eastern portion that crosses the major ridge within the Western Sydney Parklands.
- Construction of a number of intersections to allow access from adjoining rural residential areas which are proposed for future urban development. The proposed intersection arrangements are:
  » Four Way Signalised Intersections at: The Northern Road (not part of this Study), Jersey Road, Masterfield Street, North Avenue, King Street, Eastwood Road, Dickson Road/Fourth Avenue, Edmondson Avenue/ Rickard Road, Cowpasture Road/ Camden Valley Way.
  » Three Way Signalised Intersection at: Kelvin Park Drive, Browns Road, Cowpasture Road, Twenty Sixth Avenue (Western Sydney Parklands entry/ exit).
  » Left In/ Left Out at Church Street, Allenby Road, Glen Allan Road, Kelly Street.
- Construction of a new bridge crossing of South Creek and culverts at Kemps Creek and other drainage ways at elevations above flood levels;
- Creation of cut and fill slopes where necessary to achieve acceptable vertical gradients for the road design speed;
- Clearing of existing roadside trees and other vegetation in some locations to provide adequate space for the road widening; and
- Landscape works to be implemented with the road upgrading works, which will include tree, shrub and ground cover planting.

The potential landscape character and visual impacts that are predicted to result from the road upgrading works are summarised in the following section.

Figure 2.2.1 Issues and Opportunities
### 2.3 LANDSCAPE CHARACTER ASSESSMENT

#### 2.3.1 Introduction

An analysis of the existing landscape of the Bringelly Road corridor was carried out to provide a baseline for the assessment of the significance of likely changes resulting from the proposed upgrade.

The analysis involved identification of a series of Landscape Character Zones (LCZs) that are described and illustrated in the following section. The LCZs are areas that are relatively consistent in terms of their combination of landform, vegetation and land uses, while containing a degree of variation in visual landscape character.

In general the existing visual character of the Bringelly Road corridor is semi-rural. The road follows the undulations of the natural landform that consists of a series of creek crossings, including Kemps Creek and South Creek, separated by low ridges and hills. However, the current visual character is predicted to change substantially as a consequence of the planned development associated with the South West Growth Centre.

The eastern section of the Bringelly Road corridor has a distinctive landscape character where it crosses over the visually prominent ridgeline that forms part of the catchment boundary between the Georges River and Hawkesbury River systems. The panoramic long distance views available from this section of Bringelly Road, which adjoins the Western Sydney Regional Parklands, are of major significance. They contrast strongly with the relatively enclosed visual character of the Bringelly Road corridor running west across the gently undulating rural landscape.

#### Potential Landscape Character Impacts of the Proposed Upgrade Works

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<tr>
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<th>Potential Landscape Character Impacts</th>
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<tr>
<td>Clearing of existing vegetation, particularly roadside trees</td>
<td>The existing avenue character would be removed</td>
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<tr>
<td>Earthworks that alter the existing landform by creating cut and fill slopes</td>
<td>Cut and fill slopes would appear as a constructed element that would alter the landscape character</td>
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<tr>
<td>Increase of road surface</td>
<td>Replacement of vegetated or grassed areas with sealed roadway and treatment of kerbs would alter the landscape character from a generally natural appearance to an urban one</td>
</tr>
<tr>
<td>A new bridge over South Creek and a series of culverts at other creek crossings</td>
<td>The landscape character would become more urban by replacing vegetated areas with visually prominent structures</td>
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<tr>
<td>Landscape works to be carried out as part of the road upgrade</td>
<td>Initially the relatively small scale of the new planting would be different from the existing landscape character that is characterised by mature trees. However as the planted trees begin to mature the landscape character will begin to resemble the existing appearance.</td>
</tr>
<tr>
<td>Earthworks that will expose subsoil during the construction period</td>
<td>The exposed soil would form a visible element in the landscape for a limited period.</td>
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![Figure 2.3.1 Landscape Character Zones](image)
### 2.4 LANDSCAPE CHARACTER ZONES

#### 2.4.1 Landscape Character Zone 1 - Bringelly Village

**KEY PLAN**

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<tr>
<th>Topographic Features</th>
<th>Located on the western slopes of a prominent low broad hill top</th>
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<tbody>
<tr>
<td>Drainage / Hydrology</td>
<td>Well drained area, generally to the west towards a natural creekline</td>
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<tr>
<td>Geology / Soils</td>
<td>Residual shale derived clayey soils</td>
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<tr>
<td>Vegetation Type / Cover</td>
<td>Remnant Cumberland Plain Woodland on south east corner of the intersection and south west of the shopping centre</td>
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<td>Planted trees, shrubs and turf associated with the shopping centre and school west of the intersection</td>
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<td>Agricultural Quality</td>
<td>Limited to grazing on the north east corner of intersection</td>
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<tr>
<td>How settlement / development fits into setting</td>
<td>Shops form an urban edge to the south west corner of the intersection of Bringelly Road and The Northern Road</td>
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<td>Advertising signs are visually prominent</td>
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<td>School defines north west corner of intersection</td>
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<tr>
<td>Open space character &amp; quality</td>
<td>School yard is used for recreation activities</td>
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<td>Cultural/recreation character</td>
<td>Two-storey retail/commercial buildings are visually prominent at the Northern Road intersection</td>
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<td>School buildings have heritage values</td>
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<td>Architectural form/history/mix &amp; quality</td>
<td>Generally visually enclosed by remnant woodland and buildings</td>
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<td>Spatial quality of area -open or closed</td>
<td>Mid-distance views down slope to the west towards the creek line beyond intersection</td>
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<td>Infrastructure-scale/pattern</td>
<td>Overhead powerlines, lighting and traffic lights</td>
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<td>Major economic or industrial features</td>
<td>Shopping centre forms a regional economic feature that generates traffic</td>
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<td>School generates high traffic flows during morning and afternoon periods</td>
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2.4.2 Landscape Character Zone 2 - SOUTH CREEK VALLEY (WEST)

**Topographic Features**
- Located on the western slopes of a broad valley formed by South Creek.
- Long gentle slope extending from hill top to South Creek.

**Drainage / Hydrology**
- Well drained slopes.

**Geology / Soils**
- Predominantly residual clay soils derived from shale material with alluvial soils along South Creek floodplain.

**Vegetation Type / Cover**
- Scattered remnant trees of Cumberland Plain Woodland allow views across open paddocks on both sides of the road.

**Agricultural Quality**
- Predominantly grazing with market gardening on alluvial soils associated with South Creek.

**How settlement / development fits into setting**
- Rural residential land use with scattered residential and agricultural buildings generally fits into the landscape setting.

**Open space character & quality**
- Public open space confined to the road corridor which contains patches of remnant trees.

**Cultural/recreation character**
- Rural residential and agricultural buildings are distributed throughout the LCZ.

**Spatial quality of area – open or closed**
- Visually open character with views across paddocks to the vegetation along South Creek.
- Long distance north east views to Western Sydney Parkland from the western portion of the LCZ.

**Infrastructure-scale/pattern**
- High voltage powerlines along northern edge of the road reserve are visually prominent.

**Major economic or industrial features**
- Scattered rural residential development and buildings associated with agricultural activities.

**Landscape Character Impact Rating**

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**View east along Bringelly Road with remnant vegetation along the road corridor and rural residences in the mid-distance**

**View north east across rural residential land uses to Western Sydney Parklands on horizon**
2.4.3 Landscape Character Zone 3 - SOUTH CREEK RIPARIAN CORRIDOR

**KEY PLAN**

- **Topographic Features**: Flat flood plain of South Creek.
- **Drainage / Hydrology**: Drainage from flat alluvial areas is limited. Subject to flooding by South Creek.
- **Geology / Soils**: Alluvial soils of high fertility.
- **Vegetation Type / Cover**: Remnant Cumberland Plain Woodland along South Creek blocks views. Cultivated vegetable crops on alluvial soils.
- **Agricultural Quality**: Distinctive pattern associated with cultivation of vegetable crops on flat areas adjoining South Creek.
- **How settlement / development fits into setting**: Agricultural land use and the remnant vegetation along South Creek appear visually balanced.
- **Open space character & quality**: Open space is confined to the road corridor with patches of remnant trees.
- **Cultural/recreation character**: Rural residential buildings form an edge along the western side of the floodplain.
- **Architectural form/history/mix & quality**: Zoning precludes building construction within the floodplain.
- **Planning controls**: Visually enclosed by the remnant riparian woodland along South Creek together with scattered trees on the western and eastern slopes of the valley.
- **Infrastructure-scale/pattern**: High voltage power lines along the northern edge of the road reserve are visually prominent.
- **Major economic or industrial features**: Major economic or industrial features are not present.

**Landscape Character Impact Rating**

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**View north across market gardens on flood plain with Riparian Woodland along South Creek in mid distance**

**View east along Bringelly Road with Riparian Woodland along South Creek visually enclosing the road corridor**
2.4.4 Landscape Character Zone 4 - SOUTH CREEK VALLEY (EAST)

**KEY PLAN**

**Topographic Features**  
Relatively flat to very gently undulating landform

**Drainage / Hydrology**  
Drainage is constrained by the relatively flat landform

**Geology / Soils**  
Residual clayey soils derived from shale parent material

**Vegetation Type / Cover**  
Remnant Cumberland Plain Woodland roadside trees provide filtered views across open paddocks on both sides of the road

**Agricultural Quality**  
Generally good quality grazing land

**How settlement / development fits into setting**  
Remnant roadside trees providing partial visual screening of rural residential land use assist in integrating development into the landscape

**Open space character & quality**  
Public open space is limited to the road reserve

**Cultural/recreation character**  
Scattered rural residential buildings

**Spatial quality of area -open or closed**  
Generally filtered views between roadside trees across open paddocks

**Infrastructure-scale/pattern**  
Power lines alongside road partly screened by trees

**Major economic or industrial features**  
Rural residential land use is primary economic feature

**Landscape Character Impact Rating**

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2.4.5 Landscape Character Zone 5 - ROSSMORE VILLAGE

**KEY PLAN**

**Existence Site Conditions**

**Topographic Features**

- Relatively flat to very gently undulating landform

**Drainage / Hydrology**

- Moderate drainage on slopes but restricted along flat areas
- Constrained by relatively flat landform

**Geology / Soils**

- Residual clayey soils derived from shale parent material

**Vegetation Type / Cover**

- Remnant Cumberland Plain Woodland roadside trees provide filtered views to adjoining areas

**Agricultural Quality**

- Agricultural activities very limited

**How settlement / development fits into setting**

- Shops and service station on north side of road are visually prominent from road with extensive advertising signs and very little landscape planting resulting in low level of compatibility with the setting.
- School on south side of road is set back and mature remnant trees combined with landscape planting produce good integration of buildings with the setting.

**Open space character & quality**

- The visual character of the commercial development is low quality strip development

**Cultural/recreation character**

- The school presents a higher quality visual landscape character

**Architectural form/history/mix & quality**

- Shopping centre located on elevated landform relatively low cost structures and little landscape treatment
- School and residential development south of road are higher quality and more integrated with the landscape.

**Spatial quality of area -open or closed**

- Generally visually enclosed by buildings and remnant woodland
- Mid-distance views between buildings from road to shade houses and rural residential buildings to north

**Infrastructure-scale/pattern**

- Overhead powerlines along south edge of road corridor are generally screened by remnant road side trees

**Major economic or industrial features**

- Commercial development north of road are visually prominent

**Landscape Character Impact Rating**

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**View north from Bringelly Road with service station in foreground and horticultural shade structures on horizon beyond open grass area**

**View east along Bringelly Road with views through trees to school on right and views of service station and shops on left with views through gaps to tree beyond**
2.4.6 Landscape Character Zone 6 - KEMPS CREEK (WEST)

KEY PLAN

<table>
<thead>
<tr>
<th>Topographic Features</th>
<th>Flat to very gently undulating landform</th>
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<tr>
<td>Drainage / Hydrology</td>
<td>Good to fair drainage depending on degree landform undulation</td>
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<td>Geology / Soils</td>
<td>Residual clay soils derived from shale parent material</td>
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<tr>
<td>Vegetation Type / Cover</td>
<td>Remnant Cumberland Plain Woodland roadside trees create a strong avenue character with filtered views to adjoining areas</td>
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<tr>
<td>Agricultural Quality</td>
<td>Rural residential buildings, shade houses and other agricultural structures are scattered across the portion of landscape visible from the road</td>
</tr>
<tr>
<td>How settlement / development fits into setting</td>
<td>Extensive roadside vegetation filters views to adjoining rural residential development and assists in visually integrating them into the setting</td>
</tr>
<tr>
<td>Open space character &amp; quality</td>
<td>Public open space is limited to the road corridor</td>
</tr>
<tr>
<td>Cultural/recreation character</td>
<td>Scattered rural residential and horticultural buildings</td>
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<tr>
<td>Architectural form/history/mix &amp; quality</td>
<td>Woodland south of road limits views to short distance</td>
</tr>
<tr>
<td>Spatial quality of area –open or closed</td>
<td>Views north of the road are filtered by vegetation, natural landform and structures</td>
</tr>
<tr>
<td>Infrastructure-scale/pattern</td>
<td>Powerlines generally screened by road side trees</td>
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<tr>
<td>Major economic or industrial features</td>
<td>Horticultural commercial activities adjoin the road in some locations but generally rural residential land uses</td>
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Landscape Character Impact Rating

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View east along Bringelly Road with remnant roadside trees visually enclosing road corridor

Riparian Woodland along drainage line defines boundary of Visual Catchment

Roadside vegetation screens views

Culvert below road at drainage line

View west along Bringelly Road with riparian woodland vegetation along drainage line visually enclosing the road corridor

Agricultural structure visible from road between trees

Roadside vegetation screens views to agricultural area beyond

Avenue of remnant trees defines road corridor

Glimpse of shops at Rossmore Village

Woodland south of road limits views to short distance

Roadside vegetation screens views to agricultural area beyond

Avenue of remnant trees defines road corridor
### 2.4.7 Landscape Character Zone 7 - KEMPS CREEK (EAST)

**KEY PLAN**

**Topographic Features**
- Undulating landform includes a broad hill top area

**Drainage / Hydrology**
- Generally well drained slopes of broad low ridge

**Geology / Soils**
- Residual soils derived from shale parent material

**Vegetation Type / Cover**
- Remnant Cumberland Plain Woodland trees along road corridor create a strong avenue character with filtered views across open paddocks on both sides of the road
- Generally open pasture grassland beyond road reserve

**Agricultural Quality**
- Predominantly grazing with horticultural activities in some locations

**How settlement / development fits into setting**
- Rural residential buildings, shade houses and other structures associated with agricultural activities are partly screened by roadside trees which help to integrate them into the landscape setting

**Open space character & quality**
- Public open space is limited to the road corridor

**Cultural/recreation character**

**Architectural form/history/mix & quality**
- Scattered rural residential and horticultural buildings

**Spatial quality of area - open or closed**
- Generally visually open with views from the road across pasture to houses and agricultural buildings
- Roadside trees provide filtered views in some locations

**Infrastructure-scale/pattern**
- Overhead powerlines visible from the road

**Major economic or industrial features**
- Economic activities limited to a number of horticultural facilities

### Landscape Character Impact Rating

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**Avenue character created by roadside trees**
**Remnant trees visually define edge of road**
**Agricultural structures visible through gaps between trees**
**Visual Catchment**
**Residence**
**Long distance view to Blue Mountains on horizon**

- View north west from Bringelly Road across paddocks to agricultural buildings and a glimpse of the Blue Mountains on the horizon
- Remnant woodland defines boundary of Visual Catchment
- Agricultural structures visible through gaps between trees
- Avenue character created by roadside trees
- Powerlines visible against skyline
- Grass allows views across paddocks
- Glimpse between trees to paddock
- Powerlines visible against skyline

- View east along Bringelly Road across open fields to left and roadside trees filtering views to right
### 2.4.8 Landscape Character Zone 8 - SECONDARY DRAINAGE CORRIDOR

#### Topographic Features
- Very gently undulating landform

#### Drainage / Hydrology
- Generally good drainage with restricted drainage along creek lines

#### Geology / Soils
- Residual clayey soils derived from shale parent material

#### Vegetation Type / Cover
- Remnant roadside trees create a strong avenue character with filtered views across open paddocks on both sides of the road

#### Agricultural Quality
- Rural residential land uses include grazing paddocks, shade houses and other agricultural buildings that are visible from the road in some locations

#### How settlement / development fits into setting
- Residential development is generally set back from the road and fits into the landscape setting
- Residential fences and hedges in some locations highlight the residential development visible from the road

#### Open space character & quality
- Sports fields at Scott Park are located on the north side of road in one location on the western side of Edmondson Avenue

#### Cultural/recreation character
- Rural residential development is generally moderate to good quality

#### Architectural form/history/mix & quality
- Rural residential development is generally moderate to good quality

#### Spatial quality of area - open or closed
- Views from road are generally enclosed or filtered by roadside vegetation
- Open views across Scott Park to remnant trees and amenities building form a distinctive landscape element on the northern edge of the road

#### Infrastructure-scale/pattern
- Powerlines adjoining the road are generally visible or partly screened by trees

#### Major economic or industrial features
- Horticultural facilities occur in a number of locations adjoining the road corridor
- The predominant land use is rural residential with limited agricultural activities

### Landscape Character Impact Rating

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### Key Plan

- Remnant trees screen views from road
- Avenue character created by roadside trees
- Dense vegetation screens views from road

View east along Bringelly Road with remnant roadside trees filtering views to adjoining rural residential land uses

View west along Bringelly Road with sports field in centre and roadside trees filtering views

Sportsfield allows view to remnant trees

Remnant trees visually define road edge while allowing glimpses through

Avenue character created by roadside trees

Glimpse of grazing paddocks between gaps in trees

Remnant trees visually define road edge while allowing glimpses through

Avenue character created by roadside trees

Drainage culvert below road

Dense vegetation screens views from road

Residential fences and hedges in some locations highlight the residential development visible from the road

Sportsfield allows view to remnant trees

Remnant trees visually define road edge while allowing glimpses through

Avenue character created by roadside trees
### EXISTING SITE CONDITIONS

#### 2.4.9 Landscape Character Zone 9 - SYDNEY WATER SUPPLY CANAL

**KEY PLAN**

**Topographic Features**
- Western slopes of regional ridgeline forming boundary between Georges River and Hawkesbury River catchments

**Drainage / Hydrology**
- Well drained slopes
- Water supply canal flowing through the LCZ crosses under the road

**Geology / Soils**
- Residual soils derived from shale parent material

**Vegetation Type / Cover**
- Patches of remnant trees adjoining the water supply canal south of the road
- A row of mature Bunya Pines (*Araucaria bidwilli*) on southern side of road form a regional landmark

**Agricultural Quality**
- Grazing of good quality

**How settlement / development fits into setting**
- Rural residential buildings are generally set back from road and fit into the landscape setting

**Open space character & quality**
- Open space limited to road corridor

**Architectural form/history/mix & quality**
- Buildings visible from the road are generally moderate quality

**Planning controls**
- Water supply canal corridor needs to be protected
- Western Sydney Parklands, which adjoins part of northern edge of the road corridor, is covered by the Western Sydney Parklands Act 2006 that provides for control of uses in the Parklands

**Spatial quality of area—open or closed**
- Long distance views to west extend across tree tops to the Blue Mountains on the horizon
- Grassland paddocks allow mid distance views from the roads to ridge line

**Infrastructure-scale/pattern**
- The water supply canal crosses under the road, forming a distinctive landscape element of regional significance
- Chain link security fencing associated with the water supply canal detracts from the visual quality of the LCZ
- Overhead powerlines are visually prominent

**Major economic or industrial features**
- Economic activities are generally limited to grazing

### Landscape Character Impact Rating

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**View west along Bringelly Road with signs, crash barrier, power poles visually prominent; open fields on both sides of intersection and glimpses of Blue Mountains on horizon in centre of photo**

**View west along Bringelly Road with large mature Bunya Pine trees visually prominent to left, open fields on both sides of road and glimpses of Blue Mountains on horizon in centre of photo**
### 2.4.10 Landscape Character Zone 10 - WESTERN SYDNEY PARKLANDS

#### KEY PLAN

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<th>Topographic Features</th>
<th>Eastern slopes of visually prominent regional ridgeline forming catchment boundary between Georges River and Hawkesbury River</th>
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<td>Well drained slopes</td>
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<td>Geology / Soils</td>
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<td>Vegetation Type / Cover</td>
<td>Predominantly grassland with scattered remnant trees</td>
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<td>Agricultural Quality</td>
<td>Predominantly grazing grassland</td>
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<tr>
<td>How settlement / development fits into setting</td>
<td>As most of the development visible from the road is in the mid to long distance it is visually integrated into the landscape</td>
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<td>Open space character &amp; quality</td>
<td>Western Sydney Regional Parklands adjoin the road corridor to the north</td>
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<tr>
<td>Cultural/recreation character</td>
<td>Buildings visible from the road are generally good quality</td>
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<tr>
<td>Architectural form/history/mix &amp; quality</td>
<td>Western Sydney Parklands, which adjoins the northern edge of the road corridor, is covered by the Western Sydney Parklands Act 2006 that provides for control of uses in the Parklands</td>
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<tr>
<td>Planning controls</td>
<td>Panoramic long distance views to east and north east extend across the Western Sydney Parklands to Sydney CBD</td>
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<tr>
<td>Spatial quality of area –open or closed</td>
<td>Roadside cut slope and dense vegetation block views from road along part of southern edge</td>
</tr>
<tr>
<td>Infrastructure-scale/pattern</td>
<td>Overhead power lines are visible from the road</td>
</tr>
<tr>
<td>Major economic or industrial features</td>
<td>Pedestrian/cycle path within Western Sydney Parklands terminates on the northern edge of road</td>
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**Landscape Character Impact Rating**

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**SUMER bid picture**

- View east along Bringelly Road at cutting within Western Sydney Parklands with roadside vegetation and embankment focusing long distance views to urban development and Sydney CBD high rise buildings on horizon
- View to north east from Bringelly Road across paddocks in Western Sydney Parklands to remnant woodland in mid-distance and long distance views to urban development in western Sydney
- View to north east from Bringelly Road across paddocks in Western Sydney Parklands to remnant woodland in mid-distance and long distance views to urban development in western Sydney
- View to North Sydney CBD on horizon
- Long distance views to St. Leonards CBD on horizon
- View to North Sydney CBD on horizon
- Cycle path within Western Sydney Parkland
- Remnant woodland defines Visual Catchment
- Residential development
- Grassland in Western Sydney Parkland
- Cut slope focuses view to east along road corridor
- Dense vegetation & cut slope block views from road
- Powerlines visually prominent
- Section of road closed to through traffic
- View to Chatswood CBD on horizon
- View to North Sydney CBD on horizon
- View to St. Leonards CBD on horizon
- View to Chatswood CBD on horizon
- View to North Sydney CBD on horizon
- View to Chatswood CBD on horizon
- View to North Sydney CBD on horizon
- View to Chatswood CBD on horizon
2.4.11 Landscape Character Zone 11 - CAMDEN VALLEY WAY INTERSECTION

KEY PLAN

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<td>Vegetation Type / Cover</td>
<td>Predominantly grassland with scattered remnant Cumberland Plain Woodland trees</td>
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<tr>
<td>Agricultural Quality</td>
<td>Good quality grazing paddocks</td>
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<tr>
<td>How settlement / development fits into setting</td>
<td>Roadway, signage and traffic lights associated with intersection are visually prominent</td>
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<tr>
<td>Open space character &amp; quality</td>
<td>Public open space is limited to the road corridor</td>
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<tr>
<td>Cultural/recreation character</td>
<td>Small number of residential buildings visible from the road are generally of good quality</td>
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<tr>
<td>Spatial quality of area –open or closed</td>
<td>Relatively enclosed visually due to low elevation combined with surrounding trees</td>
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<tr>
<td>Infrastructure-scale/pattern</td>
<td>Overhead powerlines, lighting and traffic signs are visually prominent at the intersection. High traffic flows form a key visual aspect of the LCZ</td>
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<tr>
<td>Major economic or industrial features</td>
<td>No significant economic feature adjoins this section of road</td>
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Landscape Character Impact Rating

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- Grass paddock provides mid-distance views.
- House roof visible on horizon.
- Remnant trees visually define road edge but allow views through to paddock beyond.
- Roadside vegetation blocks views from road.
- Remnant trees visually define road corridor.
- Clumps of dense vegetation block views from road.
- Road pavement, traffic islands & signs visually prominent.

View to east from Bringelly Road with roadside trees filtering views across grazing paddocks to roofs of residential development on horizon.

View west along Bringelly Road at intersection with Camden Valley Way showing screening of most views by roadside trees and shrubs.
2.4.12 Summary of Landscape Character Impacts

The landscape character impacts for Bringelly Road vary from moderate to high. This is due to the semi-rural character of the setting that the proposal will sit in. More moderate impacts are found in areas where there are less significant views, flatter landform and less remnant woodland. Higher impacts are found where there is more remnant woodland and areas of higher scenic quality. Figure 2.4.12.1 summarises the impacts.
3.0 VISUAL IMPACT ASSESSMENT

The potential visual impact of the proposed Bringelly Road upgrade works has been assessed in relation to key viewpoints and groups of viewpoints. This assessment is based on the existing pattern of land use and development adjoining Bringelly Road corridor. However, it should be noted that substantial changes to the land use pattern are predicted to take place as a result of development associated with the South West Growth Centre.

The methodology involved:
- defining the scope and scale of the proposed road upgrade works;
- identifying key viewpoints and groups of viewpoints from which the upgraded road will be visible; and
- assessing the level of potential visual impact on viewers located at the viewpoints that would result from the proposed works.

The levels of significance of potential visual impacts have been assessed through consideration of the combination of Magnitude of visual change in the landscape and the Sensitivity of viewers who will see the change.

The Magnitude of visual change is strongly influenced by the level of visibility of the new works resulting from the combination of scale, extent, distance and duration of the views. The Sensitivity of viewers varies significantly depending on context and activity of the viewer (e.g. residence, workplace, shops, school, recreation/open space) and importance of the view to the viewer.

The levels of visual impact significance has been determined by reference to the RTA Matrix.

### Visual Impact Matrix (RTA 2009)

<table>
<thead>
<tr>
<th>Magnitude</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High High</td>
</tr>
<tr>
<td>High to Moderate</td>
<td>High Moderate</td>
</tr>
<tr>
<td>Moderate</td>
<td>Moderate Moderate</td>
</tr>
<tr>
<td>Moderate to Low</td>
<td>Moderate Low</td>
</tr>
<tr>
<td>Low</td>
<td>Negligible</td>
</tr>
</tbody>
</table>

#### Potential Visual Impact of the Proposed Works

<table>
<thead>
<tr>
<th>Proposed Works</th>
<th>Potential Visual Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing of existing vegetation, particularly roadside trees</td>
<td>Increased visibility of road and traffic for people living and working on properties adjoining the road. High potential visual impact that reduces over time as tree planting carried out as part of landscape works begins to mature.</td>
</tr>
<tr>
<td>Earthworks that will expose subsoil during the construction period</td>
<td>High visibility of earthworks results from visual contrast between exposed subsoil and the adjoining landscape. High potential visual impact but relatively short term as it is limited to construction period.</td>
</tr>
<tr>
<td>Earthworks that alter the existing landform by creating cut and fill slopes</td>
<td>New slopes contrast with the adjoining natural landform. Potential visual impact varies but significance should be low if earthworks are carefully designed to integrate with adjoining natural landforms.</td>
</tr>
<tr>
<td>Increase of road surface</td>
<td>Extent of paved surface visible from adjoining areas will be increased significantly. Potential visual impact varies from high to low depending on the level of visibility of the road surface from areas adjoining the road. Visibility will decrease over time as landscape works start to mature.</td>
</tr>
<tr>
<td>A new bridge over South Creek and a series of culverts at other creek crossings</td>
<td>Increase in scale of structures will be more visible than existing bridges and culverts. Potential visual impact low to moderate depending on scale but new bridge may create a positive visual impact if well designed.</td>
</tr>
<tr>
<td>Landscape works to be carried out as part of the road upgrade</td>
<td>Additional vegetation along road corridor will screen views from areas adjoining the road. Potential visual impact high but positive as the new vegetation becomes established.</td>
</tr>
</tbody>
</table>

Figure 3.1 - Visual Impact Matrix (RTA 2009)
3.1 VISUAL ENVELOPE MAP

The extent to which Bringelly Road is visible from adjoining areas varies significantly along the approximately 10 kilometre length of road. Views to the road are influenced by a combination of landform, vegetation, houses and other structures. A detailed field assessment was carried out to determine the extent of the area visible from Bringelly Road, which is defined as the Visual Catchment or Visual Envelope Map (VEM).

The extent of the VEM of Bringelly Road is illustrated on the following Figures 3.1.1, 3.1.2 and 3.1.3. The various types of elements that define the VEM boundary, such as trees, buildings, landform, buildings / structures, are also indicated.

![Visual Envelope Map](image)

**Figure 3.1.1 Visual Catchment Analysis of Bringelly Road (Western Section)**

**LEGEND**

- Bringelly Road
- 100m from Bringelly Road Centreline
- 300m from Bringelly Road Centreline
- Roadside trees & shrubs screen views from road
- Roadside trees filter view from road
- Trees define boundary
- Landform defines boundary
- Built form defines boundary
- Schools
- Commercial buildings / Shops
- Agricultural / Industrial / Employment places
- Open Space / Community facilities
- Residences
- Long distance views beyond catchment boundary
Figure 3.1.2  Visual Catchment Analysis of Bringelly Road (Central Section)
Figure 3.1.3 Visual Catchment Analysis of Bringelly Road (Eastern Section)
3.2 VISUAL IMPACT ASSESSMENT

The level of significance of the visual impact of the proposed Bringelly Road upgrade is determined by the combination of Magnitude of change to existing views and the Sensitivity of the viewers to that change.

![Visual Impact Significance Methodology](image)

The Magnitude of change to existing views depends on a combination of scale, extent and duration of the views. It would be influenced by:
- extent of the area from which the upgraded Bringelly Road would be visible;
- number and type of viewers who see the upgraded road;
- distance of the view to the proposed upgraded road;
- duration of change to the view (i.e. temporary or permanent, continuous or intermittent) that would result from the road upgrade;
- scale of change to the view that would result from the road upgrade (i.e. proportion of the view occupied by the upgraded road); and
- degree of contrast between the proposed upgraded road and the existing landscape in terms of form, scale, line, height, colour and texture.

The Magnitude of potential visual impact was assessed by applying the criteria in Figure 3.2.2 to each of the key viewpoints or groups of viewpoints.

![Key Viewpoint Assessment Criteria](image)

The categories of Magnitude of visibility are defined below:
- **Negligible** - very minor alteration to one or more key element/features/characteristics of the baseline visual character (i.e. pre-upgrade view) and/or introduction of elements that are consistent with the visual character of the existing landscape character (i.e. approximating the ‘no change’ situation).
- **Low** - minor loss of/or alterations to one or more key elements/features/characteristics of the baseline visual character (i.e. pre-upgrade view) and/or introduction of elements that are consistent with the existing landscape character.
- **Medium** - partial loss of or alteration to one or more key elements/features/characteristics of the baseline visual character (i.e. pre-upgrade view) and/or introduction of elements that may be prominent but not considered to be substantially uncharacteristic of the existing landscape character.
- **High** - total loss of key elements/features/characteristics of the baseline visual character (i.e. pre-upgrade view) and/or introduction of elements considered to be totally uncharacteristic of the existing landscape character.

Sensitivity is a measure of the extent to which a viewer is willing to accept the change to the landscape resulting from the development without perceiving it as an adverse impact on the existing landscape character or the value attributed to a current view. Viewer Sensitivity may range from negligible to high and is dependent on:
- category of the viewer (e.g. residence, workplace, shops, school, recreation/open space);
- content of the view;
- expectations and activity of the viewer (e.g. resident, visitor, worker, motorists, cyclists, pedestrian, recreation/sporting participant); and
- importance of the view (e.g. identified in regional scenic resources assessment, referenced in tourist maps/guides, numbers of people deliberately seeking the view, reference to the view in literature and art).
The site analysis confirmed that residents form the most significant category of viewers within the visual catchment of Bringelly Road. A detailed evaluation of road corridor indicated that houses within 100 metres of the road have the highest level of visibility. Although the level of visibility generally declines with distance, there is a significant drop in visibility of Bringelly Road beyond about 100 metres from the road. At a distance of about 300 metres Bringelly Road forms a small element in views towards the road corridor.

In assessing the potential visual impact of the proposed road upgrade three categories of view distance have been adopted, which include:
- Up to 100 metres from Bringelly Rd.
- Between 100 to 300 metres from Bringelly Rd.
- More than 300 metres from Bringelly Rd.

The approximate number of residents with potential views of Bringelly Rd. has been calculated by determining the number of houses within the three categories of view distance and assuming an average occupancy of 4 residents per house.

<table>
<thead>
<tr>
<th>View Distance Category</th>
<th>Number of Houses</th>
<th>Estimated Number of Residents (assuming 4 residents per house)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 100 metres from Bringelly Rd.</td>
<td>115</td>
<td>460</td>
</tr>
<tr>
<td>Between 100 to 300 metres from Bringelly Rd.</td>
<td>59</td>
<td>236</td>
</tr>
<tr>
<td>More than 300 metres from Bringelly Rd.</td>
<td>41</td>
<td>164</td>
</tr>
</tbody>
</table>

Figure 3.2.4 Estimate of Residents within Visual Catchment

Viewers with the highest levels of Sensitivity typically include:
- residents who would have existing attractive views affected by the proposed upgrade;
- users of public open space where their attention is focused on visual landscape values, such as scenic lookout points or natural landscape areas with attractive views;
- and communities where the proposed development would result in changes to the landscape views that they value.

Viewers with the lowest visual sensitivity are most likely to be:
- those engaged in work where their attention is focused on their work;
- motorists whose attention is focused on driving; and
- people engaged in active recreation activities such as team sports.

The various levels of Visual Impact Significance that are predicted through the combinations of Magnitude of visibility and viewer Sensitivity are presented in the following table.

<table>
<thead>
<tr>
<th>MAGNITUDE</th>
<th>High</th>
<th>High to Moderate</th>
<th>Moderate</th>
<th>Moderate to Low</th>
<th>Low</th>
<th>Negligible</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High Impact</td>
<td>High Impact</td>
<td>Mod. / High</td>
<td>Low Negligible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High to Moderate</td>
<td>High Impact</td>
<td>Mod. / High</td>
<td>Moderate</td>
<td>Negligible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>Mod. / High</td>
<td>Moderate</td>
<td>Low Negligible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate to Low</td>
<td>Mod. / Low</td>
<td>Low Negligible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low Negligible</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3.2.5 Visual Impact Matrix (RTA 2009)

The Visual Impact Significance Levels are defined as:
- Negligible - only a very small part of the road upgrade works would be discernible and/or it would be located at such a distance that it would be scarcely visible.
- Low - the road upgrade works would constitute only a minor component of the wider view and might be missed by the casual observer; awareness of the development would not have a marked effect on the overall quality of the view and the viewer has a low level of sensitivity. This level of Visual Impact Significance results from a combination of low Magnitude and low Sensitivity.
- Moderate - the road upgrade works may form a visible and recognisable new element within the overall scene and may be readily noticed by a viewer. This level of Visual Impact Significance may result from a combination of low Magnitude and high Sensitivity or high Magnitude and low Sensitivity or other combinations of Magnitude and Sensitivity.
- High - the road upgrade works would form a significant and immediately apparent part of the view that would affect and change its overall character (the change may be positive or negative). This level of Visual Impact Significance results from combinations of high Magnitude and high Sensitivity.

The RTA Matrix in Figure 3.2.5 includes the intermediate categories Moderate to Low and High to Moderate.
3.3 **KEY VIEWPOINTS ANALYSIS**

Identification of key viewpoints and groups of viewpoints involved an analysis of views from the road to identify the extent to which houses and other buildings were visible. This provided an indication of the likely level of visibility from those houses and buildings as it was not feasible to visit the private residence to check potential views to the road.

The analysis was based on the principle of ‘intervisibility’, which means that if a house is visible from the road then the road would be visible from the house. The level of visibility was checked from other public roads connecting to or in the vicinity of Bringelly Road. Views along these roads to Bringelly Road were identified in the Visual Envelope Analysis.

**WESTERN SECTION**

Results of the analysis are presented on Figures 3.3.1, 3.3.2 and 3.3.3, which show the location of houses and other buildings within the Visual Catchment or Visual Envelope of the road corridor. Contour lines for the three categories of view distance (<100m, 100 to 300m and 300m to 2km) are also shown on the figure.

The Results of this assessment of potential visual impact are presented in the table on the following pages. The various criteria used in the assessment are defined in previous sections, together with the Visual Impact Significance Levels defined in Section 3.2.

![Figure 3.3.1 - Visual Envelope Analysis Of Bringelly Road (Western Section)](image)
<table>
<thead>
<tr>
<th>REF NO.</th>
<th>KEY VIEWPOINTS / GROUPS OF VIEWPOINTS</th>
<th>APPROX. DISTANCE</th>
<th>CATEGORY OF VIEWER</th>
<th>VIEWER SENSITIVITY</th>
<th>VISUAL IMPACT LEVEL</th>
<th>COMMENT S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Northern Road travelling south</td>
<td>S to VS</td>
<td>Motorists, cyclists &amp; pedestrians</td>
<td>L M</td>
<td>View up slope to signalisation intersection</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bringelly Public School</td>
<td>VS M M</td>
<td>Teachers (3) , students (110)</td>
<td>M M/H</td>
<td>Views from school buildings &amp; playgrounds</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Greendale Road travelling east</td>
<td>S to VS</td>
<td>Motorists &amp; pedestrians</td>
<td>L L/M</td>
<td>View along road corridor to signalisation intersection</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bringelly Village Shops</td>
<td>VS M M</td>
<td>Shoppers</td>
<td>L/M M/H</td>
<td>View north &amp; east to signalisation intersection</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The Northern Road travelling north</td>
<td>VS to S</td>
<td>Motorists, cyclists &amp; pedestrians</td>
<td>L M</td>
<td>Dowslopes view to signalisation intersection enclosed by embankment, vegetation &amp; shops</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Residences (9) south of Bringelly Road</td>
<td>S L L M</td>
<td>Residents</td>
<td>M/H M/H</td>
<td>Houses on ridge oriented north</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Residences (13) north of Bringelly Road</td>
<td>VS L L H</td>
<td>Residents</td>
<td>M/H H</td>
<td>Views partly screened by vegetation</td>
<td>Bringelly Rd. powerlines visible</td>
</tr>
<tr>
<td>8</td>
<td>Residence on hill top</td>
<td>S L L L M</td>
<td>Residents</td>
<td>M/H M/H</td>
<td>View south east to Bringelly Rd.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Residences (28) along Kelvin Park Drive</td>
<td>S L M L M</td>
<td>Workers &amp; shoppers</td>
<td>L/L M/H</td>
<td>View south &amp; east to Bringelly Rd.</td>
<td>partially screened by vegetation &amp; buildings</td>
</tr>
<tr>
<td>10</td>
<td>Employment place south of Bringelly Road</td>
<td>M L L M</td>
<td>Workers</td>
<td>L L</td>
<td>View south to Bringelly Road</td>
<td>partially screened by vegetation &amp; buildings</td>
</tr>
<tr>
<td>11</td>
<td>Residences (2) north of Bringelly Road</td>
<td>S L L M L</td>
<td>Residents</td>
<td>M/H M</td>
<td>View southward to Bringelly Road</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Kelvin Park Dr. travelling south</td>
<td>M to VS</td>
<td>Motorists</td>
<td>L</td>
<td>View up slope to Bringelly Rd.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Residences (3) south of Bringelly Rd.</td>
<td>VS L L M</td>
<td>Residents</td>
<td>M/H M/H</td>
<td>View north partly screened by vegetation</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Church south of Bringelly Rd.</td>
<td>VS M L M</td>
<td>Parishioners attending church</td>
<td>M M</td>
<td>Church oriented north to Bringelly Rd.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Bringelly Plant Nursery south of Bringelly Road</td>
<td>VS M L M</td>
<td>Workers &amp; shoppers</td>
<td>L/M M</td>
<td>View north from slightly elevated site partly screened by large trees along road frontage</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Residences (4) south of Bringelly Rd.</td>
<td>VS L L H</td>
<td>Residents</td>
<td>M/H H</td>
<td>View north partly screened by vegetation along drainage line adjoining road</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Residences (3) north of Bringelly Rd.</td>
<td>S L V L L</td>
<td>Residents</td>
<td>M/H M</td>
<td>Views south to Bringelly Rd.</td>
<td>partly screened by vegetation</td>
</tr>
<tr>
<td>18</td>
<td>Residences (4) south of Bringelly Rd.</td>
<td>VS L L H</td>
<td>Residents</td>
<td>M/H H</td>
<td>View north to Bringelly Rd.</td>
<td>partly screened by vegetation</td>
</tr>
<tr>
<td>19</td>
<td>Residences (5) south of Bringelly Rd.</td>
<td>S L L M</td>
<td>Residents</td>
<td>M/H M</td>
<td>View north to Bringelly Rd.</td>
<td>partly screened by vegetation along road corridor</td>
</tr>
<tr>
<td>20</td>
<td>Residences (9) 300m to 2000m from Bringelly Road south side</td>
<td>M L L M</td>
<td>Residents</td>
<td>M M</td>
<td>View north to Bringelly Rd.</td>
<td>partly screened by vegetation along road corridor</td>
</tr>
<tr>
<td>21</td>
<td>Jersey Road travelling north</td>
<td>VS to M</td>
<td>Motorists</td>
<td>L/L M</td>
<td>View north down slope to intersection</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Employment place (market gardens) north of Bringelly Rd.</td>
<td>S L M L L</td>
<td>Workers</td>
<td>L L</td>
<td>View south from market gardens to Bringelly Rd.</td>
<td>located on embankment</td>
</tr>
<tr>
<td>23</td>
<td>Residences (9) &amp; market garden north of Rossmore Ave. West</td>
<td>S L L M</td>
<td>Residents &amp; workers</td>
<td>M M</td>
<td>Views south to Bringelly Rd.</td>
<td>partly screened by vegetation</td>
</tr>
<tr>
<td>24</td>
<td>May Av travelling south</td>
<td>S S M M</td>
<td>Motorists</td>
<td>L/L M</td>
<td>View south filtered through woodland vegetation</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Residences (3) north of Bringelly Rd.</td>
<td>S L V L L</td>
<td>Residents</td>
<td>M/H M</td>
<td>Views south to Bringelly Rd.</td>
<td>partly screened by vegetation</td>
</tr>
<tr>
<td>26</td>
<td>Private sports field &amp; recreation building north of Bringelly Rd.</td>
<td>VS M M H</td>
<td>Facilities users</td>
<td>L/M M/H</td>
<td>Open views south to Bringelly Rd.</td>
<td></td>
</tr>
<tr>
<td>REF NO.</td>
<td>KEY POINTS / GROUP OF VIEWPOINTS</td>
<td>APPROX. VIEW DISTANCE</td>
<td>APPROX. PERIOD OF VIEWING</td>
<td>MAGNITUDE OF VISIBILITY</td>
<td>CATEGORY OF VIEWER</td>
<td>VIEWER SENSITIVITY</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------</td>
<td>-----------------------</td>
<td>---------------------------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>27</td>
<td>Residence (1) north of Bringelly Rd.</td>
<td>VS L VL M</td>
<td>Residents</td>
<td>M/H</td>
<td>M/H</td>
<td>View south to Bringelly Rd.</td>
</tr>
<tr>
<td>28</td>
<td>Residences (3) south of Bringelly Rd.</td>
<td>VS L VL M</td>
<td>Residents</td>
<td>M/H</td>
<td>M/H</td>
<td>View north to Bringelly Rd.</td>
</tr>
<tr>
<td>29</td>
<td>Masterfield St. travelling north</td>
<td>VS to S M M</td>
<td>Motorists</td>
<td>L</td>
<td>L/M</td>
<td>View north to Bringelly Rd. enclosed by vegetation &amp; residences</td>
</tr>
<tr>
<td>30</td>
<td>Residences (10) south of Bringelly Rd.</td>
<td>S L L M</td>
<td>Residents</td>
<td>M/H</td>
<td>M/H</td>
<td>Views north to Bringelly Rd. partly screened by trees &amp; buildings</td>
</tr>
<tr>
<td>31</td>
<td>Residence (9) adjoining Masterfield St. south of Bringelly Rd.</td>
<td>M L L M</td>
<td>Residents</td>
<td>M</td>
<td>M</td>
<td>Views north from ridge to Bringelly Rd. partly screened by vegetation in road corridor</td>
</tr>
<tr>
<td>32</td>
<td>Residences (5) south of Bringelly Rd.</td>
<td>VS L L H</td>
<td>Residents</td>
<td>H</td>
<td>H</td>
<td>Views north to Bringelly Rd. filtered by trees in road corridor</td>
</tr>
<tr>
<td>33</td>
<td>Allenby Rd. travelling north</td>
<td>VS to S M M</td>
<td>Motorists</td>
<td>L</td>
<td>L/M</td>
<td>View north down slope to Bringelly Rd. is enclosed by vegetation &amp; buildings</td>
</tr>
<tr>
<td>34</td>
<td>Rossmore Pony Club and open space picnic area adjoining Allenby Rd.</td>
<td>VS L L H</td>
<td>Pony Club event participants</td>
<td>M/H</td>
<td>H</td>
<td>Views north to Bringelly Rd. intersection partly screened by trees</td>
</tr>
<tr>
<td>35</td>
<td>Residences (4) north of Bringelly Rd.</td>
<td>VS L L H</td>
<td>Residents</td>
<td>H</td>
<td>H</td>
<td>Views south to Bringelly Rd. filtered by trees in road reserve</td>
</tr>
<tr>
<td>36</td>
<td>Church St. travelling south</td>
<td>VS to S M M</td>
<td>Motorists</td>
<td>L</td>
<td>L/M</td>
<td>View south to Bringelly Rd. focussed by trees in road corridor &amp; adjoining properties</td>
</tr>
<tr>
<td>37</td>
<td>Residences (4) north of Rossmore Av. West</td>
<td>S L L M</td>
<td>Residents</td>
<td>M</td>
<td>M</td>
<td>Views south to Bringelly Rd. partly screened by trees</td>
</tr>
<tr>
<td>38</td>
<td>Bellfield College north of Rossmore Av. West</td>
<td>S M M M Students &amp; teachers</td>
<td>L</td>
<td>L/M</td>
<td>View south upslope to Bringelly Rd.</td>
<td></td>
</tr>
</tbody>
</table>
Figure 3.3.2 Visual Envelope Analysis of Bringelly Road (Central Section)
<table>
<thead>
<tr>
<th>REF NO.</th>
<th>KEY EMPLOYEES / GROUPS OF VIEWPOINT</th>
<th>APPROX. VIEW</th>
<th>APPROX. DISTANCE</th>
<th>RELATIVE NO. OF VIEWERS</th>
<th>MAGNITUDE OF VISIBILITY</th>
<th>CATEGORY OF VIEWER</th>
<th>VISUAL IMPACT LEVEL</th>
<th>COMMENTS</th>
</tr>
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<tbody>
<tr>
<td>39</td>
<td>Residences (4) north of Bringelly Rd.</td>
<td>S</td>
<td>L L M</td>
<td>Residents L/M M</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
<td></td>
<td></td>
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<tr>
<td>40</td>
<td>Residences (2) south of Bringelly Rd.</td>
<td>S</td>
<td>L VL L</td>
<td>Residents L/M L/M</td>
<td>View north to Bringelly Rd. partly screened by trees in road corridor</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>41</td>
<td>Residences (2) south of Bringelly Rd.</td>
<td>VS</td>
<td>L VL M</td>
<td>Residents M/H M/H</td>
<td>View north to Bringelly Rd. partly screened by trees in road corridor</td>
<td></td>
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<tr>
<td>42</td>
<td>Employment facility (Rossmore Veterinary Hospital) &amp; residence south of Bringelly Rd.</td>
<td>VS</td>
<td>M L M</td>
<td>Employees, customers &amp; residents M M</td>
<td>View north to Bringelly Rd. partly screened by trees</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>43</td>
<td>Rossmore Public School south of Bringelly Rd.</td>
<td>VS</td>
<td>M M H</td>
<td>Teachers (9) &amp; students (190) M/H H</td>
<td>Views north from school buildings &amp; grounds across Bringelly Rd. to Rossmore Village shops partly screened by trees</td>
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<tr>
<td>44</td>
<td>Rossmore Village Shops (3) &amp; service station north of Bringelly Rd.</td>
<td>VS</td>
<td>M M H</td>
<td>Shoppers &amp; employees M/H H</td>
<td>Views south across Bringelly Rd. to Rossmore Village shops partly screened by trees</td>
<td></td>
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<tr>
<td>45</td>
<td>North Av. travelling south</td>
<td>VS to S</td>
<td>S M M</td>
<td>Motorists L L/M M</td>
<td>View south to Bringelly Rd. contained by trees in road corridor</td>
<td></td>
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<tr>
<td>46</td>
<td>Residence (1) north of Bringelly Rd.</td>
<td>VS</td>
<td>L VL M</td>
<td>Residents M/H M/H</td>
<td>View south to Bringelly Rd. partly screened by trees in road corridor</td>
<td></td>
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<td>47</td>
<td>Residences (8) north of Bringelly Rd.</td>
<td>VS</td>
<td>L L H</td>
<td>Residents M/H H</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>48</td>
<td>Employment place (poultry production) north of Bringelly Rd.</td>
<td>S</td>
<td>M L L</td>
<td>Workers L L</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
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<tr>
<td>49</td>
<td>Residences (8) adjoining Rossmore Av. north of Bringelly Rd.</td>
<td>S</td>
<td>L L M</td>
<td>Residents M M</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>50</td>
<td>Glen Allen Rd. travelling south</td>
<td>VS to S</td>
<td>S M M</td>
<td>Motorists L L/M M</td>
<td>View south to Bringelly Rd. enclosed by trees</td>
<td></td>
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<tr>
<td>51</td>
<td>Residences (7) south of Bringelly Rd.</td>
<td>VS</td>
<td>L VL M</td>
<td>Residents H M/H H</td>
<td>Views north partly screened by trees in road corridor</td>
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<tr>
<td>52</td>
<td>Residence (1) south of Bringelly Rd.</td>
<td>S</td>
<td>L VL L</td>
<td>Residents M L/M M</td>
<td>View north obscured by trees</td>
<td></td>
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<td>53</td>
<td>Residences (6) north of Bringelly Rd.</td>
<td>VS</td>
<td>L L H</td>
<td>Residents M/H H</td>
<td>View south to Bringelly Rd. partly screened by trees in road corridor</td>
<td></td>
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<td>54</td>
<td>Residence west of King St.</td>
<td>S</td>
<td>L VL L</td>
<td>Residents L/M M/L M</td>
<td>View south to Bringelly Rd. contained by trees in road corridor</td>
<td></td>
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<tr>
<td>55</td>
<td>King St. travelling south</td>
<td>VS to S</td>
<td>S M M</td>
<td>Motorists L M/M M</td>
<td>Views south to Bringelly Rd.</td>
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<td>56</td>
<td>Employment place (motor mechanics workshop) north of Bringelly Rd.</td>
<td>VS</td>
<td>M L M</td>
<td>Employees L L/M M</td>
<td>Views south to Bringelly Rd. partly blocked by fencing</td>
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<td></td>
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<tr>
<td>57</td>
<td>Employment place south of Bringelly Rd.</td>
<td>S</td>
<td>M L L</td>
<td>Workers L L</td>
<td>Views north to Bringelly Rd. partly blocked by roadside vegetation &amp; buildings</td>
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<tr>
<td>58</td>
<td>Residence (1) south of Bringelly Rd.</td>
<td>S</td>
<td>L VL L</td>
<td>Residents M L/M M</td>
<td>View north to Bringelly Rd. partly blocked by vegetation</td>
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<tr>
<td>59</td>
<td>Residences (3) west of Eastwood Rd.</td>
<td>M</td>
<td>L VL L</td>
<td>Residents L/M M/L M</td>
<td>View north to Bringelly Rd. partly blocked by trees in paddocks &amp; along road corridor</td>
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<tr>
<td>60</td>
<td>Residences (11) &amp; associated agricultural employment places south of Bringelly Rd.</td>
<td>VS</td>
<td>L L H</td>
<td>Residents &amp; workers M/H H</td>
<td>Views north to Bringelly Rd. partly screened by trees in road corridor</td>
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<tr>
<td>61</td>
<td>Residences (11) north of Bringelly Rd.</td>
<td>VS</td>
<td>L L H</td>
<td>Residents H M/H M</td>
<td>View south to Bringelly Rd. partly screened by trees in road corridor</td>
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<td>REF NO.</td>
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<td>CATEGORY OF VIEWER</td>
<td>MAGNITUDE OF VISIBILITY</td>
<td>RELATIVE NO. OF VIEWERS</td>
<td>VISUAL IMPACT LEVEL</td>
<td>COMMENTS</td>
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<tr>
<td>62</td>
<td>Kelly St. travelling south</td>
<td>VS to S</td>
<td>M</td>
<td>M</td>
<td>Motorists</td>
<td>L</td>
<td>L/M</td>
<td>View south upslope to Bringelly Rd. partly screened by buildings, trees in road corridor &amp; rising landform</td>
</tr>
<tr>
<td>63</td>
<td>Residences (6) adjoining Kelly Street</td>
<td>S</td>
<td>L</td>
<td>L</td>
<td>Residents</td>
<td>M</td>
<td>M</td>
<td>Views south to Bringelly Rd. partly screened by trees in road corridor &amp; buildings</td>
</tr>
<tr>
<td>64</td>
<td>Employment place (agriculture &amp; horticulture) north of Bringelly Rd.</td>
<td>S</td>
<td>M</td>
<td>L</td>
<td>Workers</td>
<td>L</td>
<td>L</td>
<td>View south to Bringelly Rd. partly screened by trees &amp; buildings</td>
</tr>
<tr>
<td>65</td>
<td>Eastwood Rd. travelling north</td>
<td>VS</td>
<td>S</td>
<td>M</td>
<td>Motorists</td>
<td>L</td>
<td>L/M</td>
<td>View north to Bringelly Rd. intersection focused by trees &amp; buildings</td>
</tr>
<tr>
<td>66</td>
<td>Residences (1) east of Eastwood Rd. south of Bringelly Rd.</td>
<td>S</td>
<td>L</td>
<td>VL</td>
<td>Residents</td>
<td>M</td>
<td>L/M</td>
<td>View north to Bringelly Rd. partly screened by vegetation</td>
</tr>
<tr>
<td>67</td>
<td>Dickson Rd. travelling north</td>
<td>VS to S</td>
<td>S</td>
<td>M</td>
<td>Motorists</td>
<td>L</td>
<td>L/M</td>
<td>View north to Bringelly Rd. focussed by trees &amp; buildings</td>
</tr>
<tr>
<td>68</td>
<td>Residences (1) east of Dickson Rd. &amp; south of Bringelly Road</td>
<td>S</td>
<td>L</td>
<td>VL</td>
<td>Residents</td>
<td>M</td>
<td>L/M</td>
<td>View north to Bringelly Rd. focussed by trees &amp; buildings</td>
</tr>
<tr>
<td>69</td>
<td>Residences (2) south of Bringelly Rd.</td>
<td>VS</td>
<td>L</td>
<td>VL</td>
<td>Residents</td>
<td>H</td>
<td>M/H</td>
<td>Views north to Bringelly Road. mostly obscured by trees in road corridor</td>
</tr>
<tr>
<td>70</td>
<td>Fourth Ave. travelling south</td>
<td>VS to M</td>
<td>S</td>
<td>M</td>
<td>Motorists</td>
<td>L</td>
<td>L/M</td>
<td>View south to Bringelly Rd. contained by vegetation along drainage lines to east</td>
</tr>
<tr>
<td>71</td>
<td>Residences (6) &amp; employment place (Norbury Farm Animal Shelter) north of Bringelly Rd.</td>
<td>VS</td>
<td>L</td>
<td>L</td>
<td>Residents &amp; workers</td>
<td>M/H</td>
<td>H</td>
<td>Views south to Bringelly Rd. partly screened by trees</td>
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Figure 3.3.3 Visual Envelope Analysis of Bringelly Road (Eastern Section)
<table>
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<tr>
<th>REF NO.</th>
<th>KEY VIEWPOINTS / GROUPS OF VIEWPOINTS</th>
<th>APPROX. VIEW DISTANCE</th>
<th>APPROX. PERIOD OF VIEW</th>
<th>RELATIVE NO. OF VIEWERS</th>
<th>MAGNITUDE OF VISIBILITY</th>
<th>CATEGORY OF VIEWER</th>
<th>VIEWER SENSITIVITY</th>
<th>VISUAL IMPACT LEVEL</th>
<th>COMMENTS</th>
</tr>
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<tbody>
<tr>
<td>72</td>
<td>Recreation facilities (WV Scott Memorial Park) include playing field &amp; amenities block north of Bringelly Rd.</td>
<td>VS M L M</td>
<td>Spectators and team players</td>
<td>L/M M</td>
<td>View north south across playing field to Bringelly Rd./Edmondson Av. Intersection</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>73</td>
<td>Residences (3) south of Bringelly Rd.</td>
<td>VS L VL M</td>
<td>Residents</td>
<td>M/H M/H</td>
<td>View north to Bringelly Road partly screened by trees in road corridor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>Employment place (Annabelle Early Learning Centre) south of Bringelly Rd.</td>
<td>VS M M H</td>
<td>90 Pre school children and carers</td>
<td>L/M M/H</td>
<td>View north from long day care centre to Bringelly Rd.</td>
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<tr>
<td>75</td>
<td>Employment place (farm machinery maintenance) on west of Rickard Rd.</td>
<td>VS M L M</td>
<td>Workers</td>
<td>L L/M</td>
<td>Employment place with view looking south and south east toward intersection.</td>
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<td>76</td>
<td>Residences (3) adjoining Rickard Rd. south of Bringelly Rd.</td>
<td>S L VL L</td>
<td>Residents</td>
<td>L/M L/M</td>
<td>View north to Bringelly Rd. partly screened by trees and buildings</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>77</td>
<td>Rickard Road travelling north</td>
<td>VS to S</td>
<td>Motorists</td>
<td>L L/M</td>
<td>View north downslope to Bringelly Rd. focussed by trees in road corridor</td>
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<td>78</td>
<td>Residence (1) south of Bringelly Rd.</td>
<td>VS L VL M</td>
<td>Residents</td>
<td>M/H M/H</td>
<td>View north to Bringelly Rd. from side of property</td>
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<td></td>
<td></td>
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<tr>
<td>79</td>
<td>Edmondson Av. travelling south</td>
<td>VS to S</td>
<td>Motorists</td>
<td>L L/M</td>
<td>View south across playing field to Bringelly Rd.</td>
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<tr>
<td>80</td>
<td>Residences (2) north of Fifth Av.</td>
<td>M L VL L</td>
<td>Residents</td>
<td>M L/M</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
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<tr>
<td>81</td>
<td>Residence (1) south of Fifth Av. north of Bringelly Rd.</td>
<td>S L VL L</td>
<td>Residents</td>
<td>M L/M</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
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<td></td>
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<tr>
<td>82</td>
<td>Residences (6) north of Bringelly Rd.</td>
<td>VS L L L</td>
<td>Residents</td>
<td>M/H</td>
<td>View south to Bringelly Rd. partly screened by trees in road corridor</td>
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<tr>
<td>83</td>
<td>Employment place (fuel depot) and residences (2) south of Bringelly Rd.</td>
<td>VS M M H</td>
<td>Employees &amp; Residents</td>
<td>M/H</td>
<td>View north to Bringelly Rd.</td>
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<tr>
<td>84</td>
<td>Residences within 100m of Bringelly Road on south side.</td>
<td>VS L VL M</td>
<td>Residents</td>
<td>M/H M/H</td>
<td>Group of two houses with frontage to Bringelly Road surrounded by dense vegetation looking north.</td>
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<td>85</td>
<td>Residences (3) south of Bringelly Rd.</td>
<td>S L VL M</td>
<td>Residents</td>
<td>M M</td>
<td>View north to Bringelly Rd. partly screened by trees</td>
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<tr>
<td>86</td>
<td>Community Centre south of Bringelly Rd.</td>
<td>VS M L M</td>
<td>Visitors &amp; Community Centre staff</td>
<td>M/H</td>
<td>View north to Bringelly Road</td>
<td></td>
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<tr>
<td>87</td>
<td>Browns Rd. travelling south</td>
<td>VS to M</td>
<td>Motorists</td>
<td>L L/M</td>
<td>View south to Bringelly Rd. intersection confined by trees adjoining Browns Rd.</td>
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<td>88</td>
<td>Residence (1) north of Bringelly Rd.</td>
<td>S L VL L</td>
<td>Residents</td>
<td>M L/M</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
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<tr>
<td>89</td>
<td>Residence (1) north of Bringelly Rd.</td>
<td>S L VL L</td>
<td>Residents</td>
<td>M L/M</td>
<td>View south to Bringelly Rd. partly screened by trees</td>
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<tr>
<td>90</td>
<td>Residences (8) north of Bringelly Rd.</td>
<td>VS L L H</td>
<td>Residents and workers</td>
<td>M/H</td>
<td>View south to Bringelly Rd. partly screened by trees &amp; buildings</td>
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<tr>
<td>91</td>
<td>Residences (8) south of Bringelly Rd.</td>
<td>VS L L H</td>
<td>Residents</td>
<td>M/H</td>
<td>View north to Bringelly Rd. partly screened by trees in road corridor</td>
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<tr>
<td>92</td>
<td>Employment place (truck depot south of Bringelly Rd.</td>
<td>S M L L</td>
<td>Workers</td>
<td>L L</td>
<td>View north to Bringelly Rd. from north side of buildings</td>
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<td>Residences (3) south of Bringelly Road west of Cowpasture Rd.</td>
<td>S L L M</td>
<td>Residents</td>
<td>M M</td>
<td>View north to Bringelly Rd. and road bridge over water supply canal</td>
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<td>REF. NO.</td>
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<td>CATEGORY OF VIEWER</td>
<td>MAGNITUDE OF VISIBILITY</td>
<td>SENSITIVITY</td>
<td>VISUAL IMPACT LEVEL</td>
<td>COMMENTS</td>
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<tr>
<td>94</td>
<td>Cowpasture Road travelling north</td>
<td>VS to S</td>
<td>S</td>
<td>L</td>
<td>M/H</td>
<td>M</td>
<td>View north to Bringelly Rd. partly blocked by trees &amp; buildings adjoining Cowpasture Rd</td>
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<td>95</td>
<td>Residence on hill top north of Bringelly Rd.</td>
<td>VS</td>
<td>L</td>
<td>VL</td>
<td>M</td>
<td>H</td>
<td>M/H</td>
<td>Panoramic views hilltop house include Bringelly Rd. to south &amp; east</td>
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<td>96</td>
<td>Residence (1) south of Bringelly Rd.</td>
<td>VS</td>
<td>L</td>
<td>VL</td>
<td>M</td>
<td>H</td>
<td>M/H</td>
<td>View north across Bringelly Rd. to Western Sydney Parklands entry framed by trees</td>
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<td>97</td>
<td>Western Sydney Parklands entry north of Bringelly Rd.</td>
<td>VS</td>
<td>M</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>M/H</td>
<td>Panoramic views east to the Sydney CBD &amp; part of Bringelly Rd.</td>
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<td>Residence (1) west of Old Cowpasture Rd. north of Bringelly Rd.</td>
<td>S</td>
<td>L</td>
<td>VL</td>
<td>L</td>
<td>H</td>
<td>M</td>
<td>View south upslope to Bringelly Rd.</td>
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<td>99</td>
<td>Residences (2) north of Bringelly Rd.</td>
<td>VS</td>
<td>L</td>
<td>VL</td>
<td>M</td>
<td>H</td>
<td>M/H</td>
<td>View south east Group across Bringelly Rd. to slopes with grass and tree cover</td>
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<td>100</td>
<td>Residence (1) south of Bringelly Rd.</td>
<td>S</td>
<td>L</td>
<td>VL</td>
<td>L</td>
<td>M</td>
<td>M/H</td>
<td>View north to Bringelly Rd.</td>
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<tr>
<td>101</td>
<td>Residence (1) south of Bringelly Rd.</td>
<td>VS</td>
<td>L</td>
<td>VL</td>
<td>M</td>
<td>H</td>
<td>M/H</td>
<td>View north to Bringelly Rd.</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>Residences (3) north of Bringelly Rd.</td>
<td>VS</td>
<td>L</td>
<td>VL</td>
<td>M</td>
<td>M/H</td>
<td>M/H</td>
<td>View north to Bringelly Rd.</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>Residences (2) north of Bringelly Rd.</td>
<td>S</td>
<td>L</td>
<td>VL</td>
<td>L</td>
<td>M</td>
<td>L/M</td>
<td>View south to Bringelly Rd. from elevated landform</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>Cowpasture Rd. travelling south</td>
<td>VS to S</td>
<td>S</td>
<td>H</td>
<td>M/H</td>
<td>L</td>
<td>M</td>
<td>View south to signalised Bringelly Rd. blocked on eastern side by residential fencing</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>Camden Valley Way travelling north east</td>
<td>VS to S</td>
<td>S</td>
<td>H</td>
<td>M/H</td>
<td>L</td>
<td>M</td>
<td>View north to signalised intersection with Bringelly Rd. is defined by commercial development on eastern side</td>
<td></td>
</tr>
</tbody>
</table>
3.4 VISUAL IMPACT SIGNIFICANCE SUMMARY

Results of the Visual Impact assessment of each of the Key Viewpoints were combined to generate an overall rating of Visual Impact Significance for individual sections of the Bringelly Road corridor.

The significance rating of these individual sections is shown within Figure 3.4.1 below.

![Figure 3.4.1 Visual Impact Significance Summary](image)
4.0 IMPACT MITIGATION STRATEGY

Introduction

While upgrading of Bringelly Road will create significant visual impacts for residents living close to the road, it will also create opportunities to achieve positive landscape and urban design outcomes in the longer term. Coordination of the road design with landscape considerations can maximise the retention of existing trees that may be supplemented by new planting as part of the landscape works that will form part of the road upgrade program. The objective is to achieve a balance between strategies that mitigate the potential visual impact of Bringelly Road on adjoining residents and those initiatives that optimise the visual experience of motorists. It should be noted that while the mitigation measures are focused on minimising the potential visual impact on existing residents, they will also be effective as the adjoining land uses change within the South West Growth Centre.

Although maintaining and supplementing roadside vegetation is the most appropriate for the majority of the road corridor there are some sections where existing views should be maintained and enhanced. In particular the eastern section of Bringelly Road that runs through the Western Sydney Parklands (Landscape Character Zones 9 and 10) provides attractive regional views where the road crosses a major ridgeline. Road design and associated landscape works in this section should maintain the existing open long distance views from the ridge top. Careful design will be needed to minimise the potential visual impact of cut and fill slopes that will be required as part of the road upgrade.

Retention of roadside trees

Remnant trees along most sections of Bringelly Road create an avenue character that strongly defines the road corridor for motorists and often provides screening to views from adjoining residences. Consequently the retention of the existing roadside trees can provide a valuable mitigation measure to minimise the potential visual impact of the road upgrading project.

A major benefit of retaining existing roadside trees is that they contribute immediately to the visual quality of the upgraded road. Trees planted as part of the landscape works will take at least 20 years to create an avenue character that is comparable to the existing situation. In addition the existing roadside vegetation provides visual screening of views to the road from adjoining residences in many situations. Supplementary tree and shrub planting can provide complete screening where necessary.

The age and condition of remnant trees adjoining the road vary significantly. Consequently a detailed assessment will be required of the stands to be retained to identify any trees that present a significant risk to motorists, cyclists or pedestrians and therefore need to be removed. Similarly the retained trees will need to be assessed to determine where trimming and tree surgery is required for public safety reasons.

Landscape treatment in road corridor

Design of the landscape works to be carried out as part of the road upgrade will need to achieve two major objectives. Firstly it should enhance the visual experience for road users. Secondly it mitigates the potential visual impact on people living, working, shopping and participating in recreation activities in areas adjoining the road corridor. In most situations the second objective will involve vegetation, and possibly earth mounding in some situations, to screen potential views of the road and traffic travelling along it.

The landscape treatment needs to respond to planned changes to adjoining land uses associated with the proposed South West Growth Centre. This will result in the existing predominantly rural landscape character being changed to an urban character that is dominated by buildings and other structures. Landscape works together with retention of roadside trees will need to provide an enjoyable visual experience for road users even when future urban development extends along most of the road corridor edge.

A key requirement in achieving this objective will be the availability of adequate space within the road corridor for effective landscape works. In most situations this will require a planting strip that is at least 10 metres wide on both sides of the road corridor where possible. In situations where the road passes through villages or shopping zones the design of landscape and urban elements will need to be in response to the particular situation.

Earthworks Design

The upgrading project will involve extensive earthworks to achieve the necessary horizontal and vertical alignments. The potential visual impact of these earthworks can be minimised by careful design that integrates them with the adjoining landforms.

If retaining walls are required in combination with the earthworks they will form significant new elements in the visual character of the road corridor. Design of any retaining walls required can mitigate the potential visual impact by ensuring that they make a positive contribution to the visual quality of the road corridor, not only for motorists but also adjoining residents. A major consideration in mitigating the potential visual impact of retaining walls is careful consideration of their context. In the case of Bringelly Road the context may range from urban areas associated with commercial centres to public open space recreation areas such as the Western Sydney Parklands. The most appropriate design solution for each situation will vary significantly and therefore requires a thorough design process.

Bridges and Culverts

Replacement of the bridge over South Creek and the Sydney Water Supply canal as well as culverts at Kemps Creek and other drainage lines will create a series of new elements within the road corridor. Design of these structures and associated earthworks can significantly mitigate their potential visual impact and make a positive contribution to the visual quality of the road corridor. While all of these structures, with the exception of the Sydney Water Supply canal crossing, will be located in riparian zones their context varies. Design will therefore need to respond to the individual context of each structure.
4.1 MITIGATION RECOMMENDATIONS

Specific recommendations to mitigate the potential visual impact of the Bringelly Road upgrade are presented in tables in the following pages and the individual sections of road identified in Figures 4.1.1, 4.1.2 and 4.1.3.

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Landscape and urban design should be integrated with road intersection design to reinforce the intersection area as a nodal point.</td>
</tr>
<tr>
<td>2</td>
<td>Landscape treatment along northern edge to maintain long distance views from the road while minimising visibility of the road from adjoining residences.</td>
</tr>
<tr>
<td></td>
<td>Landscape treatment along southern edge to include screen planting to minimise potential views of road from residences.</td>
</tr>
<tr>
<td>3</td>
<td>Existing trees to be retained in road corridor where possible. Additional tree and shrub planting to minimise visibility of the road from adjoining residences.</td>
</tr>
<tr>
<td>4</td>
<td>Views from road across market gardens and grazing on flood plain to be maintained.</td>
</tr>
<tr>
<td>5</td>
<td>Enclosed landscape character of the creek corridor to be retained and reinforced by additional tree planting where appropriate.</td>
</tr>
<tr>
<td>6</td>
<td>Semi-enclosed landscape character to be maintained by strategic tree planting along road corridor.</td>
</tr>
</tbody>
</table>

Figure 4.1.1 - Mitigation Measures 1-6
<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Urban and landscape design of Rossmore commercial centre should create an integrated character to this nodal point and alert motorists as they approach it. Views from road to commercial development to be framed by tree planting in road corridor. Views to road from the school to be minimised by landscape treatment in road corridor. Existing trees to be retained as much as possible.</td>
</tr>
<tr>
<td>8</td>
<td>Enclosed visual character of road corridor to be maintained and reinforced where necessary by new planting associated with road upgrade. Shrub planting where necessary to screen views of the road from adjoining residences. Emphasis to be placed on ecological values of remnant vegetation and new planting.</td>
</tr>
<tr>
<td>9</td>
<td>Existing trees to be retained as much as possible. Semi-enclosed landscape character to be maintained by strategic tree planting along road corridor.</td>
</tr>
</tbody>
</table>

Figure 4.1.2 - Mitigation Measures 7-9
<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Recommendations</th>
</tr>
</thead>
</table>
| 10    | Open view from road across sports field to be maintained and framed by strategic tree planting  
Existing trees to be retained where possible |
| 11    | Enclosed visual character of road corridor to be maintained and reinforced where necessary by new planting associated with road upgrade  
Shrub planting where necessary to screen views of the road from adjoining residences  
Emphasis to be placed on ecological values of remnant vegetation and new planting |
| 12    | Views from road to the water supply canal and slopes of Western Sydney Parklands to be maintained in landscape design  
Cultural landscape character to be maintained and reinforced by additional tree planting, including Araucarias  
Views to intersection from residences to be screened as much as possible |
| 13    | Visual enclosure of roadside cut slopes to be maintained |
| 14    | Panoramic views from road for motorists travelling east should be maintained with limited tree planting strategically placed in relation to key views |
| 15    | Views to road from adjoining areas to be minimised by landscape treatment including tree and shrub planting |

**Figure 4.1.3 - Mitigation Measures 10 - 15**
5.0 URBAN DESIGN VISION, OBJECTIVES AND PRINCIPLES

RTA’s objective for the urban design of Bringelly Road is to improve urban landscape and amenity and to guide development adjacent to the road corridor. The following Urban Design Vision, Objectives and Principles provide a design framework for the concept design.

5.1 URBAN DESIGN VISION FOR BRINGELLY ROAD

Bringelly Road will be a key orientation road for the south-west region, facilitating vital east-west and north-south vehicular and pedestrian movements for existing residents, the future South West Growth Centre community and regional Sydney road users. The road journey will comprise a variety of experiences responding to the adjacent existing and future built and landscape context providing legibility for the community. Experiences will include a remnant woodland character; major town and smaller village centres; riparian/creek zones and open grassed lands offering views to significant cultural and heritage features such as the Sydney Water Supply Corridor and the Western Sydney Parklands.

5.2 URBAN DESIGN OBJECTIVES AND PRINCIPLES

The following objectives and their corresponding principles have been developed during the design:

Objective: Protect, maintain and enhance existing views, heritage, cultural and roadside landmarks and values.

- Recognise and incorporate existing heritage or cultural items.
- Maintain views to built form to establish a sense of place along Bringelly Road.
- Place power lines underground where possible/feasible to enhance views from the highway and maximise tree planting opportunities.
- Conserve existing prominent landscape features and significant views and create a distinct identifiable character for the South West Growth Centre.

- Incorporate design elements that enhance legibility (example below).

- The use of a feature wall with text of street names and exotic plantings create a legibility and sense of place in the road environment (photo: Cowpasture Road)

- Bunya Pines located on Bringelly Road at the vicinity of the Sydney Water Supply Canal

- Remnant woodland retained in median on Camden Valley Way with wire rope barrier

- Flatten batters as much as possible.
- Make drainage elements (ponds, basins and the like) as informal and “natural” as possible.

Objective: Sensitively fit the Bringelly Road upgrade into the existing (and future desired) built and natural context.

- Retain and enhance identified landscape character zones (LCZs).
- Minimise the visual and physical impact of road widening by retaining existing remnant woodland trees and providing for substantial avenue planting wherever possible.

- Avoid visual coalescence between the proposed village and town centres by providing landscaped buffers to reinforce the existing pattern of separation and change in character between the different locales.

- Enable integration of regional and district bus networks into the Bringelly Road road corridor. Incorporate bus priority measures to maximise bus speed. Maximise access to bus stops by locating them as close as possible to intersections.

- Avoid the need for noise walls by also allowing for planning/land use controls, such as adequate setbacks for development from the road corridor.

- Avoid estate boundary fences on the road corridor. Instead provide a consistent design to boundaries to reflect the proposed character of the town centre or the road corridor.

Objective: Provide a distinctive, legible and visible gateway setting for Leppington Town Centre.

- Provide a more urban character for this section of Bringelly Road, reinforcing its role as a Town Centre through route, with more formal structured plantings that distinguish this section from the remnant woodland character of other sections.
- Encourage pedestrian activity by creating a boulevard character comprising shared paths and pedestrian paths and intersections at every 500 metres with potential for pedestrian bridges to be incorporated at key pedestrian crossing points (for example Rickard Road).
- Ensure views are retained along north-south streets to the Town Centre for legibility and orientation.
- Prohibit driveway access along the Bringelly Road frontage. Buildings along this edge should be accessed from secondary roads from north-south local roads.

Objective: Facilitate the provision of a good urban design outcome for the future growth of the area

- Enable Bringelly Road to provide a dual role catering for both vehicular and pedestrian/cycle movements providing a safe and varied pedestrian and cyclist experience with good connections along and across the road.
- Encourage new development to provide an active street address and minimise rear fences along the road edges.

- A residential access road parallel to the arterial corridor facilitates an active street address (photo: Richmond Road)

- A more urban character for this section of Bringelly Road, reinforcing its role as a Town Centre through route, with more formal structured plantings that distinguish this section from the remnant woodland character of other sections.
Objective: Provide a simple and unified suite of road and roadside elements and details that contributes to and establishes a desired future character for Bringelly Road and are easily maintained.

Standard road elements may include road furniture (safety barriers, pedestrian fences, shared path fencing, bus stops, traffic management, signage, street lighting), retaining walls, bridges, shared paths and noise walls.

In particular some principles have been developed for the following:

**Noise Walls**
- Avoid requirement for noise walls by allowing for sufficient setback for new development. (Refer photo on page 35)
- If noise attenuation is required, consider mounds or wall / mound combination.
- Where only walls can be provided, provide a plain base panel design.
- Utilise feature panels in long expanses of wall to reduce the scale of walls and contrast the base panel design. Locate feature panels at intersections with the street, changes in vertical alignment and opposite pedestrian entry points.
- Maximise planting in front of walls as far as practicable.
- Provide a strong termination end treatment.

**Shared Paths**
- Where possible, provide a minimum 3.0 metre planted edge to all shared paths to provide separation of path users (cyclists in shoulder) from the road carriageway due to the 80 km/h proposed speed limits. Where this may impact remnant woodland, path can be located closer to the road to retain the remnant woodland.
- Where the shared path is less than 1.0 metre from the back of kerb incorporate width into shared path rather than having a narrow planting strip.
- Vary vertical and horizontal alignment to provide interest and amenity and retain remnant woodland.
- Minimise conflict at points such as where the path is bounded by walls or railings by providing markings designating cyclist versus pedestrian.

**Bus Stops**
- Consider incorporating bus bays to allow for traffic flow whilst buses are stopped at bus stops along Bringelly Road.
- Position bus stops to allow the shared path to continue behind.

**Fencing**
- Provide pedestrian fence with cyclist rail similar to Cowpasture Road example below on bridges and retaining walls where required.
- Where cyclist rail is not required ensure fencing detail matches.

**Retaining Walls**
- Minimise the use of retaining walls as far as practicable. However in some situations it may be better to have a low retaining wall to retain existing woodland vegetation.
- In residential contexts, for less visible locations facing away from Bringelly Road carriageway, and below the road level, utilise smooth faced blockwork in a colour that recedes visually.
- For more visible retaining walls facing Bringelly Road utilise materials appropriate to context - for urban areas utilise patterned concrete panels, or a combination of split-faced and smooth-faced blockwork. For more natural contexts/bushland utilise gabions above road level. At town centre locations where a distinctive high quality treatment is preferred, random natural stone facing or equivalent maybe utilised.
- Avoid use of shotcrete.
**Safety Screens**
- Provide screens that angle out from the bridge to open up the bridge spatial experience.
- Ensure screens extend the full length of the bridge to match the extent of the bridge parapets.
- Ensure the ends of the screen are tapered and provide a neat termination to the beginning of the road safety barrier.
- Ensure safety screens and posts are integral with the shape and form of the parapets, including the traffic barrier railing system and any skirting details hiding services or drainage pipes.
- Ensure the same screen detail is used for the length of Bringelly Road.

**Bridges**
- Provide simple and elegant structural elements with minimal environmental footprint.
- Minimise disturbance to creek bed and riparian vegetation zone.
- Optimise public amenity both on top and below the bridge in terms of visual and physical amenity.
- Optimise slenderness of the structure. (Figure 5.2.1)
- Minimise visual clutter.
- Incorporate DECCW, Sydney Water and Fisheries requirements.
- Review and apply ESD innovations where feasible.
- Maximise use of precast / prefabricated construction methods for better quality control, faster construction, optimum use of materials, re-use of moulds and less waste material.
- Separate the pedestrian/cycle shared path from the vehicular bridge and connect to any path systems running parallel to watercourses.
- Minimise the elevation of the road in relation to adjacent land form and land uses.
- Maximise natural light levels beneath bridges. (Figure 5.2.2)
- Locate bridge substructure away from creek. (Figure 5.2.3)
- Minimise visual intrusion especially vistas along the creek floor and nearby sensitive lands uses. (Figure 5.2.4)
- If required, noise walls on bridges should be transparent, smooth topped avoiding stepping, combined with mounding where space allows and screened by planting on the approaches.
- Carefully design bridge transitions and parapet elements.

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Cowpasture Road Bridge with separated cyclist and pedestrian markings.

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Cowpasture Road Bridge with separated cyclist and pedestrian markings.

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Cowpasture Road Bridge with separated cyclist and pedestrian markings.

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Cowpasture Road Bridge with separated cyclist and pedestrian markings.
Culverts

Refer to Figure 5.2.5 below
- Culvert headwall to disguise staggered setting out of standard precast units.
- Guardrail to extend beyond culvert headwalls and remain parallel to the kerb.
- Steel grating within the median to provide a light well to aid fish and fauna passage.

Refer to Figure 5.2.7 below
- Insitu concrete headwall provides an overhang to disguise precast culvert units.
- Guardrail setback from edge of shared path.

Figure 5.2.5

Figure 5.2.7
5.2.1 Future Development of Leppington Town Centre

The following principles have been developed to input into discussions with the Department of Planning during the project planning/design process. They are important as the built form and its relationship to Bringelly Road will have a significant impact on the character of the road and yet are outside the control of this Study. They are:

- Encourage future development to create a high quality street frontage with a dense built environment creating a strong built presence on Bringelly Road.
- Ensure active street address where buildings address Bringelly Road even if vehicular access is not from Bringelly Road.
- Do not allow carparking in the setback to Bringelly Road.
- Incorporate urban elements such as street lighting, signage and furniture to signify the Town Centre environment.
- Locate appropriate land uses adjacent to Bringelly Road which are less noise sensitive such as business park style commercial and civic uses.
- For noise sensitive land uses, ensure appropriate development controls are in place in terms of setbacks, building orientation, layout and building height controls to mitigate the need for physical noise attenuation measures.
- Ensure any perimeter fencing is visually permeable – opaque fencing is not to exceed 1.2 metres above ground and security fencing is to be 80% permeable.
- Facilitate wayfinding/decision making for those choosing to access the Town Centre rather than continue on Bringelly Road.

Example of a high quality street frontage for Civic buildings - Campbelltown Arts Centre.

High quality street frontage for car yards on O’Riordan Street in Alexandria with active street address.

Same building on O’Riordan Street - note articulation and modulation of the facade which creates an interesting and dynamic street address.

A commercial development on O’Riordan Street in Alexandria which houses three different companies. The strong high quality presence to the street with simple landscaped setback and interesting branding signage creates a positive urban environment in a vehicular dominated area.

Audi Headquarters located adjacent to the Eastern Distributor - this building creates a strong high quality aesthetic and a positive street address due to its contemporary design, windows/openings onto the freeway and quality of materials and finishes.

Examples of active street address in residential areas on Richmond Road and Henry Lawson Drive. The residential access road provides a visual and physical separation and avoids back fences and noise walls.
6.0  URBAN AND LANDSCAPE MASTERPLAN

The Bringelly Road Upgrade Masterplan (Figure 5.1.2 over page) comprises an overall strategy diagram which describes generally the urban and landscape design approach by landscape character precinct with a series of typical plans and sections (Figure 6.1.3 - 6.1.46) at a larger scale to further demonstrate the application of the principles. The Masterplan applies the urban and landscape design principles developed in Section 4.0 with the main design elements comprising:

- Retain/Protect remnant woodland trees in the median or on the edge of the carriageway, as far as practicable, to create an enclosed remnant woodland parkway experience, where this character currently exists.
- Utilise planting to screen existing residential to provide improved visual amenity.
- Retain open views through the use of scattered tree plantings and low level groundcovers, where this character is desirable.
- At Bringelly Village intersection (Jersey Road/Bringelly Road), provide more formal tree plantings to distinguish this journey decision point and provide legibility in the road experience.
- Maintain, restore and enhance the creek crossing experience and riparian areas at South Creek, Kemps Creek and Bonds Creek to distinguish the riparian experience in the road journey.
- At Rossmore Village, provide a Woodland Boulevard character, to distinguish the Rossmore Village precinct from the other remnant woodland parkway sections.
- At Leppington Town Centre, provide a formal structured Urban Boulevard character to distinguish Leppington Town Centre in the road journey.
- Relocate the WV Scott Memorial.
- Reinforce the cultural landscape of Araucarias (Bunya Pines) and the Sydney Water Supply Canal.
- Retain community access to the William Brown Memorial and Water Trough.
- Retain open views at Western Sydney Parklands entry – limit tree planting, provide grasses in keeping with rural character.
- Retain the spectacular panoramic views and vistas to the Blue Mountains and Sydney City Skyline from the ridgeline.
- Distinguish the gateway treatments to Bringelly Road at Cowpasture Road/ Camden Valley Way and The Northern Road from the rest of the corridor and the other roads in the region.
- Provide a hierarchy of treatments to the various scales of intersections which also relate to their contextual landscape setting.
- In the short term it is proposed to provide a shared path in the following locations (refer to Figure 6.1.1) in response to where the perceived need will be at: Leppington Town Centre (both sides), along the Western Sydney Parklands to link with the Regional Cycleway Network and on both sides of the road at Rossmore Village. In the long term as the South West Growth Centre develops to its full capacity, paths will be provided on both sides for the full length, excluding the section south east of Browns Road.
**Future Rossmore Village Centre**

*Location as per SWGC Structure Plan. Actual location to be either north or south of Bringelly Road subject to future planning.*
**Concept Design Description**

- Retain remnant woodland in median, as far as practicable, utilising wire rope barrier where necessary to meet safety requirements.
- Locate shared path a minimum of 3.0 metres from the Bringelly Road carriageway to maximise landscape width for low level shrubs/groundcovers and provide separation for cyclists and pedestrians from the 80km/h speed environment.
- Retain views out of road corridor by providing scattered tree plantings to road edge.

**Figure 6.1.2 PS1 - Plan**

**Figure 6.1.3 PS1 - Section at Ch. 233**
**Concept Design Description**

- Retain remnant woodland in median and along road edges to provide an enclosed character.
- Vary shared path alignment to maximise retention of remnant woodland.

---

**Figure 6.1.4 PS2 Plan**

- ** Existing Tree**
- **New Mass Tree Planting**
- **Groundcovers and Grasses**
- **Tree to be removed**
- **Road Centreline**
- **Shared Path**
- **Wire Rope Barrier**

**Figure 6.1.5 PS2 Section at Ch. 983**

- **min. 3.0 m**
- **min. 3.0 m**
- **9.0 m**
- **16.0 m**
- **9.0 m**
- **3.0 m**

**Figure 6.1.5 PS2 Section at Ch. 983**

- **Existing Tree**
- **New Mass Tree Planting**
- **Groundcovers and Grasses**
- **Tree to be removed**
- **Road Centreline**
- **Shared Path**
- **Wire Rope Barrier**

---

**URBAN + LANDSCAPE CONCEPT DESIGN**

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**HBO+EMTB WITH CORKERY CONSULTING**

**BRINGELLY ROAD UPGRADE: URBAN DESIGN + VISUAL ASSESSMENT REPORT**

**SEPTEMBER 2011 ISSUE D**
Concept Design Description
- Retain open views over floodplain by limiting tree planting. Provide some scattered tree plantings for shading of shared path.
- Ensure embankments are 4H:1V to maximise planting establishment and provide better fit to topography.
**Concept Design Description**

- Separate bridge carriageways to accentuate the creek crossing experience.
- Provide scattered mass tree plantings leading up to the bridge.
- Provide riparian plantings at the bridge to extend existing vegetation patterns.
**Concept Design Description**

- Retain remnant woodland along southern edge of boundary to screen residential adjacent.
- Minimise slope of the embankment - ensure maximum 3H:1V to enable plant establishment.
- Locate shared path a minimum of 3.0 metres from the Bringelly Road carriageway to maximise landscape width and provide separation for cyclists and pedestrians from the 80km/h speed environment.
- Provide new mass tree plantings along the road boundaries to provide screening to residential adjacent and provide amenity/shade for shared path users.

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**Figure 6.1.10 PS5 - Plan**

- Key Plan
- Concept Design Description
- Retain remnant woodland along southern edge of boundary to screen residential adjacent.
- Minimise slope of the embankment - ensure maximum 3H:1V to enable plant establishment.
- Locate shared path a minimum of 3.0 metres from the Bringelly Road carriageway to maximise landscape width and provide separation for cyclists and pedestrians from the 80km/h speed environment.
- Provide new mass tree plantings along the road boundaries to provide screening to residential adjacent and provide amenity/shade for shared path users.

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**Figure 6.1.11 PS5 - Section at Ch. 2583**

- Key Plan
- Concept Design Description
- Retain remnant woodland along southern edge of boundary to screen residential adjacent.
- Minimise slope of the embankment - ensure maximum 3H:1V to enable plant establishment.
- Locate shared path a minimum of 3.0 metres from the Bringelly Road carriageway to maximise landscape width and provide separation for cyclists and pedestrians from the 80km/h speed environment.
- Provide new mass tree plantings along the road boundaries to provide screening to residential adjacent and provide amenity/shade for shared path users.
Note: Two options have been presented for this particular location due to the uncertainty in whether the school will still be in this location by the time the road is actually developed as the Rossmore Village Centre may be re-located in the future. The second option is preferred in urban design terms as it retains significant remnant woodland.

Concept Design Description
- Provide formal street tree planting to road edges and median to enable an Urban Boulevard character to distinguish the Rossmore Village precinct from other road sections.
- Due to the lower speed limit of 60km/h, provide two layers of tree plantings either side of the shared path.
- Ensure line of sight to Village centre retail/commercial and Rossmore Public School is retained.
- Provide shared path access on both edges of the Bringelly Road corridor, located 3.0 metres from the Bringelly Road carriageway to provide a landscaped area.
**Concept Design Description**

- Retain remnant woodland in median utilising wire rope barrier to meet safety requirements.
- Supplement planting to road edges to enable a Woodland Boulevard character to distinguish the Rossmore Village precinct from other remnant woodland parkway sections. Due to lower speed limit of 60km/h, provide two layers of tree plantings either side of the shared path.
- Provide shared path access on both edges of the Bringelly Road corridor, locate 3.0 metres from Bringelly Road carriageway to provide a landscaped area.

**Figure 6.1.14 PS6 - Plan: Option 2**

**Figure 6.1.15 PS6 - Section: Option 2 at Ch. 3483**
Concept Design Description

- Shift alignment to the south to retain existing remnant woodland in the central median.
- Provide an “Island” of signature low level planting at the intersection to enable journey recognition.
- Supplement remnant woodland to retain and enhance enclosed woodland character.
PS8 Typical Plan and Section

Concept Design Description
- Retain remnant woodland in median and along road edges, utilising wire rope barrier to meet safety requirements.
- Supplement planting to road edges to enable an enclosed woodland character.

Figure 6.1.18 PS8 - Plan

Figure 6.1.19 PS8 - Section at Ch. 5183
**Groundcovers and Grasses**

**Tree to be removed**

**Scattered Shrubs**

**Road Centreline**

**Shared Path**

**Wire Rope Barrier**

---

**Figure 6.1.21 PS9 - Section at Ch. 5683**

**Concept Design Description**
- Provide scattered mass tree plantings to road edge to extend existing vegetation patterns and enable views out beyond the corridor.
- Provide shrub plantings in median to distinguish the approach/exit from/to Leppington Town Centre environs.

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**Figure 6.1.20 PS9 - Plan**

**Figure 6.1.21 PS9 - Section at Ch. 5683**
Concept Design Description

- Provide a formal structured urban boulevard character to distinguish the Leppington Town Centre part of the road journey.
- Minimise land take of road corridor to maximise width of land available for town centre development along this edge.
- A 90km/h design speed, 80km/h posted speed is a relatively high speed environment therefore the shared path has been set back to provide better amenity for pedestrians/cyclist and space for distinctive decorative town centre planting.
- Provide a row of trees in the median through provision of wire rope barriers.
- Provide a 3.0 metre planted verge adjacent to the road carriageway.
Concept Design
- Provide a formal structured urban boulevard character to distinguish this section of the road journey through Leppington Town Centre.
- Minimise land take of road corridor to maximise width of land available for town centre development along this edge.
- 90km/h design speed, 80km/h posted speed is a relatively high speed environment therefore the shared path has been set back to provide better amenity for pedestrians/cyclist and space for distinctive decorative town centre type planting.
- Provide a row of trees in the median through provision of wire rope barriers.
- Enable planting of a shared path adjacent to the carriageway with a 3.0 metre planted verge to road.
Concept Design

- Retain remnant woodland in median - utilise wire rope barrier to meet safety requirements.
- Provide minimum 3.0 metre low level planted zone between shared path and carriageway to ensure clear zone safety requirements are met.
- Provide new tree plantings to shared path outer edge to provide both shade and an enclosed character experience.
**PS13 Typical Plan and Section**

**Concept Design**
- Provide signature tree plantings of Araucaria cunninghamii, inspired by existing cultural heritage plantings of Bunya Pines to the south.
- Provide native grasses in the median to tie in with grasslands at Western Sydney Parklands to the north.
- Retain views to Sydney Water Canal and Western Sydney Parklands.
- If retaining walls are required to minimise impacts to tree roots, minimise the heights of the wall by combining with a batter slope.

![Figure 6.1.29 PS13 - Section at Ch. 8383](image)

Figure 6.1.29 PS13 - Section at Ch. 8383
Concept Design

- Vary shared path alignment to provide horizontal and vertical separation from the Bringelly Road carriageway.
- Provide native grass plantings to median to match Western Sydney Parklands landscape.
- Exposed rock preferred for the cutting otherwise architectural treatment such as gabion facing required.
Concept Design

- Retain open views over Western Sydney Parklands by utilising native grasses in median and along road edges.
- Vertically separate shared pathway on northern edge to provide better visual and physical amenity. The change in level will make pedestrians/cyclists feel separated from the vehicular level and provide a better fit to topography by stepping down the slope.
**Concept Design**

- Retain remnant woodland in road verges.
- Provide minimum 3.0 metre low level planted zone between shared path and road carriageway.
- Supplement with scattered tree plantings to ensure views to future Western Sydney Parklands between trees are retained, located on the outer edge of the shared path to provide shade.