VEGETATION MANAGEMENT PLAN

BATHURST CITY COUNCIL

APRIL 2003

Prepared for

BATHURST CITY COUNCIL

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PLAN OBJECTIVES

The objectives of the Vegetation Management Plan are to:

- Provide a working tool for Council to manage the vegetation resource and plan for the future.
  - Provide the foundation and set the direction for developing specific vegetation management actions or work plans by Council, key stakeholders and the community.
  - Strengthen the cultural and environmental values of native and exotic vegetation within Bathurst City through coordinated and sustainable vegetation management and planning.

The VMP primarily focuses on land owned and controlled by Council but is inclusive of areas outside these bounds due to the interaction of natural process beyond given boundaries. Therefore vegetation management becomes a collaboration between many stakeholders within and neighbouring Bathurst LGA.

LOCAL COUNCIL ROLES

- Land Manager
- Landuse Planner
- Development Controller
- Regulator
- Community Facilitator/Supporter
- Educator

LOCAL COUNCIL RESPONSIBILITIES

Tree Preservation Order
Local Environmental Plan
Development Control Plans (DCP)
Landscape Code
Ecologically Sustainable Development
Central West Blueprint

THE VISION FOR BATHUST'S VEGETATION

Bathurst's reputation as pleasant and prosperous place to live and do business in will be enhanced by its recognition as a place of excellence in vegetation management.

Through active and collaborative Council leadership with high quality vegetation management, the city will have retained the character of its heritage core, its rural setting and outlook as well as providing for pleasant and sheltered suburbs. All approaches to the city will be marked by distinctive gateway vegetation themes.

Substantial areas of native woodlands on the hills will be by supported by healthy ecological processes and retain a varied and valued sample of native fauna. They will be linked to the Macquarie River and its tributaries a by a web of corridors based on streamlines, cycle and roadsides and other corridors. The Macquarie itself will be a focus of community pride in a setting provided for by the restoration of the native riparian vegetation.

THEME VALUE CONSIDERATIONS

Areas were classified into themes according to a set of criteria based on visual amenity, views, existing natural and built environment, site analysis, land use, culture and heritage, planning provisions, biophysical constraints, social expectations and environmental and ecological aspects. Specific points considered when making the determination are given below.

- Need to protect the landscape value of the ridges and prominent hills around Bathurst.
- The interface between the urban and rural landscape.
- The visual appeal of the City as it is approached from the major access roads.
- Preservation of rural vistas viewed from within the City.
- The character of the existing natural and built environment based on the vegetation type, style of buildings, road layout and land use, etc.
- Slope, topography, solar access and the living environment.
- Land zones.
- Flood regimes, soil types, drainage.
- Cultural heritage.
- Water quality and landscape protection through watercourse and vegetation management.
- Habitat protection.

BATHURST VEGETATION THEMES INCLUDE:

- Heritage Conservation Area
- Endemic Native Vegetation
- Native Vegetation
- Exotic/Native Mix
- Natives Dominant
- Exotics Dominant
- Waterways
- Floodplain

SIGNIFICANT NATURAL LANDSCAPES

- Rural Landscapes
- Macquarie Floodplain
- Riverine Landscape
- Bathurst Plains

MANAGEMENT CATEGORIES

- Significant Natural Landscapes
- Native Remnant Vegetation
- Waterways
- Streetscapes
- Parks And Public Reserves
- Gateways
- Floodplains

SIGNIFICANT NATURAL LANDSCAPES

Guiding Principles

- The Growth Centre Study, cited in the *City of Bathurst Structure Plan* (Bathurst City Council 1996), stated that it was essential to retain the attractive rural setting of Bathurst-Orange Growth Area. The Study argued that generally countryside should be retained in its existing state to help maintain the character and regional identity of Bathurst.

- In the urban areas many vistas of the slopes and hilltops can be viewed and should remain as natural as possible.

- The edge of urban development should be contained, with the ridges and hills running generally north-south to the west of Bathurst being preserved.

- As well as the ridges and hills to the west, the gentler slopes to the north, east and southwest should be protected as a contribution to the unique rural identity of the City.

TABLE 6.2

SIGNIFICANT NATURAL LANDSCAPE STRATEGIES

STRATEGIES	RECOMMENDATIONS/GUIDELINES
OBJECTIVE 1: To protect Bathurst's rural identity through landscape protection	
L1 Protect significant landscapes through adequate provisions in appropriate planning instruments	Include significant landscapes in the provisions of the LEP.
L2 Plan for urban development to protect the rural landscape and to provide a sense of containment of the built environment	Vegetation or natural features to buffer or provide an 'edge' between the urban and rural environment.
L3 Ensure rural landscapes retain the visual characteristics of such a landscape with the advent of any future development	Tree scaping with natives, revegetating watercourses and drainage lines, appropriate building materials and/or large allotment sizes need to be considered. Landscaping with natives gives a sense of containment to the urban environment and conforms to sound environmental principles.

NATIVE REMNANT VEGETATION

Guiding Principles

The factors that guide the development of strategies and recommendations for native vegetation have to address a diversity of issues covering cultural heritage, recreation, aesthetics, landscape protection and conservation. The diversity of issues poses challenges to land managers, as a cohesive balance between all issues needs to be given to ensure values are retained and remnants are viable.

The guiding principles addressing native vegetation in the Bathurst LGA are given below:

- Preserve and enhance remnant native vegetation on the ridges and hillsides for the purpose of scenic protection, thus contributing to the rural identity of Bathurst and offering visually pleasing vistas from within and into the City.
- Recognise the objectives of the Regent Honeyeater Recovery Plan and Box/Red Gum Woodland Recovery Plan (in preparation).
- The significance of an area of remnant vegetation also contributes to its intrinsic value. Strategies should ensure that these values are protected and managed.
- Integration of recreational usage while protecting the natural and scenic resources of Mount Panorama.
- For Council to properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible in its charter under the *Local Government Act 1993*, and the *Environmental Planning & Assessment Act 1979*.
- To protect and enhance where practical the box-gum woodland Endangered Ecological Community, which is the predominant vegetation community in the Bathurst LGA.
- Seek opportunities for increasing the size of remnants or linking remnants to:
  - reduce the existence of non-viable populations of plants and animals;
  - provide wildlife corridors;
  - to provide connectivity between significant areas of remnants and the riverine system;

- to increase habitat area for native fauna; and
- connect gene pools of native plants and animals.

- To protect and enhance the remnant vegetation in an endeavour to retain the characteristic Australian landscape of eucalypt woodlands.
- To conserve remnants, including small areas outside nature reserves as they are the last vestiges of a highly fragmented timbered landscape.
- To protect areas of highest conservation value as less than 0.5 per cent of the box-gum woodlands is estimated to retain pre-European levels of diversity and species composition (NPWS 2002a).
- To protect and enhance remnant vegetation for the conservation of threatened fauna species known to occur in the Bathurst LGA.

TABLE Error! No text of specified style in document.**.1** **Native Remnant Vegetation Strategies**	
Strategies	**Recommendations/Guidelines**
OBJECTIVE 1: To manage the existing areas of remnant native vegetation to improve their environmental, recreational and visual qualities and attributes through protection and enhancement	
RV1 Maintain or enhance the diversity, structure and ecological integrity of remnants through the adoption and implementation of best management practices and recommendations.	• Control or manage the dumping of garden refuse and litter into remnant vegetation areas. • Undesirable plant species not be planted within or near areas of remnant vegetation (**Refer Appendix F Species Lists**). • Prohibit and enforce the policy of no collection of firewood. • Adopt grazing practices that allow for natural regeneration and reduce the potential for erosion. • Revegetate with endemic native upperstorey trees. • Improve diversity and ecology of remnants with the planting of shrubs and encouraging native ground cover species. • Retain standing dead timber, logs, rocks, leaf debris as valuable habitat resources for fauna. • Avoid potential for hot fires. • Maintain good ground cover to minimise risk of erosion. • Restrict unauthorised vehicle access in remnant vegetation areas (eg oval opposite cemetery). Log barriers or other device need to be considered. • Avoid unnecessary root and trunk disturbances to remnant trees, for example during road works and cultivation. • Do not lop tree branches, but prune branches if necessary using a qualified arborculturist • Maintain isolated remnant trees to act as stepping-stones to other remnants. • Exclude stock if possible through fencing/change of management or land use. • Do not remove remnants unless threatening life or property. First consider options such as removing offending branches using proper aboricultural practices. • Remove litter, garden refuse, dumped household materials etc. • Erect signs where littering and the dumping of garden plants is commonplace to dissuade these practices.
RV2 Enhance the extent, viability and diversity of native grasses and groundcover plants where they occur.	Designated areas in urban landscape to include: • Open space behind Brooke Moore Oval and behind sports centre at Hector Park (GIS Key 15250, 15251, 15264). • Parts of Booth Street open space (GIS Key 4826, 5865, 4905) • Between the rugby oval and residential areas (GIS Key 4691).

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Strategies	**Recommendations/Guidelines**
	Recommendations include: • Restrict the slashing of the native grasses in remnant vegetation areas. • Restrict vehicle access by the use of barriers if necessary. • Manage weeds. • Prevent the illegal dumping of rubbish and garden refuse. • Slashing that is required to be undertaken following peak flowering and seed set. • Educate community (particularly those in vicinity of remnants) about low fire risk of native grasses and their value.
RV3 Future development not to significantly threaten or negatively impact on remnant vegetation.	• Where the outcome of a proposal on native vegetation is uncertain, apply the precautionary principle in accordance with Ecologically Sustainable Development. • Ensure developers have a clear understanding of the planning provisions in relation to the protection or enhancement of native vegetation. • Undertake on-going monitoring to assess conservation areas and to set adaptive management plans for their continued long-term protection. • Control and manage pests and weeds identified as being of significance. • Continued community education and awareness programs aimed at limiting the introduction of pests and weeds into native vegetation areas. • Where possible, revegetate the upperstorey trees species with endemic native species of the local provenance.
RV4 Compile an inventory of endemic native plants found in the varying landscapes in the LGA.	• Inventory designed to be repeatable so monitoring can be undertaken.
RV5 Continually monitor the condition of the remnant vegetation, ensuring its on-going sustainability through targeted management actions.	• Areas under the greatest pressure, or remnants showing signs of decline, undertake surveys more regularly than more stable communities.
RV6 Review management recommendations and amend where necessary.	• For management of native vegetation to be applicable and targeted, management recommendations need to be reviewed and amended as tasks are completed or new threats arise.

TABLE Error! No text of specified style in document.**.1** **Native Remnant Vegetation Strategies**	
Strategies	**Recommendations/Guidelines**
OBJECTIVE 2: To protect and conserve Boundary Road Reserve for the purposes of conservation, passive recreation, scenic protection and a buffer from the Mount Panorama race track	
RV7 Recognise, support and implement the on-going management and recommendations in accordance with the Boundary Road Reserve Management Plan.	• Boundary Road Reserve be fully protected from development or change in land use.
OBJECTIVE 3: To protect and conserve the remnant vegetation on Council controlled land inside Mount Panorama track (south and south-west corner only) within the scope of future development and the precinct being used for motor racing	
RV8 Ensure all development proposals likely to impact on remnant vegetation fully consider the conservation value of this area and all efforts be made to protect and conserve it.	• The remnant vegetation constitutes an Endangered Ecological Community (ECC) as defined in the *Threatened Species Conservation Act 1995* and as such has high conservation value. Its conservation value needs to be fully recognised. • As a means of legally protecting the EEC community, any development assessment governed by the *Environmental Planning and Assessment Act 1979* needs to consider this community.
RV9 Undertake measures to protect and conserve the area.	• Ensure replanting or tree replacement use species endemic to the area (Refer **Appendix F, Species Lists).** • Consider Aboriginal heritage before embarking on any revegetation or restorative projects. • The removal of trees grossly disfigured by lopping is recommended with consideration to replacing with suitable low growing, endemic native species. • Restrict unauthorised vehicle access to retain good ground coverage of grasses and forbs for the purposes of controlling water and gully erosion and for conservation of the existing native plants. • Maintain weed control, especially on noxious weeds such as briar, blackberry, hawthorn and African boxthorn. Variegated thistle, locally prolific also to be controlled. • Any seedlings and juvenile radiata pine be destroyed. • Contractors/Council responsible for litter control and cleanups undertake complete rubbish removal from remnant vegetation areas inside the track. • Where the outcome of a proposal on native vegetation is uncertain, apply the precautionary principle, consistent of Ecologically Sustainable Development. • Ensure developers have a clear understanding of the planning provisions in relation to the protection or enhancement of native vegetation. • On-going monitoring to assess conservation areas and to set new recommendations within the VMP if appropriate.

TABLE Error! No text of specified style in document.**.1** **Native Remnant Vegetation Strategies**	
Strategies	**Recommendations/Guidelines**
	• Control and manage pests and weeds identified as being of significance. • Conduct community education and awareness programs aimed at limiting the introduction of pests and weeds into native vegetation areas. • Where possible, revegetate with only indigenous native species of the local provenance (particularly the upperstorey tree species. • Develop site specific action and implementation plans to provide for the long-term protection and regeneration of remnant vegetation at the top of the Mount, where possible.
OBJECTIVE 4: To enhance and protect the remnant vegetation on Council controlled land on the "Top of the Mount' within the scope of future development and the precinct being used for motor sports	
RV10 Ensure the sustainability of the remnant vegetation during the course of development with site specific landscape and vegetation management plans that compliment land use for motor racing.	• Plans to be detailed with specific measures to protect and enhance the remnant vegetation in relation to all development proposals. • The VMP to prevail over landscape and vegetation concept plans. • Vegetation to provide recreational and visual amenity value that compliments the land use for motor sports. • New plantings to be strategically placed to reduce the risk of vandalism, to maximise amenity value, to provide buffer zones, to prevent view obstruction, not to hinder future development for infrastructure and to provide the best links with other remnants. • All trees to be endemic to the area. Shrubs and groundcover plants used for landscaping to be native, but not necessarily endemic as the diversity is too limited. • Plans to accommodate for the full protection of new plantings to ensure their survival. • As well as other interrelated issues, the plans need to recognise the value of remnant vegetation, the EEC, threatened species habitat, local occurrence of mountain gums, environmental value of native grasses *in situ,* and other native species, and the scenic and amenity values of the vegetation.
RV11 Restore the remnant vegetation in Sir Joseph Banks Nature Park for conservation and passive recreation.	• Develop the site for passive recreation with constructed walking trails. • Restore the remnant vegetation through revegetation works, erosion control measures, weed and grazing management. • Exclude from high impact usage such as camping. • Plantings to be of endemic species only.
OBJECTIVE 5: To enhance and protect the remnant vegetation on Council controlled land on Mount Panorama environs within the scope of future development and the precinct being used for other land uses	
RV12 Plan for the enhancement and protection of remnant vegetation in the rifle	• Confine grazing to the designated rifle range area to prevent an over abundance of grass growth. Avoid excessive grazing as soils are prone to erosion, especially along flow lines.

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Strategies	**Recommendations/Guidelines**
range while maintaining its existing sporting land use.	• Protect the steeper gradients from livestock to encourage natural regeneration. • Maintain weed and pest control.
RV13 Create a conservation link of high value remnant vegetation from Boundary Road, along the western and southern face of Mount Panorama to Vale Road.	• **Refer Map E.** • Restrict stock access to vegetation corridors. • Revegetate where necessary. In areas with good stands of existing trees, allow and encourage natural regeneration. • Plant with endemic species only. • Connect areas of highest conservation value as practically as possible. • Corridor not to restrict the pursuits of the rifle range users. • Corridor to connect with Sir Joseph Banks Park. • Recreational potential for bushwalkers from Boundary Road Reserve to continue to Sir Joseph Banks Park. Consideration needs to be given to accommodate for the interest expressed by the community for recreation in this area.
OBJECTIVE 6: To increase the extent of fragmented remnants by linking and creating vegetation corridors to provide for their ecological sustainability and function as wildlife corridors and recreational areas	
RV14 Link remnant vegetation areas through the urban landscape.	• **Note: Detail on Sawpit Creek linkage addressed in Section 8.** • **Refer Map E** for proposed links. • Use locally indigenous species. • Incorporate natural features such as existing drainage lines, fallen logs, outcrops. • Include a diverse range of species • Develop as much structural diversity as possible (ie. trees, shrubs and groundcover species). • Retain any standing dead timber. • Widths of newly created links should be as wide as possible.
OBJECTIVE 7: To protect and enhance remnant vegetation on the rural roads	
RV15 Develop a Roadside Management Plan.	• Survey roadsides and note areas of remnant vegetation, their condition, composition and connectivity to other remnants. • Identify areas under threat, areas of conservation value, sites for potential revegetation etc. • Identify areas suitable for works compounds, stock pile sites etc. • Development management recommendations in accordance with the findings.
OBJECTIVE 8: To reflect the objectives of protecting, enhancing and increasing the area of native vegetation through revision and amendment of existing planning provisions	
RV16 Revise and amend local planning provisions to accommodate for native	• Adopt a policy of 'no net loss of native vegetation' by incorporation into planning policies and through the development consent process (ie. no remnant vegetation is lost within the LGA through clearing, land degradation or from

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Strategies	**Recommendations/Guidelines**
vegetation protection and enhancement.	development pressures). • Ensure that planning controls and development decisions maintain the integrity of vegetation corridors. • Council to develop regulatory controls in LEPs, DCPs and other planning instruments that provide incentive mechanisms to protect or enhance native vegetation. • Policies need to be enforceable.
OBJECTIVE 9: Educate and increase the awareness to the community of the function and value of the remnant native vegetation and the threats to its sustainability	
RV17 Educational programs and material developed and disseminated to targeted community groups.	• Collaboration between state and local government agencies, and the community is required. • Provide for the community an on-going program of education and awareness initiatives developed to foster an appreciation of the remnant vegetation.
OBJECTIVE 10. Develop a Bush Fire Risk Management Plan in full consultation with relevant stakeholders to consider the values of the native vegetation while preserving life and property	
RV18 Form a Bush Fire Management Committee to determine appropriate fire strategies in areas of remnant vegetation.	• Committee representatives to include BCC, environmental interest groups, Rural Fire Brigade, government agencies and local landholders.

Actions

TABLE Error! No text of specified style in document.**.2** **Native Remnant Vegetation Actions**		
Action	**Strategy Identifier**	**Importance Ranking (1-highest, 4-lowest)**
Manage existing areas of remnant vegetation using best management practices.	RV1	1
Enhance the extent, viability and diversity of native grasses and groundcover plants where they occur.	RV2	2
Continue to compile an inventory of endemic native plants found in the varying landscapes in the LGA.	RV4	3
Continually monitor the condition of the remnant vegetation, ensuring its on-going sustainability through targeted management actions.	RV5	3
Review management recommendations in relation to existing areas of remnant vegetation as appropriate.	RV6	3
Undertake measures to reduce the impact to remnants within the Mount Panorama Sporting Precinct where possible and consider remnant conservation measures with any future development.	RV9, RV11, RV12	1
Create a link of native vegetation from Boundary Road along the western and southern face of Mount Panorama to Vale Road.	RV13	2
Link remnant vegetation areas through the urban landscape (refer Map E).	RV14	2
Revise and amend local planning provisions to accommodate for native vegetation protection and enhancement.	RV15	1
Educational programs and material developed and disseminated to targeted community groups.	RV16	4
Bush Fire Management Committee to develop a bush fire risk management plan.	RV17	3

WATERWAYS

Guiding Principles

The functions of waterways are diverse and consideration has to be given to their environmental, ecological, cultural and recreational values.

Further, as many of the watercourse systems in the Bathurst LGA pass through the urban environment, constraints and opportunities have to be acknowledged to appropriately guide the rehabilitation and development of these systems.

The guiding principles that steer the direction of planned management are given below:

- Many waterways pass through land of differing tenure and this has wide ranging implications in terms of their value (ie stock watering, sediment control, urban stormwater management, aesthetic values), land use and management.
- Drainage reserves in the urban environment often have a limited function and require a considerable input of resources to maintain them. Increasing their function, and ultimately their value to the local community, will improve the benefit to cost ratio in the long-term.
- Watercourses are natural topographical features, which can potentially provide effective buffers in the urban environment. The buffers can achieve an appropriate edge between the rural and urban landscape or between areas of differing land use.
- The very nature of the watercourse, especially the riparian zone and creeks lend itself to passive recreation and with appropriate planning of access ways and amenities they can be used as recreational links.
- The primary function of the watercourses and drainage lines is for the passage of water. The whole ecology and hydrology involved in this process is fundamental to any waterways management.
- Linking remnant vegetation around Mount Panorama and Boundary Road Reserve to the Macquarie River.
- Waterways are a resource to visually enhance the landscape and any development or rehabilitation should accommodate for this.
- Incorporate the objectives of the *Stormwater Management Plan* (Bathurst City Council 2002b) where relevant.
- Improve water quality for domestic, industrial, agricultural and recreational use both for the immediate area and to users downstream.

TABLE Error! No text of specified style in document.**.3** **Waterways Strategies**	
Strategies	**Recommendations/Guidelines**
OBJECTIVE 1: To restore the riparian vegetation along the Macquarie River (excluding the section between Hereford Street and Evans Bridges) to a state that resembles the pre-European condition.	
W1 Undertake specific surveys to determine the priority ranking for willow removal along the river.	• Surveys are required to stage restoration on a long-term basis, which may require another 50 years.
W2 Seek funding opportunities for willow removal and river restoration.	• Sourcing funds to be a collaborative process between BCC and community groups such as Macquarie Rivercare.
W3 Control, remove and manage willows and environmental weeds, and undertake river restoration in accordance with recognised best management practices.	Best management practices require (Houghton 1999): • minimisation of damage to existing vegetation (other than willows and other noxious weeds) and streambanks; • killing of willows by hand removal, cut and paint stump, foliar spraying or stem injection; • revegetation of the site; • protection of wildlife corridors; • management of debris; • use of herbicides; and • removal of dead willows. • The dominant vegetation type to be river she-oak **Refer References and Further Reading 8.7, and Appendix E: Willow Ecology and Management.**
W4 Generate community support for riparian restoration through public awareness and education.	• Joint BCC and relevant government agency initiatives.
OBJECTIVE 2: To manage the riparian vegetation in the section between Hereford Street and Evans Bridges to provide for bank stability, erosion control, recreational usage and to enhance the aesthetics and natural ecosystems.	
W5 Protect and enhance native aquatic emergent, semi-emergent and floating plants.	• In key areas where aquatic plants are likely to occur, such as in pools (as compared to riffle areas) avoid slashing to encourage the establishment of these plants. It also allows for an improvement in habitat for waterfowl, frogs and other fauna.
W6 Manage the riparian vegetation to reduce the incidence of erosion, particularly on cut banks.	• Avoid slashing close to the bank edge on cut banks to encourage natural regeneration, to help stabilise the river banks and to discourage erosion caused by pedestrian access. • Encourage the establishment of native vegetation, especially she-oaks along cut banks.

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TABLE Error! No text of specified style in document.**.3** **Waterways Strategies**	
Strategies	**Recommendations/Guidelines**
W7 Improve the aesthetic appeal and recreational function of the river section.	• Plant native trees and shrubs in accordance with DLWC guidelines and BCC flood modelling strategy. • Plant some trees within the park area to provide for shade and to add interest.
W8 Ensure appropriate species selection to avoid potential weed problems, to discourage undesirable bird species and to enhance the native ecosystem.	• Any exotic species should be non-invasive by either vegetative means or seed dispersal. **Refer Appendix F Species Lists, Undesirable Plant Species**. • Fringing vegetation to be solely vegetated with endemic species. River she-oaks to dominate the upperstorey vegetation with shrubs such as river bottlebrush to be represented in the shrub layer and sedges, rushes and native grasses and forbs to comprise the ground layer. • River she-oaks to be discontinuous along the river bank to maintain the recreational quality of the area.
OBJECTIVE 3: To rehabilitate, enhance and protect waterways which flow into the Macquarie within the urban environment	
W9 Establish native vegetation along all waterways wherever possible (eg Queen Charlotte Vale, Jordan and Hawthorden Creeks, and Raglan Creek off the floodplain).	• Some waterways may be too restrictive in size to accommodate for the tall upperstorey trees endemic to the area. In these instances plant with suitable native shrubs, small trees or a mix of both. • Consideration needs to be given to public safety (visual barriers using shrubs), potential branch fall close to residential areas, obstructing solar access etc. • Creeks currently concreted that run a course through the urban landscape can only be restored to the level where exotic vegetation can be replaced. Ensure good vegetation coverage to reduce light levels to the creek, preventing excessive build up of algae. • Revegetate only with native species and avoid the use of deciduous trees in close proximity of the channel where leaf drop can reduce water quality. • Drainage reserves and creeks within the HCA to be representative of the 'waterways theme'. • Upperstorey to be dominated eucalypts species such as yellow box, apple box and Blakely's red gum
W10 Undertake an assessment on watercourses with severe or very severe bank erosion to evaluate the probability of using engineering solutions to mitigate against on-going erosion.	• An example is Hawthornden Creek at Boundary Road.
OBJECTIVE 4: To develop Sawpit Creek (from Ophir Road to Mitchell H'way) for the benefits of recreation, protection and enhancement of remnant vegetation, stormwater control and the buffering of the urban environment	
W11 Set within the local planning framework the rehabilitation and development of Sawpit Creek.	

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TABLE Error! No text of specified style in document.**.3** **Waterways Strategies**	
Strategies	**Recommendations/Guidelines**
W12 Plan the concept of developing Sawpit Creek to accommodate for recreational usage, conservation, stormwater control and visual amenity.	• Fully integrate a cycleway along the open space area to link Suttor Street and Ophir Road. • Extend open space along drainage line to Suttor Street, incorporating existing remnant vegetation. • Landforming, detention basins, sediment ponds and other engineering works for stormwater management to allow for natural stream processes to occur. • Engineering structures to be designed to enhance the visual and recreational amenity of the area. • The vegetation theme is native, with upperstorey tree species to be endemic eucalypts including yellow box, apple box, Blakely's red gum and ribbon gum. Shrubs to be native but not necessarily endemic. • Avoid the introduction of non-native grasses. When using grasses for erosion and sediment control, select sterile annual grasses or perennial natives. • The area to be ultimately devoid of willows and exotic woody weeds. • Creek zone to be at least 20m from the high bank, therefore 40m wide plus width of creek channel. • Retain standing dead timber from eucalypts, logs and trees with branch hollows, rocks etc for fauna habitat, unless considered a public safety risk.
W13 Seek funding sources to allow for the full development and rehabilitation of Sawpit Creek.	• BCC to work with community groups to source funding opportunities beyond Section 94 Contribution Plan and capital works.
W14 Manage the creek zone to optimise its conservation value.	• Remove and manage willows and exotic woody weeds from Sawpit Creek. • Avoid slashing the drain where natural stream processes occur to enhance the habitat for semi-aquatic fauna and flora. • Retain standing dead timber from eucalypts, logs and trees with branch hollows, rocks etc for fauna habitat, unless considered a public safety risk.
OBJECTIVE 5: To enhance and protect the remnant vegetation along Sawpit Creek (from Mitchell H'way to upper catchment) for the benefits of conservation, recreation, and stormwater control	

TABLE Error! No text of specified style in document.**.3** **Waterways Strategies**	
Strategies	**Recommendations/Guidelines**

W15 Future planning of the orchard adjacent to Sawpit Creek to make provision for its protection and enhancement.	• Recognise the significance of Sawpit Creek for conservation during the development of the Local Environmental Study during any rezoning application, making provision for its protection and enhancement.
	• Develop the creek for conservation, stormwater management and functioning as an open space area.
	• Include guidelines relating to the protection and enhancement of Sawpit Creek in the DCP relevant to the area when rezoned.
	• Key guidelines to include:
	  • creek to contain only endemic upperstorey species.
	  • shrubs to be native.
	  • allow for natural regeneration in preference to replanting. Restrict stock access.
	  • remove and manage exotic woody weeds, and feral animals.
	  • creek zone to be at least 20m from the high bank, therefore 40m wide plus width of creek channel.
	  • vegetation guidelines within DCPs to link to VMP.

W16 Encourage the planting of native vegetation along the upper catchment of Sawpit Creek to link to other remnant vegetation.	• Street trees in catchment area to be native if factors such as solar access, views, lot size etc allow. • Gullies and drainage lines to be revegetated where possible and any willows and exotic woody weeds removed. • Education and awareness through multi-media channels.
OBJECTIVE 6: To improve the function of drainage reserves to include visual amenity, improvement to water quality and recreational and ecological use, with due consideration of the basin's prime drainage function	
W17 Make provision for the enhancement of drainage reserves for recreation, visual amenity and conservation through relevant local planning instruments.	• DCPs for new developments to include guidelines that will enhance the function of the drainage reserves. • Schedule of works for stormwater drainage to link revegetation as a function of stormwater management.

TABLE Error! No text of specified style in document.**.3** **Waterways Strategies**	
Strategies	**Recommendations/Guidelines**
W18 Design and landscape drainage reserves to improve their visual and recreational and ecological amenity value.	Landscape with due consideration of the basin's prime drainage function in accordance with the guidelines for open spaces in the *Preliminary Guidelines for Engineering Works with the City of Bathurst* (Bathurst City Council 1999). The guidelines are: • No vegetation, other than grass, should be planted in channels and overflow paths beneath the surface level of the 5% Annual Exceedance Probability (AEP) flood event. • Trees with clean boles, strong crown structure, and with no propensity to root suckering may be planted at minimum 3 metre spacings between the 5% and 1% AEP flood levels. • No shrub or flow interference landscaping should be designed below the 1% AEP flood level. • Open space areas should be grassed and free of boulders, dirt and debris. • All open space areas and drainage reserves should be contoured to facilitate easy mowing. Species recommended for planting between the 5% and 1% AEP – include eucalypts, and she-oaks that have been canopy lifted. Size of the drainage reserve and locality to dwellings may dictate species selection. Narrow drainage reserves may warrant small growing eucalypt species. No mallee or multi-stemmed trees, trees unable to be canopy lifted or shrubs recommended. Where batter slopes are 1:10 or gentler, and are outside the 1% AEP, plantings in the drainage reserve to be predominately native. Some exotics can be planted near residential areas avoiding those listed as undesirable near remnant vegetation or riparian zones (**Refer Appendix F**). • It is recommended that plantings be grouped into clumps rather than planted linearly or randomly scattered. This improves the overall visual impact, and can cut down maintenance requirements if a knockdown herbicide is used around the clumps to reduce slashing. Some open grassed areas also increases the options for recreational usage. • Integrate the drainage reserve as an open space area for the community to use for recreation. To compensate for increases in maintenance, decommission other open space areas according to the Open Space Strategy or 'vacant' block areas currently under-utilised. • Plan the area of the reserve to accommodate for its multifunction (ie. narrow reserves limit their use). • Incorporate wetlands where possible as part of sediment ponds, detention basins etc.
W19 Develop a concept plan to restructure Raglan Creek (contained within the Macquarie Plains DCP) for stormwater control, open space and nature conservation.	Raglan Creek Stormwater Drainage Management Section 94 Contribution Plan. Provision needs to be made for open space and nature conservation in planning, engineering and landscaping works.

TABLE Error! No text of specified style in document.**.3** **Waterways Strategies**	
Strategies	**Recommendations/Guidelines**
OBJECTIVE 7: To develop, rehabilitate and manage waterways according to their governed stream processes	
W20 Evaluate streams according to their hydrological, morphological, physical and ecological characteristics.	Some waterways are natural, others formed as a result of severe gully erosion. These types of drainage lines need to be managed differently and in respect to the land use. The demarcation between engineered solutions to drainage management and allowing for natural stream process to occur needs to be assessed by a panel of technical experts, specifically BCC and DLWC. • The evaluation needs to occur on undeveloped drainage lines before revegetation or engineering works are undertaken. • Natural stream processes and the associated ecosystems need to be balanced with engineering requirements.
W21 Develop, rehabilitate and manage drainage lines according to their governed stream process.	Engineered drainage lines. • BCC guidelines (1999) apply. Where natural processes occur general recommendations include: • Do not plant undesirable species in stream channel or along banks (**Refer Appendix F**). • Plant predominately native species. Endemic trees where possible and native shrubs and groundcovers. • Keep free of environmental weeds especially willows. • Maintain a canopy of trees over drainage line to reduce the incidence of algae and semi-aquatic plants such as *Typha* and *Phragmites,* which can cause channel blockages. This can also help to exclude other undesirable terrestrial weeds and help to improve water quality and fauna habitat. • Floodplain areas to be free of trees and vegetated with native aquatic, emergent and semi-emergent plant species where possible. • Keep the natural substrate including sands, gravel, rocks fallen logs etc. If logs or branches obstructing flows, realign to allow the free passage of water. Mixed materials are habitat for aquatic fauna. • Where possible creek buffers to be 20m from high bank, therefore >40m wide, plus channel width dedicated for open space.

Actions

TABLE Error! No text of specified style in document.**.4** **Waterways Actions**		
Action	**Strategy Identifier**	**Importance Ranking (1-highest, 4-lowest)**
Restore the riparian vegetation along the Macquarie River.	W1,W2,W3	1
Establish native vegetation along all waterways.	W9	1
Undertake engineering solutions to mitigate against erosion in key identified areas.	W10	2
Develop Sawpit Creek from Ophir Road to Mitchell Highway.	W11, W12, W13, W14	1
Protect and enhance Sawpit Creek from Mitchell Highway to upper catchment.	W15, W16	2
Make provision for the enhancement of drainage reserves in planning instruments.	W17	1
Design and landscape drainage reserves to be multi-functional.	W18	3
Make provision for Raglan Creek, within Residential Subdivision DCP (Map No 2 Macquarie Plains) to have enhanced conservation value.	W19	1
Evaluate streams according to their stream processes.	W20, W21	4

STREETSCAPES

Guiding Principles

To achieve a unified, functional and visually pleasing streetscape many considerations need to be addressed that involve strong design principles, species selection and solutions that overcome constraints. These factors form the guiding principles which govern the development of strategies and recommendations.

The guiding principles are outlined below:

- The streetscape vegetation is to preserve, enhance and reflect:
  - The heritage significance of the Conservation Area.
  - The general rural identity of the City.
  - The interface between the rural and urban landscapes.
  - Views to the outlying rural landscape.
  - A particular character or theme of an area.
  - The prominent ridgelines and crests around Bathurst.
- The objectives and strategies to reflect the intrinsic value of street trees and the values expressed by the wider community.
- Physical constraints to development such as flooding, urban capability (soils), air pollution (reduce dependence on fossil or solid fuels, encourage solar passive designs), unfavourable urban heat in summer (particularly in carparks and streets), and UV radiation in public places have all been recognised in the *Structure Plan* (BCC 1996). Therefore, the streetscape vegetation to be planned must consider solar passive values of winter sun and summer shade, improving the microclimate in residential and recreational areas as well as in the commercial/retail sectors.
- Consideration given to utility and transport infrastructures, ensuring low maintenance outcomes and uninterrupted functionality of the services.

- The streetscape vegetation to be part of an integrated plan to link areas of remnant vegetation that lie within the urban landscape.

- Species selected to accommodate for the constraints of soils, climate, infrastructure, view requirements and landuse, as well having a low maintenance requirement.

- The streetscape to be aesthetically pleasing, being planned on the foundation of good design principles.
- Recognise the issues to street tree landscaping in regards to street and footpath width, service utilities, pedestrian and cyclist usage, traffic factors, street layout and sight distance to intersections, street signs, traffic lights etc.

- Address current and future salinity and rising groundwater issues through targeted revegetation and water use efficiency strategies.

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
OBJECTIVE 1: To develop the streetscape to enhance and protect Bathurst's rural and cultural identity	
S1 Use the theme framework to guide the planting focus in new and existing areas so desired visual outcomes are maintained or achieved.	• (**Refer Section 5 & Map A**).
S2 Maintain the rural landscape vistas visible from many parts of the City and surrounds through current strategic planning and appropriate streetscaping.	• Narrow streets with a rural vista as a focal point should be planted with small street trees or of a type with an upright habit to prevent view obstruction. Plant trees only on the footpaths or kerbside where rural views are to be maintained (ie. avoid planting along the median). • Where rural vistas are significant trees need to be widely spaced, grouped together or of upright habit so views are not obstructed (for example, Eglinton Road along the access path has views across the floodplain, and the major gateways into the City offer views of the rural and floodplain landscapes).
S3 Plan urban expansions and associated streetscapes in a manner which achieves a desirable interface between the urban and rural environment.	• Where rural residential areas buffer the more densely developed urban areas with the rural landscape, the streetscape and associated theme should be a mix of natives and exotics to create a gradual transition from one environment to another. • The interface between the natural or rural landscape and the urban environment to be 'softened' by a number of options such as (a) rural subdivision using a theme of exotics and native vegetation; (b) a delineation of the environments by a topographical feature such as a ridge line or well vegetated watercourse (eg Sawpit Creek); (c) screening boundary fencing with native shrubs and small trees. • Enhance, protect and link areas of remnant vegetation on the western fringe of the City.
S4 Maintain and enhance the heritage significance of Bathurst.	• In the HCA street trees to be deciduous. The selection of species to be dependent on specific location. • Grid pattern of roads lends itself to avenues of same species trees. • Street trees and plantings in parks and gardens to be in character with the built environment and cultural heritage (ie avoid the use of inappropriate species such as *Robinia* 'Mop Top' on Kendal Avenue and Durham Street. ***Specific Guidelines for CBD*** To be consistent with the CBD Beautification Scheme and Heritage Study. • In sections of streets with lamp standards, trees should be planted on the kerbside in a street tree bay. They need to be widely spaced, open-canopied, and with a somewhat upright habit (ie avoiding trees with horizontal branches). They have to be suitable for crown lifting, and directional pruning if under power lines. • Tree scaping is to compliment and enhance the built environment and historic setting, and not detract from the

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
	lamp standards and rural vistas as focal points of interest. • Avoid the planting of modern plant species or cultivars as they are out of context with the dominance of Victorian buildings in the CBD. • Trees with significant autumnal colouring to be favoured.
S5 The prominent ridgelines and crests around Bathurst, such as Mt Panorama, Mt Stewart, White Gate and Wentworth Estates to be visually dominated by vegetation, not the built environment.	• Protect and enhance existing remnant vegetation (**Refer Section 7**). • Evergreen exotics and/or natives are recommended to be the predominant vegetation type in this area to provide a suitable visual backdrop throughout all seasons. • Natives are suitable street trees in the larger rural subdivision areas.
S6 Enhance the streetscapes through strategic tree planting.	It is recommended that tree planting be undertaken in accordance with set priorities (**Refer Actions**). ***CBD Area*** • Implement recommendations of the CBD Beautification Scheme (BCC 2002a). Opportunities for Bathurst City Council to reconsider streetscaping particular sections of the CBD area in the future needs to be open-ended. • Replace missing trees in existing tree avenues. • Refer Theme recommendations (**Refer Section 5.0**). Heritage Conservation Area • Replace missing trees in existing tree avenues. • Plant avenues of trees in streets where they are absent. ***New residential and industrial areas*** • Refer relevant DCPs. ***Other areas*** • Plant according to theme type. • Replant where trees are absent.

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
OBJECTIVE 2: To provide a comfortable and aesthetically pleasing living environment for residents and visitors through judicious species selection and integrated design principles	
S7 Use of design principles to be fundamental to any streetscaping project.	• Adopt the design principles referred to in **Section 9.3.5.** • (**Refer Appendix F Species Lists**). • Flower and foliage accent colours to compliment the earthy colours of the built environment and surrounding landscape, and as such should be muted warm colours (russet, earthy reds and yellows, gold, cream, blue and grey). Flower colours to avoid include bright, clear, colours such as orange/ reds, canary yellows, and bold magenta and the modern cultivars of multi-coloured flowers. • Streets to be planted in avenues on both sides of the streets to maintain the formal grid pattern of roads and to provide unity and street character. Avenues essentially should be planted with the same species of tree to maximise the visual impact. Some variation between avenues is necessary to avoid a monoculture of one species. To add interest, vary species between streets, or from a point where a natural or artificial feature changes (eg intersection, commercial to residential or gradient change). • Wide streets, particularly with wide nature strips, to accommodate medium to large trees and to be proportional to the scale of the street. Wide spacings are also necessary to allow for mature tree growth. • Narrow streets or lanes to be planted with small trees and at relatively close spacings to maintain unity. The elements of interest in these streets may be the front fences and cottage style dwellings. Trees in these situations would greatly improve the microclimate and should provide visual accents only with the architectural features still being predominant. • Trees need to be planted where they have become absent in the streetscape to improve the visual amenity (avenue formation, unity, interest, sense of character) and living environment. • Lamp standards to be the predominant focal point in streets where they are present. Trees in these streets to be on the kerbside, deciduous and less than 7 metres in height and widely spaced. • Blisters, roundabouts and median strip plantings to be in keeping with the cultural heritage theme, and therefore be planted with species of appropriate foliage and flower colouration. Contrast of plantings in lower maintenance areas to be provided by plant height and form and texture or colour contrast in the foliage (greys, reds, yellows). The bedding of perennial plants selected for their flowers are also recommended provided they conform to the desirable colour characteristics. • Plants in blisters etc to be selected for year round interest, ability to withstand severe frosts, extreme heat conditions and without the requirement of constant pruning to keep them contained. Low growing plants and those with a prostrate habit are desirable.
S8 Plant species selection needs to be founded on	• (**Refer design principles Section 9.3.5**).

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
their aesthetic appeal, function, environmental value and contribution to the character or theme of an area.	• Deciduous trees to be used for solar access in winter and for summer shade. They are the ideal street tree in most parts where allotment size is small. Potential to reduce energy demands for residents and provides improved living environment • Evergreens (native and exotic) are suitable in areas where solar access is not significant or where allotment size is relatively large and the dwelling is setback from the road. Exotics add to the European cultural value of the City, whereas natives improve habitat value for fauna and can link areas of remnants. The relative values of using exotics or natives need to be considered in relation to the theme of the area. • Trees selected to consider road function – ie passage of heavy vehicles need higher clearance than cars and therefore trees need to free of low branches through crown lifting. Trees need to have the potential for canopy lifting. • Narrow streets or where shading already exists due to other structures, select trees with open canopies and do not lop. • Consider planting trees with another use (eg. nut trees in open space areas). • A combination of species in a street can be used to good visual effect to create an informal streetscape if some unifying element, such as foliage colour, tree height or form, type (eg all native, all broad domed deciduous) is the same. • No planting of trees along the medians in Heritage Conservation Area (except for William Street between Rocket and Piper Street). • Planting on the carriageway has to be relatively wide where car parking is a premium. • Where overhead powerlines are an issue, there are a number of options: – Plant small trees on both sides of the street where street widths are narrow. – Plant large trees on the side with no power lines and small trees under the power lines. Negative aspect – it creates a visual imbalance and loses its avenue effect. – Plant large trees on both sides of the street, offset from the powerlines if possible, and 'directionally' prune when the trees are young by qualified arborculturists. Negative aspect –maintenance requirement.
S9 Landscape key areas to visually screen out unsympathetic views, to soften the built environment and to provide a buffer between differing land uses.	• The type of vegetation to be guided by the vegetation theme areas (**Refer Section 5**). • Landscape concepts (**Refer Figure 1**). • To reduce the reliance on our water resources, to improve the connectivity of remnant vegetation and to provide habitat for native birds, it is recommended that these screens or buffers be predominately native shrubs and small trees, even in areas such as Eglinton Road, Abercrombie.

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
	• The maximum height be determined by considerations such as view, height of elements to be screened, scale of surrounds and presence of overhead power lines. Suggested foreground plantings to be of lower growing shrubs, groundcovers and mass plantings of grasses or grass like plants. • The screen planting to be continuous or massed in large groups with slashed surrounds. The surface to be covered with bark chips or other suitable organic material. • In many instances, screen plantings can be incorporated with the standard street trees plantings where the road reserve is accommodating enough. Recommended screen areas include: • The newer subdivision areas where colourbond fences fronting arterial roads, highways, streets or parks need to be visually screened. • Screen out residential and industrial zones along gateway entrances to the City. Retail premises with 'shop front' excluded. • Industrial and bulky goods areas.
S10 Use the streetscape to add character to new subdivision areas, which all look similar and lack a local identity.	• To add character in newer subdivision areas, group plantings, rather than creating formal avenues. Consider alternating groups of trees with textural and colour contrast. Character can also be based on some vegetation feature such as a predominant foliage colour or vegetation type. • Break up urban development with unique landscapes of native vegetation, such as the revegetation and development of a cycle track along Sawpit Creek and introducing native trees and shrubs in drainage reserves and watercourses (**Refer Section 8 'Waterways''** for recommendations and guidelines).
S11 Use streetscapes vegetation to improve the visual amenity of industrial and bulky goods retail areas.	• Refer 'dcp – industrial development' for guidelines. • Refer **Map A** for suitable theme type. • Ensure landscaping complies with DCP guidelines and it has been undertaken. • The plantings to be in scale with the buildings and allotment size to create a woodland setting.
OBJECTIVE 3: To integrate and link the streetscape plantings with areas of remnant vegetation, key access ways and main arterial roads	
S12 Enhance the visual appearance of Panorama Avenue to draw a link between Mount Panorama, the CBD and the Macquarie River.	• Avenue plantings of same species where possible. • Remove poplar suckers. • Plant large-scale trees with good bole length to retain vistas to outlying landscapes. • Panorama Avenue – suggested planting of poplar species (not Lombardy) (**Refer Appendix F Species List**). • Retain street trees along William Street to Bicentennial Park and replant where they have become absent.

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
S13 Main arterial roads to be landscaped to reflect and enhance the theme of the area, be aesthetically pleasing, avoid hazards to road users, pedestrians and cyclists and to provide for a suitable microclimate.	***Durham Street*** • The CBD Beautification Scheme recommends underground cabling of electricity between Bentinck and George Streets and the removal of the existing small trees) to be removed and replaced with tall plantings. It is recommended that plane trees or Manchurian pear be selected to mirror what exists on the eastern side. Pruning regimes for newly planted trees should also be similar to that conducted on the eastern side. ***Stewart Street*** • Footpaths to be planted with medium to large trees to reflect the scale of the dual carriageway. Constraints of overhead power lines, residential allotments located close to the front boundaries and traffic hazards would require species selected for their ability to be crown lifted, directionally pruned and pollution tolerance. Trees with a strong tendency for horizontal branching should also be avoided. • An avenue effect of the one species is recommended to accentuate the rural vistas, provide unity and provide strong visual impact. A suggested species includes the golden and claret ash provided overhead power lines are removed. Existing white cedars to be removed and replaced. • Planting along the median strip to be restricted to low growing shrubs (< 0.5 m), or grass like plants such as the existing *Dietes sp*. to maintain adequate sight distance for traffic safety. • *Ginko biloba* and *Liquidambar styraciflua* that are within the median strip should be removed as they have potential to obstruct views and are in poor health due to the unfavourable growing conditions. • The visual appearance of the median strip to be improved through weed control measures, tree removal, upkeep of existing plantings, retention of mono-specific plants, fertiliser application, replanting in voids and supplementary watering when and where required. (Note: Regular light applications of fertiliser improves the drought tolerance of the plants by increasing their root mass and overall functioning). ***Cycleways*** • Avoid planting shrubs immediately adjacent to cycleways to prevent branches causing injuries and to lessen the security risk. • Trees planted along the cycleway between Eglinton Bridge and Esrom Street to be planted in groups to allow clear views to the floodplain. Avenue plantings would also create an undesirable visual barrier (**Refer Figure 2**).

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
OBJECTIVE 4: To maintain street trees in good health and desirable form	
S14 Adopt appropriate arboricultural principles in the endeavour to extend the life-span of the tree, maintain street trees in good health, desired form and with high aesthetic value.	• Underground cabling of electricity can cause extensive root damage to existing mature trees and needs to be considered in any future planning • Improving the health of the street trees increases their longevity and aesthetic value while reducing the time required for replacement. • Lopping of old trees or pruning of their large branches is deleterious and often causes terminal decline, as the wounds never close over and become the entry points for decay causing disease and insect borers. The smaller wounds on younger trees are capable of callousing over. • The pruning of trees under power lines is a requirement for the Overhead Line Construction and Maintenance Regulations, 1962. The *Electricity Development Act 1945* require trees to be trimmed to prevent contact with aerial conductors of any overhead line. • Trees and landscaping should be subject to regular maintenance to ensure that they do not become overgrown or hazardous to pedestrian movement —including growth overhead and root damage to pavement surfaces. ***Directionally prune*** • Crownlift, crown reduce or centre prune street trees in the early stages of growth to reduce future pruning requirements. Directional pruning can slow down growth by reducing apical dominance, achieves desired form and avoids massive and often deleterious pruning cuts when the trees are large. This measure should be undertaken gradually to prevent wind lodging, sunburn to the trunk and excessive growth of terminal shoots. Broad domed trees are suitable for this treatment. ***Avoid lopping and heavy pruning*** Undesirable outcomes: • can alter the root to crown ratio; • can lead to increased root growth; • can cause decay; • can promote excessive root growth; • produce weak branches; • creates an unnaturally dense canopy which can obstruct street lighting; and

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
	• trees grow back with increased vigour, further increasing maintenance costs. Some lopping practices can be avoided by pruning branches back to branch collars. Do not flush cut. ***Select suitable species*** • Avoid planting trees under power lines which will require extensive pruning or will lose their natural form (large trees or those with apical dominance). • Select species that are not apically dominant (such as Eucalypts, Liquidambar, poplars and conifers) as street trees where pruning under power lines would be anticipated. • Select deep rooted trees that are small to medium at maturity and are suited to harsh environments. • Select appropriate species to avoid unnecessary and often damaging pruning and to reduce future pruning costs. • Use of aerial bundled conductor for low voltage reduces tree clearance to about 55 mm. Underground cabling can interfere with roots of existing trees. • Avoid problems with future pavement distortion and kerb damage by planting trees in large holes.
S15 Remove severely diseased or dying trees at the point where their aesthetic value is decreasing and their management costs and hazard ranking are increasing.	• Inform relevant community bodies of any significant tree removal activities to ensure their support. • Single trees can be removed when appropriate, though with groups of trees (such as in an avenue), their ultimate removal may need to be staged to prevent a negative visual impact. This has to be assessed on a case by case basis, as re-establishment may be difficult with existing trees in close proximity. • Replacing diseased trees will sustain Bathurst's heritage value for future generations. Some trees are in a state of terminal decline and maintenance inputs will increase as the tree ages, with the aesthetic and ecological value decreasing. A high cost to benefit ratio warrants tree removal and replacement. • Mature trees that have been lopped and/or pruned of large branches are destined to die prematurely as the large wounds provide entry of decay causing disease and wood boring insects and their overall vigour is diminished. Structurally they are prone to limb loss and being blown over and aesthetically they have depreciated value. • Remedial action on some severely diseased trees that have the potential to become dangerous may not be practical. In these situations removal becomes the preferred option. • If trees within a group or avenue are retained until their death, the amenity value is decreased and maintenance costs, hazards and litigation can increase. • The aesthetic return from a tree starts low and steadily increases to maturity where it plateaus for a period of

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
	time until it becomes over mature or senescent. At this later stage in the tree's life the aesthetic value becomes increasingly depreciated at the same time as costs to manage the tree increase (**Refer Figure 3**). In the years of non-productive decline, perhaps 20 – 30 years, resources could be allocated to re-establishing the aesthetic return by planting new trees. Therefore, the maintenance of a high level of aesthetic return from trees for as long as possible should be achieved rather than a pattern of fluctuating highs and lows.
S16 Undertake periodic tree health surveys of urban street trees and develop a street tree inventory database.	Inventory to include street plantings of heritage significance. • Budgets and priorities can be developed in accordance with survey results. • Surveys can be used to generate lists of trees requiring specific management actions with the data base designed to accommodate for continued updating. • Systematic surveys allow for determinations to be made in relation to the aesthetic value of single trees. This information can then be used to determine the critical point for tree removal and replacement. • Surveys and developed inventories to give a relative monetary value on trees to assist in management decisions (eg. removal, worth restoration work, value of tree outweighs costs to damaging infrastructure etc).
S17 Adopt drought management strategies to counteract the adverse affects of extended dry periods on street trees.	• Develop multi-pronged guidelines to manage newly established street trees, trees of high value (gateway specimens) or heritage trees for variable dry period conditions. • Selection of suitable species for the environment will reduce the consequences of drought, particularly in areas where supplementary watering is not an option. • Supplementary watering, weed management and mulching may be required for newly established plantings, especially in times of low water availability. • Where the physical or chemical properties of the soil are not conducive to good growth and establishment, soil remediation may be necessary to reduce future management costs and potential tree replacement.
OBJECTIVE 5: To appropriately locate trees in the road reserves, along with suitable species selection to maximise the street tree effect while considering constraints of safety, utility services and road and tree maintenance.	
S18 Consider recommendations during treescaping projects.	• (**Refer Appendix F Species Lists**). • Spacings to consider solar radiation, scale of the plantings and the desired effect. Gaps between trees sets up a rhythm and is an effective landscape tool in the urban environment. • Plantings not to obstruct sight distances. Particular care to be taken around curves, near intersections and driveways. • Non-frangible trees planted near road verges and medians to have a mature diameter of less than 100mm. • 4.5 metre footpaths allow for 0.95 metres for street tree planting.

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
	• New subdivisions with a less formal street layout can be enhanced with a less formal street tree layout. Currently equidistant plantings, with one tree per allotment sets up a formal, sterile streetscape. Groupings of trees can introduce interest in these situations. • For arterial roads, plant trees >2.5 metres from the road edge. • Frangible trees plant >1 metre from road edge. • For local roads the main safety consideration is sight distance. • Small trees and shrubs can cause visibility problems for road users, provide little shade and may be of a scale unsuitable for the area. • Select tree species and consider location of trees to avoid the obstruction of street lamps, traffic lights, views and buildings. • Street tree canopies need a ground clearance of 2.5 metres to be clear of pedestrian and vehicular traffic. • In areas utilised by heavy vehicles, the ground clearance needs to be 4.3 metres in height. ***Planting within carriageway*** • Reduces interference of trees with power lines and underground services. • Can visually obstruct views if large species are selected. • Only suitable for wide roads. • Limits parking availability. • Vehicular accidents and damage resulting from collision with trees.
S19 Remove overhead powerlines as an on-going process to enhance the streetscape.	• Underground cabling of electricity can cause extensive root damage to existing mature trees and needs to be considered in any future planning. • Target areas include the CBD, gateways and major arterial roads. • Use thrust bore method for trenching under existing trees as opposed to open trenching.
OBJECTIVE 6 Street trees in the village of Raglan to accommodate for the aerodrome clearance requirements	
S20 Heights of mature street trees to be within the height limitations specified by the Civil Aviation Safety Authority.	• Tree heights above the allowable limit set out by the Civil Aviation Safety Authority need to be controlled through pruning or removal. To avoid unnecessary maintenance it is recommended that species be selected that reach mature heights below this limit. • It is recommended that trees that are constantly maintained to be within the allowable limit be removed and

TABLE Error! No text of specified style in document.**.5** **Streetscape Strategies**	
Strategies	**Recommendations/Guidelines**
	replaced with appropriate species. • All trees in the north-eastern most corner of Raglan (in the block bounded by Christie, Locke and Eugene Streets) to be less than 8m. • Heights can increase to the south-west of the block with the maximum allowable height being 15m. • In the blocks including the Raglan Sports Complex and those between Locke and Eugene Streets the height restrictions vary from around 20 – 30m. It is recommended that a maximum of 20 m be used as a practical guide. • Residents within the flight paths to be kept informed about height restrictions of trees to prevent inappropriate private planting.
OBJECTIVE 7 To incorporate the VMP into local planning studies and provisions	
S20 Vegetation issues to be incorporated within Development Control Plans for new development areas.	• VMP to underpin recommendations in the DCPs.

Actions

TABLE Error! No text of specified style in document.**.6** **Streetscape Actions**		
Action	**Strategy Identifier**	**Importance Ranking (1-highest, 4-lowest)**
Replant trees in CBD area.	S6	2
Replant trees in new residential and industrial areas	S6	2
Replant trees in Heritage Conservation Area.	S6	2
Undertake screen plantings	S9	1
Enhance the visual appeal of Panorama Avenue and William Street.	S12	3
Plant/replace trees along main arterial roads: • Eglinton Road • Hamilton Street, Eglinton • Peel Road • O'Connell Road • Stewart Street • Durham Street	S13	2

PARKS AND PUBLIC RESERVES

Guiding Principles

The future direction of vegetation management for the parks and public reserves of Bathurst are guided by a number of specific principles. These are:

- Develop themes and management recommendations that reflect the character of the immediate natural and built environment.
- Recognise existing heritage values of public parks and reserves.
- Vegetation management to allow for future development within open space areas, in context with the character and value of the area.

Enhance and preserve significant values of open space areas preserved for their heritage and aesthetic values.

TABLE Error! No text of specified style in document.**.7** **Parks and Public Reserves Strategies**	
Strategies	**Recommendations**
OBJECTIVE 1: To retain and conserve the heritage value of Machattie Park while accommodating future memorial features and plantings	
P1 Management of Machattie Park to reflect existing and future management guidelines.	• Review management strategies in the *Interim Conservation Management Strategy* for Machattie Park and other Council related plans (eg Council's Management Plan for Machattie Park (Gutteridge, Haskins and Davey 1990) and Bathurst Heritage Study (Hughes *et al* 1990).
P2 Manage the Park to maintain its inherent qualities.	• The Park to remain as a general community park and as a focal point for community leisure time activities. • At some time in the future other memorials could and should be added to the Park to continue its historic role in commemorating members of the community. • Plantings in garden beds can be changed as required, avoiding modern cultivars and plant species. • Seek funding through NSW Heritage Council for proposed improvements or upgrading. • Maintain the Begonia house to a high standard to ensure continued visitations. • Appropriately replant trees in consideration to heritage and design values, as a process to sustaining the park when older trees begin to senesce.
OBJECTIVE 2: To retain and conserve the heritage value of Kings Parade while accommodating future memorial features and plantings	
P3 Management of Kings Parade to reflect existing and future management guidelines.	• Review management strategies in the *Interim Conservation Management Strategy* for Kings Parade and other Council related plans (eg Bathurst Heritage Study (Hughes *et al* 1990) and Central Pilot Program State Heritage Register (2001), Heritage Office. • Kings Parade to remain as a general community park and as a focal point for Community parades, celebrations and remembrance services. • Plantings in garden beds can be changed as required, avoiding modern cultivars and plant species.
OBJECTIVE 3: To Improve the visual amenity and functionality of key parks and reserves	

TABLE Error! No text of specified style in document.**.7** **Parks and Public Reserves Strategies**	
Strategies	**Recommendations**
P4 Design and redevelop Centennial Park to improve its overall amenity value.	• Retain as an open space area for passive recreation and the possibility of active recreational usage. • A suggestion could be to centrally locate a significant water feature as a focal point to add interest to the park. • The layout of paths to use good design principles. The existing path bisects the park and has no visual appeal. Consider symmetrical formal layout. • Design of park to be consistent with the heritage theme of the HCA. • Irrigation, especially at the time of plant establishment is essential. On-going provision for irrigation to be considered. • Tree species to be predominately exotics, with consideration given to their origin. Avoid plants reliant on good soils and high moisture requirements that have originated in moist, fertile regions. • Native trees can be used, though they are to work in with a heritage/formal landscape design. • Landscape material to be appropriate (ie. crushed granite as opposed to more 'earthy' materials suitable for reserves near waterways, bushland).
P5 Design and redevelop Victoria Park to improve its overall amenity value.	• Retain as an open space area for passive and active recreation and playground facilities. • The layout of paths to use good design principles. • Consideration given to terracing areas to achieve some flat terrain, whilst avoiding dramatic root disturbance to existing trees. • Design of park to be consistent with the heritage theme of the HCA. • Irrigation, especially at the time of plant establishment is essential. On-going provision for irrigation to be considered. • Tree species to be predominately exotics, with consideration given to their origin. Avoid plants reliant on good soils and high moisture requirements that have originated in moist, fertile regions. • Native trees can be used, though they are to work in with a heritage landscape design. • Landscape material to be appropriate (ie. crushed granite as opposed to more 'earthy' materials suitable for reserves near waterways, bushland).
P6 Develop an arboretum in the Blayney Common.	• Seek support, undertake feasibility study and secure funding. • Development to be undertaken in stages. • Species to be exotic and native. • To avoid a hotch-potch approach, which can result in a disfunctional and visually displeasing collection of plants, the arboretum is to be professionally designed and administered. • Plants to be adaptive of the Bathurst climate, with little requirement for irrigation once trees are established. Smaller plants may need supplementary watering during extensive dry periods. • Develop arboretum to optimise its many functions.

TABLE Error! No text of specified style in document.**.7** **Parks and Public Reserves Strategies**	
Strategies	**Recommendations**
P7 Upgrade O'Keefe Park, Abercrombie.	• Remove undesirable plant species from riverine environment, including white cedars and replant with she-oaks and river bottlebrush. • Where bank slumping is occurring on the cut banks of the river, keep vegetated buffer along bank edge to prevent erosion by trafficking to river and improving bank stability. • Strategically plant she-oaks and retain groundcover in buffer zones. • Plant trees in groups to maintain floodplain and rural vistas. • The environmental status and visual amenity would be improved with riparian restoration works. Within the Park, restoration has to be accommodating for recreation.
P8 Develop the open space area at the Keppel Street Railway Station to frame the historic setting and to provide amenity for travellers.	• Create a park-like environment suitable for the public awaiting buses or trains or passengers.
OBJECTIVE 4: To create a regional riparian recreational zone along the Macquarie River	
P9. Undertake a comprehensive study to investigate and develop a recreational link along the Macquarie River	• Recreational areas to link with existing part between Evans and Hereford Street Bridges. • Areas outside Evans and Hereford Street Bridge to have a maintenance level more akin to a natural parkland. • A suggested area for a more modified open space along the river would be in the old BCC nursery site (GIS Key 6474,6475). The non-invasive, existing exotic trees can be retained, grass slashed and car parking made available. The degree of amenity provided to be consistent with its potential benefit. • Retain the old BCC nursery site for future community recreation purposes. • Incorporate an access way along the river to link with other existing and proposed access ways. • Upperstorey vegetation to be endemic native species. • Upstream end suggested to commence at the railway bridge and to extend downstream to Apex Park. • Riparian zone to be restored according to best management practices.
OBJECTIVE 5: To improve the visual amenity and functionality of parks and reserves through practical planting principles	

TABLE Error! No text of specified style in document.**.7** **Parks and Public Reserves Strategies**	
Strategies	**Recommendations**
P10 Adopt planting principles to improve the amenity value of parks and reserves.	• Plant trees and shrubs in groups rather than as widely scattered individuals. The groupings can be mulched and kept weed free to reduce slashing. • Factors of safety should be considered when landscaping (ie. avoid creating visual barriers where they are not appropriate for personal protection). • Plant where practical evergreen trees to form windbreaks on the south and south-west of sporting fields, playgrounds, etc (suitable species include conifers, she-oaks, and other Australian natives). • Deciduous trees to be planted near amenities, and to the north and north-east of sporting fields, playgrounds etc. • Avoid eucalypts where cars are likely to park.
P11. Strategically increase tree planting in parks and public reserves.	• Replace dead or diseased trees, either in place of origin or at different locations (site dependent). • Replanting program to concentrate on one park/reserve at a time to avoid spreading resources thinly. • Target parks and reserves with high or potentially high amenity value and new subdivision areas where natural landscapes are devoid.
OBJECTIVE 6: To change management or decommission parks and reserves as compensation for improving parks and reserves of high or potentially high amenity value	
P12. Adopt strategies given in the Open Space Strategy.	• Refer Bathurst Open Space Study (Manidis Roberts Consultants, 1993).

TABLE Error! No text of specified style in document.**.7** **Parks and Public Reserves Strategies**	
Strategies	**Recommendations**
P13. Reduce resource input into key parks and reserves.	***Upstream of Apex Park*** *(GIS key 7231, Community land)* • In the short-term, implement management practices to reduce misuse of land. Long-term land use may alter to accommodate a recreational reserve to link with other river recreational areas. • Fence off to restrict unauthorised access to avoid vandalism, dumping of rubbish and garden refuse, the lowering of the visual amenity from unsympathetic land use and the creation of unnecessary vehicle tracks. • Before decommissioning, undertake appropriate weed control and rubbish removal. • Suitable for low pressure grazing with off-river watering. • Long-term measure to revegetate with riparian vegetation. • Do not slash. ***Parks/Reserves with remnant vegetation*** • In areas where groundcover has a high proportion of native grasses or where regeneration of box-gum woodlands are likely, reduce slashing incidence, restrict slashing area or do not slash at all. Native grasses have a low fire hazard due to their relatively low bulk. If it needs to be slashed it should be undertaken post flowering.

OBJECTIVE 7: To reduce the heat island effect in car parks by increased tree planting and tree care	
P14. Increase tree planting in car parks to improve the living environment.	Key car parks are: • Car park behind the R.S.L. • Russell Street car park.
P15. Select tree species suitable for the car park environment.	• (**Refer Appendix F Species Lists**). • Plant deciduous trees for summer shade and winter sun. • Do not plant eucalypts. • Select trees with spreading or horizontal branches. • Trees must be suitable for hot, dry summers and cold, frosty winters. • Avoid trees bearing fleshy fruit.

TABLE Error! No text of specified style in document.**.7** **Parks and Public Reserves Strategies**	
Strategies	**Recommendations**
P16. Adopt tree care principles to ensure maximum benefit from trees.	• Protect trees through the provision of adequate tree guards. • Encourage healthy growth by providing an appropriate growing environment (eg. garden islands, open grates around trunk). • Crown lift to improve clearance. • Supplementary irrigate and fertilise to encourage healthy growth, especially in the first two years of establishment. • Do not lop as this will encourage weakly attached branches and an upright habit.
OBJECTIVE 8: To produce quality park landscapes, to avoid stress induced disease and to improve the amenity of the area through judicious species selection	
P17. Select plant species suitable for the specific growing conditions of the designated area.	• (**Refer Appendix F Species Lists**). • Give consideration to height, width, and structural characteristics to suit constraints of location (land function, views, power lines, visual obstructions such as near traffic lights and street lamps, plant structural soundness). • In the HCA, open space areas such as informal public reserves and sporting fields can include native species where soil and moisture limitations would not favour good health and development of exotic species. • Open space areas surrounding historical buildings need to be influenced by original plantings and their design setting.
P18. Enhance the tree's visual appearance, keep services, infrastructure and views unobstructed and ensure the structural soundness of the trees.	• New and existing trees to be directionally pruned, where necessary, particularly in the early stages of growth and thereafter periodically assessed/pruned by a qualified arboriculturalist to ensure their continued health and desired form.
P19. Enhance the visual appearance of the park or reserve.	• Select trees according to the scale of the area, theme, surrounding characteristics of the natural and built environment. • Group or linear plantings are more unified than widely scattered, unconnected trees.
OBJECTIVE 9: Parks and reserves in the village of Raglan to accommodate for the aerodrome clearance requirements	
P20. The Raglan Sports Complex vegetation to accommodate for aerodrome clearance requirements.	• Trees to be less than 15m in the north-eastern portion and 20-30m on the south- western portion.

Actions

TABLE Error! No text of specified style in document.**.8** **Parks and Public Reserves Actions**		
Action	**Strategy Identifier**	**Importance Ranking (1-highest, 4-lowest)**
Centennial Park redevelopment.	P4	3
Victoria Park redevelopment.	P5	3
Blayney Common arboretum.	P6	4
Upgrade O'Keefe Park, at Eglinton Bridge.	P7	4
Develop the open space adjacent to the Keppel Street Railway Station.	P8	4
Investigate and develop recreational access link, along the Macquarie River.	P9	2
Increase tree planting in parks and reserves.	P11	3
Adopt strategies given in the Open Space Strategy.	P12	2
Decommission public reserves.	P13	2
Change management practices in parks and reserves with remnant vegetation.	P13	3
Increase tree planting in Council car parks, except for William Street car park which is being upgraded.	P14	1

GATEWAYS

Guiding Principles

Developing gateways into Bathurst and the outlying village of Perthville are planned on a number of specific guiding principles. These are:

- To maintain Bathurst's rural identity and cultural heritage.
- To maintain and frame vistas of the surrounding rural landscape where appropriate.
- To reflect the character of the immediate natural and built environment.
- To allow for the appreciation or enhancement of views, vistas or focal points recognised as being significant natural, cultural or heritage features.
- To act as significant landscape features that aid in the transition between the rural and urban landscapes.
- To provide visually impressive statements into the City.
- The plantings on the floodplain not to cause a reduction in floodway capacity.
- To be adaptable to the constraints of soils and climate and microclimate features of the particular site.
- To recognise the constraints of services, infrastructure, safety requirements and land use.

TABLE Error! No text of specified style in document.**.9** **Gateway Strategies**	
Strategies	**Recommendations**
OBJECTIVE 1: To develop gateway landscape features to compliment the surrounding natural landscape and built environment.	
G1 Maintain the rural and cultural heritage identity of Bathurst through appropriate planting and landscaping.	• Avoid the use of gateway structures such as feature walls and associated small gardens as they are not in keeping with the historical character of the City and are liable to become outdated. • Avoid the development of garden settings along the gateways as they are inappropriate for the scale of the surrounds and would be isolated, unconnected features. Gardens to be within more 'intimate' settings such as central parks. • The gateway vegetation, rural vistas, historical built environment, Carillon, Mount Panorama, floodplains and surrounding vegetation to provide the key focal points to the approaches into the City.
OBJECTIVE 2: To manage gateway plantings for long-term visual appeal, desired form, and good health.	
G2 Future roadside plantings to be assisted in establishment with adequate pre and post planting management.	• Thorough ground preparation to include ripping and weed control. • Supplementary watering, mulching, weeding and fertilising to encourage healthy growth and reduce early stress to the trees. • Protect young trees with tree guards if they are prone to be damaged by cars.
G3 Remove severely diseased or dying trees at the point where their aesthetic value is decreasing and their management costs and hazard ranking are increasing.	• Recommendations as per streetscape Section, Strategy S15.
G4 Undertake periodic tree health surveys of gateway trees and develop an inventory database.	• Recommendations as per streetscape Section, Strategy S16.
G5 Adopt drought management strategies to counteract the adverse affects of extended dry periods on street trees.	• Recommendations as per streetscape Section, Strategy S17.
G6 Adopt appropriate arboricultural principles in the endeavour to extend the life-span of the tree, maintain street trees in good health, desired form and with high aesthetic value.	• Directionally prune trees when they are young to enhance their visual appearance, maintain uniformity of the tree line or avenue, keep services, infrastructure and views unobstructed and ensure the structural soundness of the trees. • Undertake proper arboricultural techniques to lessen the risk of induced disease and add value to the vegetation.
OBJECTIVE 3: To improve the avenue effect of the tree and shrub plantings along PJ Moodie Memorial Drive.	
G7 Landscape the western side of PJ Moodie Drive.	• The existing red gums may be difficult to replace, and their mature height is unknown, therefore it is suggested yellow gums be planted in gaps and to continue the planting to the highway. Plant yellow gum (*Eucalyptus*

TABLE Error! No text of specified style in document.**9** **Gateway Strategies**	
Strategies	**Recommendations**
	leucoxylon var. *macrocarpa*). It is unlike the parent species and only grows to about 8 m in height and 5 m in width. • In between the gums, plant or replant two large-leafed photinia (*Photinia x fraseri*) shrubs to continue the theme planting that already exists towards the airport. • Towards the airport entrance remove exotic trees and replace with yellow gums and photinia to act as effective visual screens and to keep the avenue unified. The exotics are also less suited to the growing conditions prevalent at the site.
G8 Improve the visual appearance of the existing plantings on the eastern side of PJ Moodie Drive.	• The existing mature hawthorn and persimmon trees to be hedged or tidied up. • Towards the highway, small isolated hawthorns and disfigured juvenile eucalypts to be removed. • Narrow road reserve at the highway end to be kept free of shrubs and trees and slashed as currently practiced.
OBJECTIVE 4: To create a significant eastern gateway into Bathurst that enhances the rural vistas, provides unity amongst many discordant visual effects and reflects the heritage values of the City.	
Section from the LGA boundary to Raglan	
G9 The road reserve to be in keeping with the character of the surrounding grassy 'Bathurst Plains' and extending the views of the traveller to a wide area around Bathurst.	• Road reserve to be retained as a grassy verge with scattered silver wattle being allowed to colonise where it is occurring naturally. • Remove non-native shrubs such as hawthorns along road reserve.
Section includes Raglan Village	
Interim Management Until Highway Upgrade	
G10 Until the highway is upgraded maintain the existing line of poplars on the airport side of highway to within allowable heights in accordance with CASA requirements.	• Slash all poplar suckers, avoiding further root damage, which can induce further suckering. • Perform crown reduction operations to reduce the height of the poplars as required, preferably during the growing season of the tree to reduce the likelihood of disease.
G11 Plant avenue of trees along the Raglan Village section from the eastern boundary of Raglan to the bend in the road past the Raglan Common.	• Recommend that an evergreen native be planted to provide a screen to the urban area, to provide a transition between the rural and urban environment and to complement the vegetation theme of the area. • Tree height to be within allowable limits in accordance with CASA requirements. • Recommended tree species is the low growing yellow gum, variety macrocarpa (*E. leucoxylon* var. *macrocarpa*). Do not plant the parent species. • Density of planting to be higher than other street tree planting due to the small stature of the trees. Widely spaced small trees do not work well in terms of design principles.

TABLE Error! No text of specified style in document.**9** **Gateway Strategies**	
Strategies	**Recommendations**
Following Future Highway Upgrade	
G12 Plant avenue of trees along the airport side of Raglan Village to mirror the plantings on the other side of the Highway.	• Gateway plantings to accommodate for the constraints set out by the CASA. For the purpose of species selection the maximum allowable height of the tree at maturity is not to exceed 8 metres. • Recommended species is the yellow gum. • Single row in the avenue is recommended. • Due to the small scale of the tree in relation to the open expanse of the rural landscape surrounding the Aerodrome, the spacings between the trees to be relatively narrow. With overly wide spacings the tree avenue will lose its impact and continuity. • Consider land acquisition if necessary.
Section from Raglan to O'Connell Road	
Interim Management Until Highway Upgrade	
G13 Until the highway is upgraded maintain the existing line of poplars in the road reserve.	• Slash all poplar suckers, avoiding further root damage which can induce further suckering. • Remove exotic trees, shrubs and weed species in the avenue of poplars.
G14 Improve the visual appearance between the Raglan Creek Bridge and the traffic lights.	• On the southern side keep area between Raglan Creek Bridge and traffic lights free of trees. • On the northern side remove undesirable plants species such as *Robinia* and radiata pine. These are inappropriate near a watercourse and the *Robinia* is prone to suckering, resembling a weed. • To improve the safety of the area as a pedestrian access route remove the existing poplars that act as visual barriers. The poplars also detract from the proposed planting types. • Plant with a mix of eucalypts and deciduous exotic trees to provide the appropriate transition into Kelso. • Plant natives in the vicinity of the drainage line. • Trees to be planted in groups rather than formal avenues. • Do not plant shrubs or multi-stemmed trees. • Area to be land-formed to improve the appearance and pedestrian access.
Following Future Highway Upgrade	
G15 Treescape highway section where practical to improve visual appearance.	• Plant or maintain poplars along road reserve where they will not interfere with overhead power lines and drainage lines. • On the northern side, continue line of poplars up to the Gold Panner Motel. Acquire land if necessary. • Allowances need to be made on the southern side for infrastructure constraints and drainage lines adjacent to the Highway. Do not plant poplars or any other trees in these areas. • Remove poplar suckers as they appear.

TABLE Error! No text of specified style in document.**9** **Gateway Strategies**	
Strategies	**Recommendations**
	• Avoid damaging poplar roots which can induce root suckering. • Continue line of poplars to the bridge over Raglan Creek. • From the Gold Panner Motel to Raglan Creek Bridge in front of the business services, plant avenue of crab apples. • Directionally prune crab apples to ensure appropriate form.
Section from O'Connell Road to the Kelso Floodplain	
G16 Improve the visual amenity of the highway section at Kelso.	• Diseased and damaged trees that are at risk of causing damage and injury to persons or property and have low aesthetic value should be removed and replaced with a more suitable species. • Trees to be directionally pruned in the early stages of growth to ensure their form and functionality, especially under power lines. • The planting of crab apples to extend to the first set of lights on the southern side of the highway to accommodate for the power lines. • Crab apples to be planted on the northern side to View Street where there are overhead power lines. • From View Street to Boyd Street, maintain existing plantings of trees. • Continue avenue of trees to car dealership with existing species such as claret ash and nettle tree. • Avoid planting trees under domestic electricity cables connected to the power lines. • Remove existing small shrubs and multi-branched small trees.
Section includes Kelso Floodplain	
G17 Develop avenue of trees along floodplain recognising soil constraints, flood regimes and visual amenity.	• Species to be adaptable to soils prone to waterlogging, and cracking during dry periods. • Trees to be single trunked and adaptable to canopy lifting to allow for free passage of water and debris in times of flood. • Plant spacings on the left hand side to be wide enough not to obstruct views to Mount Panorama. • Plant and replace pin oaks on southern side of highway. Extend from Evans Bridge to Car Stop shop. • To replicate the existing rhythm, species on the right hand side be restricted to English elms, English oaks and maple leafed plane trees. Species to have essentially the same dome shape, be large and have dark brown bark. Avoid light coloured trunks (Birch) and cone-shaped trees (Liquidambar). • Remove white cedars as they may have potential to readily colonise watercourse systems from seed, particularly downstream in the warmer environments. • Remove poplars as they represent the wrong shape for the avenue planting. • Avenue to be at least double rowed.

TABLE Error! No text of specified style in document.**9** **Gateway Strategies**	
Strategies	**Recommendations**
	• Continue log car barrier to Kelso area.
Section includes Kendal Avenue	
G18 Enhance the visual appearance of the existing vegetation in keeping with its heritage value.	• Remove the irises, log planter boxes, and "Mop Top" robinias. • Continue post and rail fencing to run between road and tree planting. This is to delineate the road from the avenue planting, to add interest and to tie in existing elements from Morse and Learmonth Parks. The fence, if erected close to the road, would also prevent inappropriate parking during periods of high attendance at the showground. • Retain the post and rail in its natural state. This would require the timber to be a hardwood, which is initially expensive. The initial expense outweighs continual painting. The natural colour compliments the existing kopper logs and concrete pillers in Morse and Learmonth Parks and is more visually distinctive than the existing green fence. • Plant gaps in avenue planting with maple leaf plane trees.
OBJECTIVE 5: To create a significant western gateway into Bathurst that enhances the rural vistas, screens urban development and reflects the heritage values of the City.	
Section from Wentworth Estate entry to RTA	
G19 Develop the gateway into Bathurst, up to the RTA, with a native vegetation theme.	***Riverside (LHS)*** • The avenue of trees to be yellow box. Care needs to be taken to ensure they do not have included bark, are not root bound and are of good form. It is advisable to purchase trees from the same vendor at the same time to improve the likelihood of the stock being similar. • Yellow box need to be appropriately spaced to minimise view obstruction and to maintain vistas to river valley and backdrop of slopes and ranges. • Native screening needs to be planted on the outside of the avenue of trees to act as a buffer between the residential areas and the highway. (**Refer Figure 1**). The extent of the screen planting to be extended as development extends. • Remove hawthorns, African boxthorns, blackberries, conifers and exotic trees. ***Hillside (RHS)*** *Interim measures*:

TABLE Error! No text of specified style in document.**.9** **Gateway Strategies**	
Strategies	**Recommendations**
	• Remove woody weeds such as hawthorn and conifers in the road reserve. • Plant road reserve with frangible native shrub species. Mass plant where possible. • Native shrub screening to buffer service business centre. *Long-term measures:* • Continue avenue planting of yellow box following re-zoning or land development proposals. Land acquisition may be necessary.
Section from RTA to Stewart Street	
G20 Develop gateway plantings to have a strong visual impact and to reflect the historic identity of Bathurst.	***Cemetery frontage*** • The theme of the gateway plantings to change to exotic species. • All trees up to the Boundary Road intersection to be removed. • Within the constraints of drainage, landform the road reserve to improve the appearance. • Retain remnant native vegetation. • Replant avenue of deodar cedars (*Cedrus deodara*) to link to existing plantings. Where road reserve narrows at intersection with Boundary Road, leave open. Avenue will be discontinuous along the cemetery where other established trees exist. • Remove pyracantha and cotoneaster shrubs and plant a mix of natives and exotics trees (deciduous and conifers) in the cemetery to reduce pruning and to provide a backdrop to the avenue plantings. • As a safety issue avoid planting shrubs in cemetery. • Erect appropriate style of fencing, such as wrought iron, along entire boundary of cemetery. • To ensure road signs and the connecting road are not obstructed do not plant deodars in front of oval. ***Sports Stadium frontage to Stewart Street*** • Continue avenue planting of deodar cedars. • Retain all other existing trees. ***Golf Course frontage***

TABLE Error! No text of specified style in document.**9** **Gateway Strategies**	
Strategies	**Recommendations**
	• Retain existing deodars and replant where overhead power lines are not a constraint (ie close to Boundary Road). Remove only those that are severely damaged or dying. ***Gaol to Stewart Street*** • To accommodate for power lines plant an avenue of small growing, ornamental trees such as Chinese pistachio (*Pistacia chinensis*) from the golf course to Stewart Street.
G21 Develop and implement a landscape plan of the area surrounding the visitors information stand at Hector Park to improve the visual appeal and amenity value of the area.	• Avoid non-invasive species. • Mix of native and exotic species would be appropriate.
OBJECTIVE 6: To create a gateway into Bathurst from Blayney that compliments the natural remnant vegetation in the area.	
G22 Revegetate the road reserve along the Mid-Western Highway to Boundary Road.	• Plant with endemic tree species and native shrubs to compliment the surrounding bushland and to enhance the road reserve as a wildlife corridor and link to other remnants. • Remove weeds in the drainage lines where possible which may need to be incorporation with landholders.
G23 Maintain the 'bush' atmosphere of the gateway by keeping tree plantings fronting Boundary Road Reserve and the Golf Club informal.	• Gateway plantings to be in random groups not avenues or rows of same species plantings.
OBJECTIVE 7: To create a gateway to Bathurst and Perthville along Vale Road that is European in character and assimilates the unique floodplain landscape.	
G24 Survey and assess the existing trees along Vale Road and determine those that need to be removed.	Those to be assessed include: • trees showing severe dieback; • poplars close to the road shoulder; and • willows, regardless of the species or whether they are non-reproductive males. Willows should not be seen to be growing on floodplains or watercourses.
G25 Undertake a tree removal and replanting program to continue the avenue planting to the Lagoon village turnoff.	• Remove trees in accordance with the tree assessment. • Suggested planting of a poplar species (Refer **Appendix F, Species List**). • Plantings can continue to Hawthornden Creek.
G26 Maintain elms into Perthville.	• Undertake sucker control and continue to prune to accommodate for trucks.

Actions

TABLE Error! No text of specified style in document..**10** **Gateway Actions**		
Action	**Strategy Identifier**	**Importance Ranking (1-highest, 4-lowest)**
Improve the avenue effect of the tree and shrub plantings along PJ Moodie Memorial Drive.	G7, G8	2
Plant avenue of trees along the Raglan Village section from the eastern boundary of Raglan to the bend in the road past the Raglan Common.	G11	2
Improve the visual appearance between the Raglan Creek Bridge and the traffic lights through engineering works and landscaping.	G14	1
Improve the visual amenity of the highway section at Kelso.	G16	1
Develop avenue of trees along Kelso floodplain.	G17	1
Enhance the visual appearance of the existing vegetation in Kendal Avenue.	G18	1
Develop the gateway plantings into Bathurst along the Mitchell Highway.	G19, G20	1
Landscape the area surrounding the visitors information stand at Hector Park.	G21	2
Revegetate the road reserve along the Mid-Western Highway to Boundary Road.	G22	4
Survey and assess the existing trees along Vale Road and remove where necessary.	G24	3
Remove dying and diseased trees where necessary and undertake a replanting program to continue the avenue of trees to the Lagoon village turnoff.	G25	3

FLOODPLAINS

Guiding Principles

The principles that have guided the development of management strategies are to recognise and embrace:

- The visual amenity values of the Kelso floodplain.
- The function of the floodplain for flood routing.
- The predominant land use being agriculture, horticulture and active recreation.
- The potential for environmental and recreational wetlands development.

TABLE Error! No text of specified style in document..**11** **Floodplain Strategies**	
Strategies	**Recommendations**
OBJECTIVE 1 To create a Raglan Creek wetlands environment.	
F1 Enhance the wetlands opportunities by developing a project to construct an off-stream wetlands environment along Raglan Creek.	• Recommended location to be to the north of the Great Western Highway between Kelso and the Macquarie River. • The works to be integrated into the existing sports field areas without compromising those uses and providing a diversification of recreational opportunities. • The wetlands to be developed to provide the community with a small example of the complex of sod tussock lands, billabong and flood runner streams that existed before it was modified for agriculture.
F2 Seek funding opportunities for developing wetlands environment.	• Success of project enhanced by Council, community and agency partnerships.
OBJECTIVE 2 To maintain the 'generally tree less, market garden, open space' theme identity of the Kelso Floodplain.	
F3 Recognise the theme characteristics of the Kelso Floodplain.	• On public land limit the plantings of trees to gateways and recreational parks where they are required for amenity value.
OBJECTIVE 3 Vegetation management on the Kelso floodplain to have a nil or negligible impact on flood routing, enhance amenity value and be environmentally sound.	
F4 Plant species selected for plantings on the floodplain to be appropriate for flood routing, aesthetics and environmental reasons.	• Only single trunked trees selected. • Multi-stemmed trees appropriately pruned or removed if deemed causing flood problems. • Trees with low branches may require canopy lifting. • Avoid the planting of large shrubs. • Trees planted in groups should be strategically planted to avoid the build up of debris and allow for the free passage of water (ie plant in 'tear drop' shape). • Avoid the selection of undesirable species (**Refer Appendix F**). • Use of native groundcover species is recommended as a landscaping option eg grasses, grass like plants (sedges, rushes, *Lomandra spp.*).

Actions

TABLE Error! No text of specified style in document..**12** **Floodplain Actions**		
Action	**Strategy Identifier**	**Importance Ranking (1-highest, 4-lowest)**
Develop an off-stream constructed wetlands on Raglan Creek.	F1, F2	3

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
Native Vegetation			
Create a link of native vegetation from Boundary Road along the western and southern face of Mount Panorama to Vale Road	RV13	Planting, ground preparation (including fencing) On-going maintenance (Over 10 year period) **TOTAL**	$300,000 $50,000 **$350,000**
Link remnant vegetation through urban landscapes	RV14	Planting, ground preparation On-going maintenance (excluding slashing) (Over 10 year period) **TOTAL**	$50,000 $50,000 **$100,000**
Waterways			
Restore riparian vegetation along the Macquarie River	W1, W2, W3	Willow removal Restore with native vegetation (no fencing) Follow-up willow management **TOTAL**	$700,000 $700,000 $100,000 **$1500,000**
Establish native vegetation along all waterways (eg	W9	Remove exotic vegetation along stream banks	$500,000

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
Hawthornden, Jordan, Queen Charlotte Vale Creeks and Raglan Creek off the floodplain)		Restore with native vegetation Follow-up willow and exotic vegetation management **TOTAL**	$500,000 $200,000 **$1200,000**
Undertake engineering solutions to mitigate against erosion on drainage lines where needed	W10		**$200,000**
Develop Sawpit Creek from Ophir Road to Mitchell Highway	W11 – W14	Willow removal Revegetate with native vegetation On-going management (not including slashing) (Over 10 year period) **TOTAL**	$300,000 $500,000 $100,000 **$900,000**
Protect and enhance Sawpit Creek from Mitchell Highway to its upper catchment	W15, W16	Planting with native species and to allow natural regeneration where appropriate (including fencing) On-going maintenance (Over 10 year period) **TOTAL**	$200,000 $50,000 **$250,000**
Landscape drainage lines	W18	Landscaping with native plants (excluding fencing)	$200,000

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
		Follow up maintenance (excluding regular slashing) (Over 10 year period) **TOTAL**	$200,000 **$400,000**
Streetscape			
Replant trees in CBD where necessary	S6	Tree planting On-going maintenance Tree removal (Over 10 year period) **TOTAL**	$100,000 $100,000 $50,000 **$250,000**
Plant trees in new residential and industrial areas	S6	Tree planting On-going maintenance (Over 10 year period) **TOTAL**	$500,000 $500,000 **$1,000,000**
Replant trees in HCA where necessary	S6	Tree planting On-going maintenance (Over 10 year period) Tree removal	$100,000 $100,000 $50,000

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
		TOTAL	**$250,000**
Undertake screen planting	S9	Screen planting On-going maintenance (excluding slashing) (Over 10 year period) **TOTAL**	$50,000 $50,000 **$100,000**
Enhance visual appeal of Panorama Avenue	S12	Plant/replant On-going maintenance (Over 10 year period) Tree removal **TOTAL**	$20,000 $20,000 $20,000 **$60,000**
Plant/ replace trees along main arterial roads	S13	Tree planting On-going maintenance (Over 10 year period) Tree removal **TOTAL**	$500,000 $500,000 $100,000 **$1,100,000**
Parks & Reserves			
Centennial Park redevelopment	P4		Minimum $250,000

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
Victoria Park redevelopment	P5		Minimum $250,000
Blayney Common	P6		Minimum $250,000
Upgrade O'Keefe Park	P7		Minimum $100,000
Develop open space adjacent to the Keppel Street railway station	P8		**$50,000**
Recreational link along Macquarie River	P9	Constructed pathway	**$700,000**
Tree plantings in parks and reserves	P11	Planting Maintenance (Over 10 year period) **TOTAL**	$500,000 $500,000 **$1,000,000**
Floodplains			
PJ Moodie Memorial Drive	G7/G8	Tree planting and follow up maintenance	**$20,000**
Avenue of trees along Raglan Village	G11	Tree planting On-going maintenance (Over 10 year period) **TOTAL**	$50,000 $50,000 **$100,000**
Landscape area between Raglan Bridge and O'Connell Road turnoff	G14	Tree planting Land forming **TOTAL**	$10,000 $5,000 **$15,000**
O'Connell Road to Kelso floodplain	G16	Tree planting	$30,000

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
		On-going maintenance (Over 10 year period) Tree/shrub removal **TOTAL**	$30,000 $10,000 **$70,000**
Develop avenue of trees along floodplain	G17	Tree planting Maintenance (Over 10 year period) Tree removal **TOTAL**	$10,000 $10,000 $10,000 **$30,000**
Enhance the visual appearance of the existing vegetation in Kendal Avenue	G18	Replacement tree planting and maintenance (Over 10 year period) Tree and planter box removal Erection of post and rail fence **TOTAL**	$5,000 $20,000 $30,000 **$55,000**
Develop the western approach gateway plantings into Bathurst up to the RTA	G19	Tree planting Maintenance of avenue planting (Over 10 year period)	$50,000 $50,000

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
		Screen planting Maintain screen planting (excludes slashing) (Over 10 year period) Tree and shrub removal **TOTAL**	$50,000 $50,000 $10,000 **$210,000**
Western approach gateway plantings from RTA to Stewart Street	G20	Tree planting Maintenance of avenue planting (Over 10 year period) Tree removal **TOTAL**	$50,000 $50,000 $20,000 **$120,000**
Landscape visitors information area at Hector Park	G21		**$50,000**
Revegetate road reserve along Mid-Western Highway	G22	Woody weed removal in drainage line and roadside Revegetate roadside On-going maintenance (excluding slashing (Over 10 year period) **TOTAL**	$20,000 $100,000 $100,000 **$220,000**

TABLE 13.13 SPECIFIC PROJECT COSTS			
Project	**Strategy Identity**	**Description**	**Indicative Costs**
Survey and assess existing trees along Vale Road	G24		**$10,000**
Undertake replanting program along Vale Road and remove diseased and dying trees where necessary	G25	Replanting avenue trees Maintenance of avenue trees (Over 10 year period) Tree removal **TOTAL**	$100,000 $100,000 $40,000 **$140,000**
Floodplain off-stream constructed wetlands	F1, F2	Earthmoving Revegetating wetlands On-going maintenance (Over 10 year period) **TOTAL**	$50,000 $50,000 50,000 **$150,000**