



Urban Tree Management Policy

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Contents

Urban Tree Management Policy.....	1
Purpose	4
Context	4
Scope	4
*Bushland (Natural) Reserves.....	5
Policy Objectives.....	6
Policy Statement.....	7
Strategic Direction.....	7
1. Tree Protection	7
1.1. Tree Protection Zones	8
1.2. Excavation within a TPZ.....	8
1.3. Root pruning.....	9
1.4. Events	9
1.5. Tree Protection Management Plans	10
2. Tree Removal	10
2.1. Tree removal criteria	10
3. Tree Valuation	11
3.1. Tree Removal Costs	12
3.2. Bonds.....	12
4. Tree Management.....	12
4.1. Tree Data	12
4.2. Tree Pruning	13
4.3. Proactive maintenance.....	13
4.4. Veteran Trees	14
4.5. Electrical Line Clearance.....	14
4.6. Reactive works and requests for maintenance	15
4.7. Tree Inspections	15
4.8. Pests and Disease	15
5. Tree Planting	16
6. Tree Roots and Infrastructure	17
Direct damage to light built structures	17
Indirect damage - Subsidence and heave from soil moisture variations	17
Damager to Sewers, Pipes and Drains	18

7. Fauna.....	19
7.1. Habitat trees.....	19
7.2. Termites.....	19
8. Community Engagement.....	20
8.1. Tree Planting.....	20
8.2. Tree Maintenance Activities.....	20
8.3. Tree Removal.....	21
Implementation Action Plan.....	21
Monitoring and Review.....	23
Related City of Greater Bendigo Documents.....	23
Glossary.....	24
Appendix 1.....	25
Weed Species.....	25
Appendix 2.....	27
Proactive Tree Management.....	27
Appendix 3.....	28
Nominated facilities on the City’s annual tree inspection cycle.....	28

Purpose

This policy provides a rationale and framework for an equitable, transparent and consistent approach to the management of urban trees by the City of Greater Bendigo.

Context

Bendigo is often referred to as 'the City in the Forest'. The protection of existing trees and enhancement of Bendigo's urban forest is pivotal to the City living up to this title and realising its vision: '*Greater Bendigo - creating the world's most liveable community*'.

The innumerable environmental, economic and social benefits provided by the urban forest contribute to a liveable city which supports human health and wellbeing whilst enhancing the character of our urban areas and townships.

As urban development increases and vegetation on private land diminishes, the provision and protection of trees in the public realm will become increasingly important.

This policy, in conjunction with an Urban Forest Strategy (to be developed), will guide and support the strategic vision for Greater Bendigo's urban forest.

Scope

This policy applies to all public trees that are on land owned or managed by the City of Greater Bendigo within Bendigo's urban boundary, townships and along roadsides in speed limit zones of up to 80 kilometres per hour.

This policy is applicable to all developers, builders, service providers, residents, civil contractors, event organisers and internal works units undertaking activities in proximity to City trees.

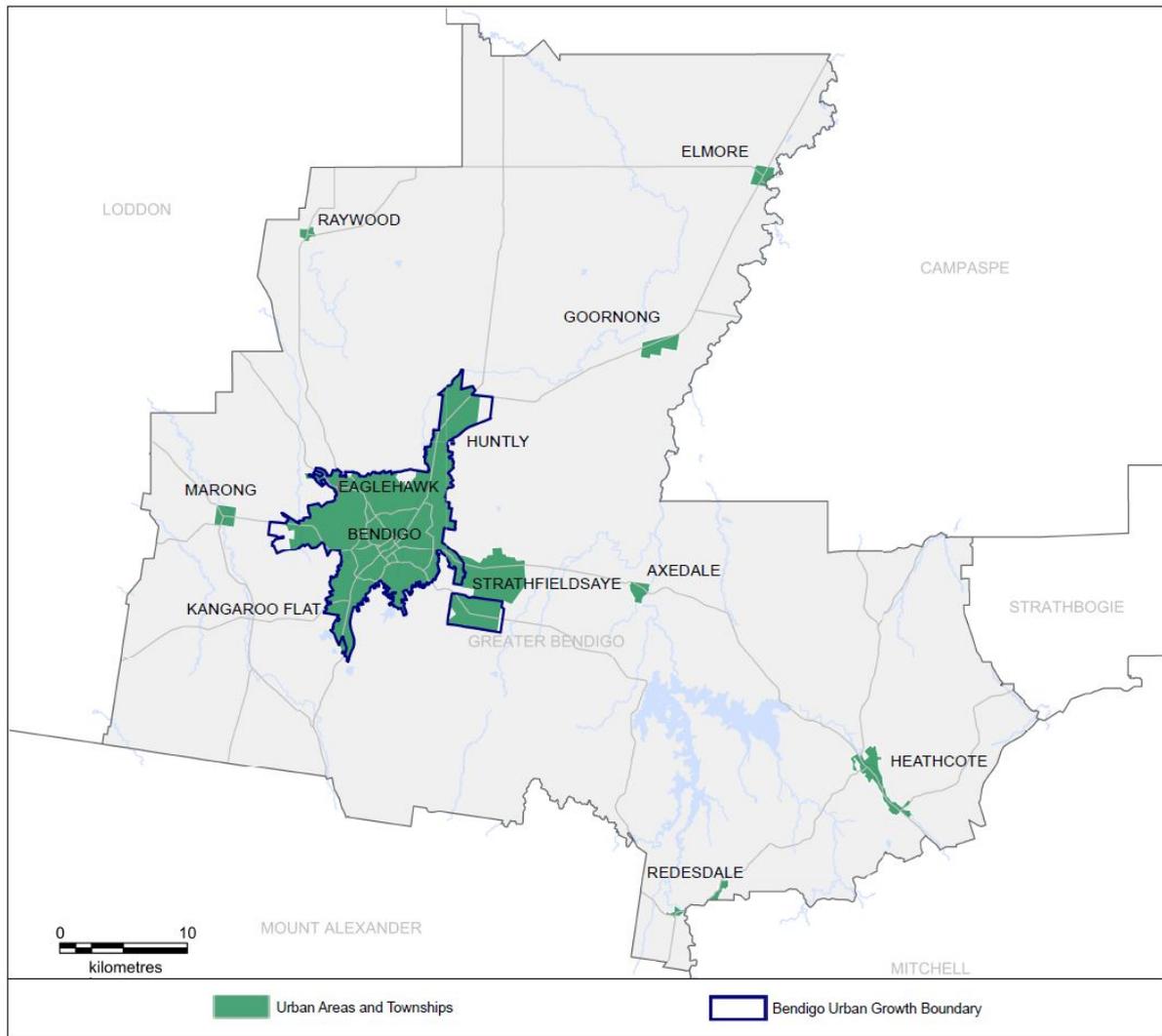


Figure 1 The City of Greater Bendigo's Urban Forest.

Trees excluded in this policy but may be covered by other policies and legislation include;

- Trees on private property
- Trees on rural roadsides
- Roadsides managed by VicRoads
- Public trees in National, State or Regional parks or on land managed by DEWLP or Parks Victoria
- Bushland and natural reserves*

***Bushland (Natural) Reserves**

The City of Greater Bendigo is responsible for the management of an extensive network of natural reserves and sites of environmental significance which contain a diverse range of species of native flora and fauna, some of which are unique to the Bendigo region (Figure 2.). Natural reserves are areas of indigenous vegetation managed for their conservation, environmental, habitat, recreational and heritage values. These reserves are maintained to



the service level agreement outlined in the Parks and Natural Reserves Service Delivery Plan which includes weed removal and revegetation regimes based on respective Ecological Vegetation Classes.

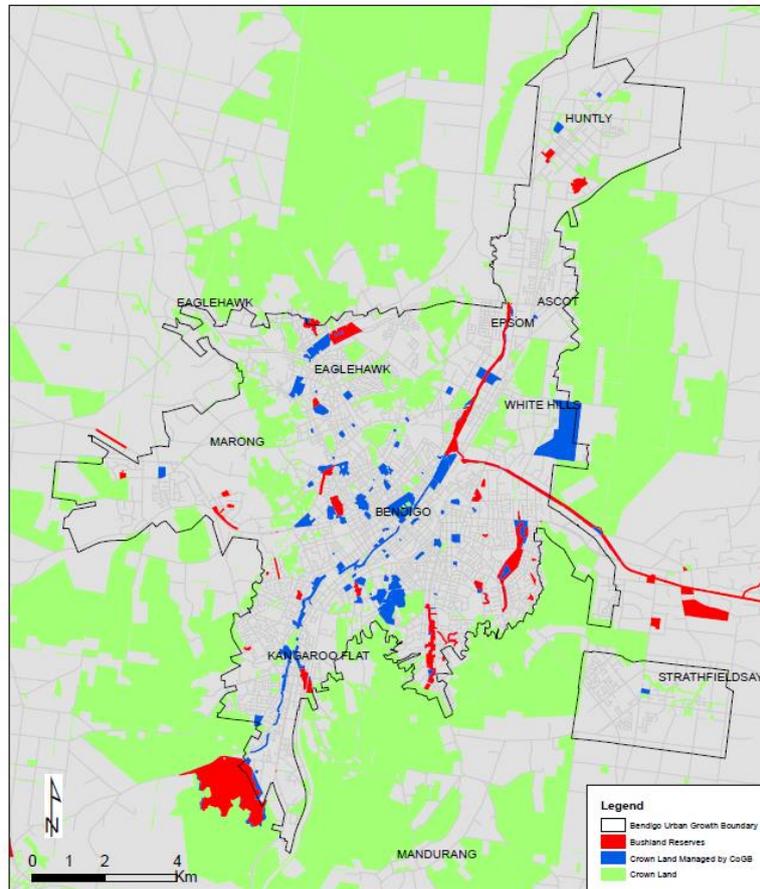


Figure 2 City of Greater Bendigo’s Bushland Reserves within the Urban Growth Boundary

Policy Objectives

1. To support and enhance the City of Greater Bendigo’s reputation of being ‘a City in a Forest’.
2. To document and standardise processes and procedures to ensure consistency in tree management decisions made by the City of Greater Bendigo.
3. To value the contribution of urban trees to the liveability and character of Greater Bendigo.
4. To protect existing trees from construction and development activities.
5. To define the circumstances under which public trees may be removed.

Policy Statement

Most trees will take many years, if not decades, to establish but are frequently compromised or irreversibly damaged by activities that do not adequately consider the requirements a tree needs to survive and grow. Decisions concerning tree management must be considered over the long-term and should not benefit one particular outcome at the expense of the multiple benefits provided by that tree into the future.

In recognition of the contribution trees make towards a liveable city, the retention of existing trees in the landscape will be given priority in every instance. As trees are living organisms there will be some degree of leaf and other plant litter as these are shed as part of their natural life cycle. It is not unreasonable to expect residents to undertake home maintenance activities as part of having trees in the urban environment.

Strategic Direction

The Urban Tree Management Policy is divided into eight key areas;

1. Tree Protection
2. Tree Removal
3. Tree Valuation
4. Tree Asset Management
5. Tree Planting
6. Tree Roots and Infrastructure
7. Fauna
8. Community Engagement

1. Tree Protection

Trees are dynamic living organisms that require specific environmental conditions in order to maintain life, health and value as an asset. Trees consist of crowns, stems and roots and damage sustained to one part will compromise the function of the tree as a whole. If trees are to be adequately retained and protected, these requirements must be considered and met during all stages of development.

Trees will be protected from construction works and other activities that threaten their health and stability. All construction, works, events and development activities in proximity to City trees and trees shown on endorsed plans to be retained must abide by the following requirements:

1. Removal of trees will not occur unless approved by the City consistent with the removal criteria within this policy.
2. Trees may not be pruned in any form and branches or roots may not be removed unless authorised by a City arborist. Any pruning undertaken on City trees must conform to *AS 4373 Pruning of amenity trees* and only be undertaken by sufficiently certified and insured personnel.
3. All City trees will be protected from construction and works activities in accordance with Australian Standard AS 4970- *Protection of trees on development sites*.

4. A Tree Protection Zone (TPZ) shall be established for the duration of any works in proximity to a City tree.
5. TPZs will be calculated in accordance with the methodology outlined in Australian Standard AS 4970- *Protection of trees on development sites*.
6. All City trees to be retained and protected plus the corresponding TPZ must be clearly identified on all submitted landscape plans.
7. Care will be taken at all times to ensure no damage is sustained to tree stems, crowns and roots.

1.1. Tree Protection Zones

1. A Tree Protection Zone (TPZ) shall be established for the duration of any works in proximity to a City tree or tree shown on an endorsed plan to be retained.
2. The TPZ for individual trees is determined by multiplying the DBH, measured at 1.4m above ground level, by 12. The TPZ distance is measured as a radius from the centre of the stem at ground level.
3. A TPZ will be no less than 2 meters or greater than 15 meters (except where crown protection is required).
4. The TPZ for palms, cycads and other large monocots will be no less than 1m outside of the crown projection.
5. The TPZ will be a restricted area delineated by sturdy fencing, as specified in AS 4970, which will isolate the tree from disturbance so that it remains viable. The TPZ will be established prior to the commencement of any works and signed off by a City arborist.
6. The following are not permitted within the TPZ without written permission from a City arborist;
 - a. Machine excavation including trenching;
 - b. Stockpiling of building materials, debris or soil;
 - c. Vehicular traffic except on existing paved surfaces;
 - d. Parking of vehicles and plant except on existing paved surfaces;
 - e. Preparation of chemicals, including preparation of cement products;
 - f. Refuelling;
 - g. Wash down and cleaning of equipment;
 - h. Placement of fill;
 - i. Alteration of soil levels or structure;
 - j. Temporary or permanent installation of utilities and signs;
 - k. Severing of roots greater than 30mm;
 - l. Installation of service pits or hatches;
 - m. Permanent or temporary vehicular crossings;
 - n. Physical damage to the tree.

1.2. Excavation within a TPZ

1. Boring is the preferred method of below-ground service installation within a TPZ.
2. Entry and exit pits for boring activities must be situated outside of TPZs.
3. Directional boring must occur at a minimum depth of 1 meter below ground surface.
4. Where boring is not possible, excavation shall be by hand or by a non-destructive method such as hydro-excavation at low pressure with consent from a City arborist.

1.3. Root pruning

Roots are responsible for the uptake of water and nutrients and for anchoring and supporting the tree in the ground. Root pruning is generally discouraged as the long-term impacts are not always predictable.

1. Any root pruning must be authorised by a City arborist.
2. Where root pruning is unavoidable, all cuts will be clean cut by hand using sharp tools such as secateurs, pruners, handsaws or specialised equipment.
3. Under no circumstances will roots be ripped or pulled by machinery.

1.4. Events

The City's parks and public open spaces provide the perfect venue and backdrop to a diverse array of community events and activities. Trees provide valuable amenity and much needed shade, especially over the warmer months, however can sustain damage from activities that occur around them.

Common ways that trees can be injured during events include;

- **Compaction** of the soil profile in which the space between soil particles is reduced, limiting the amount of air and water available to tree roots. If occupation beneath trees is frequent enough to damage the lawn, then it is likely that tree roots are also being damaged. Compaction is especially problematic on silty soils or during wet weather. If occupancy of vehicles or other equipment beneath trees cannot be avoided, there are many products available that will distribute loads and therefore reduce the amount of soil compaction sustained.
- **Mechanical damage and injury** to trees from vehicles, conflicts with equipment, unauthorised pruning and from tethering or fixing equipment and objects to trees.
- Less common is the **spill of chemicals or liquids** into the soil or the **scorching** of tree canopies due to the proximity of outdoor heaters and exhausts.

In addition to the tree protection criteria listed in 1.1. the following must be applied to all events and activities held in proximity to City trees;

1. There should be no vehicular movement or placement of sheds/large infrastructure beneath the drip-line of a public tree except where ground-protection, such as track mats or similar, has been implemented.
2. Equipment, decorations and signage must not be tied to, tethered to, nailed to, suspended from or placed within tree crowns, branches or stems.
3. Care will be taken at all times to avoid damage to tree crowns, branches and stems.
4. Trees must not be pruned in any form to facilitate access or activities unless permission from a City arborist has been sought prior to the event.
5. Outdoor heaters and exhausts must be placed no less than 2 meters from any part of a tree.
6. Refuelling, cleaning of equipment and emptying of liquid waste may not occur under the dripline of any City tree.

1.5. Tree Protection Management Plans

In instances where works or activities cannot be undertaken within the parameters outlined in the abovementioned tree protection requirements, a Tree Protection Management Plan (TPMP) will be required to be prepared and implemented prior to the commencement of the project.

1. The Tree Protection Management Plan (TPMP) must be prepared by a qualified arborist in accordance with Australian Standard AS 4970- *Protection of trees on development sites*.
2. The TPMP will assess the impacts of activities on public trees, recommend mitigation efforts to minimise identified impacts and identify methodologies to guide works and activities through all stages of a project.
3. The TPMP will include an arboricultural assessment of each tree including photos of the tree's current condition.
4. A project arborist may be required to oversee all works near City trees for the duration of works.
5. The TPMP must be endorsed by a City arborist prior to commencement of the works.
6. A single TPMP will be required for each project, development or event and cover all phases of demolition, construction and post-construction activity. The Principal Contractor will be responsible for the implementation of the TPMP by all contractors and personnel onsite.

2. Tree Removal

Trees, like all living things grow, age and eventually die. The City will manage and monitor all public trees throughout their lifecycle and remove and replace them as appropriate. Whilst tree removal is a last resort management option, public safety always takes priority.

City trees may not be removed unless approved by a City arborist in accordance with the tree removal criteria stipulated in 2.1.

1. All trees that are removed will be replaced as close as practically possible to the tree being removed to ensure that there is no net loss of trees from the immediate area.
2. Waste and debris generated from tree maintenance activities will be disposed of as per the City's Procurement Policy. Waste, including mulch and firewood, will not be offered to residents or businesses.

2.1. Tree removal criteria

1. Tree removal **will not be considered** in the following instances;
 - a. If the tree is considered healthy and structurally sound.
 - b. If there is a safe and practical means for tree retention.
 - c. For solar access.
 - d. For unjustified property or infrastructure damage claims.
 - e. To reduce leaf, fruit and litter debris.
 - f. For causing minor allergenic and irritant responses.
 - g. To minimise obstructions of advertising signage and desired views.

- h. For awnings, verandas and other projections over public open space.
 - i. To reduce the impact from any bird/bat/other animal waste or noise.
 - j. For superficial bush fire risk.
 - k. If the tree/s provides an important biodiversity function such as recognised high conservation road reserves.
 - l. For personal aesthetic preference.
 - m. Trees listed as a 'significant tree' on either the City of Greater Bendigo or National Trust registers.
2. The removal of City trees **may be considered** under the following instances;
- a. All hazardous trees will be removed as soon as reasonably practicable.
 - b. Trees that are unviable, have a high probability of failure, or are structurally unsound.
 - c. Any tree deemed dead, dying or in severe decline by a City arborist.
 - d. In the case of works and development, only once all practical design solutions to retain the tree have been exhausted.
 - e. A tree that has a defect requiring action that cannot be rectified without removal of the tree.
 - f. For pest, disease and biosecurity reasons that cannot be managed with the tree *in situ*.
 - g. The tree is a weed species for a particular location as listed in Appendix 1 of this document.
 - h. Trees proven to be causing damage to private infrastructure or services where all interventions to retain the tree have been exhausted.
 - i. Trees that are recognised as inducing severe allergenic or toxic responses.
 - j. As part of a project, whole street upgrade or capital works program which will result in a net increase in or improvement to green space that could not be achieved with the tree/s *in situ*.
 - k. Trees that do not meet specific objectives of the City's Urban Forest Strategy (to be developed), a masterplan or a management plan for a location in which they are located.
 - l. Non-indigenous trees within natural or bushland reserves that are considered weedy or incompatible with the conservation values of that reserve.
 - m. Trees listed as a 'significant tree' on either the City of Greater Bendigo or National Trust registers may only be removed following a Council resolution to do so.

In every instance, the on-going health and retention of the tree in the landscape will be given priority.

3. Tree Valuation

When the removal of a public tree is deemed necessary for construction, development or works, all costs associated with its removal and replacement must be paid by the property owner, utility or developer prior to removal.

3.1. Tree Removal Costs

The costs associated with the removal of a public tree include:

A. Tree Amenity Value	Calculated in accordance with the revised Maurer-Hoffman method adapted for Greater Bendigo.
B. Removal Costs	Costs associated with the removal of the tree including stumps, disposal of debris and any community engagement.
C. Tree Replacement Costs	Costs associated with the suitable replacement of the tree being removed. The level of reinstatement required will be determined by the City and include a 24-month maintenance period. Opportunities to improve soil conditions and increased water capture will be explored.

A Tree amenity value (A.) will not be charged in the following instances;

- a. Trees that are dead (except in cases of intentional vandalism or poisoning).
- b. Trees with a ULE of less than five years.
- c. Where the tree is a declared weed species for a particular location.
- d. Trees that have been assessed by a qualified arborist that pose a medium, high or very high level of residual risk in accordance with the City's risk management framework (Based on *Australian Standard for Risk Management ISO 31000:2009*).
- e. Trees proven to be causing damage to private infrastructure or services where all interventions to retain the tree have been exhausted.
- f. Trees proven to be causing damage to private infrastructure or services where all interventions to retain the tree have been exhausted.

3.2. Bonds

The City of Greater Bendigo will impose bonds on developers and event organisers where necessary to ensure the adequate protection of all trees to be retained. The bond or bank guarantee amount will be the combined amenity, removal and replacement value determined in accordance with this policy. The bond or bank guarantee will be held for the duration of the works, subject to an approved Tree Protection Management Plan.

4. Tree Management

The City will ensure that its high standard maintenance regime is continued and strengthened and that it provides adequate resources for ongoing urban tree management. The City will regularly update tree maintenance standards and procedures to ensure they reflect legislative requirements and industry best practice.

4.1. Tree Data

The City of Greater Bendigo has a computer based inventory of all trees for which it is responsible. The City's tree management program is linked to this inventory which allows for the details of all tree works and inspections to be recorded, providing evidence that the City satisfactorily maintains its urban tree population.

To maintain the integrity and content of the asset inventory and works program;



1. All trees considered to be tree assets are to be electronically recorded as such which identifies the species of the tree, its location, age, ULE, size and condition.
2. The City's tree inventory is to be updated every five years to ensure that the content is current and relevant.
3. All tree inspections are to be conducted in accordance with section 4.6. of this policy and must be recorded electronically in the City's asset management system.
4. All City staff and contractors are to electronically record works for every tree asset as they occur.
5. City staff and contractors will update electronic information as required including adding trees planted by a third party and recording trees that have been removed.

4.2. Tree Pruning

The City of Greater Bendigo undertakes pruning of street and park trees as part of its proactive, reactive and electrical line clearance programs.

1. All tree pruning on City trees will be in accordance with *AS 4373 Pruning of amenity trees*.
2. All tree pruning on City trees outside of the Proactive Tree Management contract must be approved by a City arborist.
3. No more than 30 per cent of the total tree crown will be removed at any one time.
4. The City will not allow pruning of trees under the following circumstances;
 - a. For solar access.
 - b. To reduce leaf, fruit and litter debris.
 - c. For causing minor allergenic and irritant responses.
 - d. To minimise obstructions of advertising signage and desired views.
 - e. For awnings, verandas and other projections over public open space.
 - f. To reduce the impact from any bird / bat / other animal waste or noise.
 - g. For personal aesthetic preference.

4.3. Proactive maintenance

The City's Proactive Tree Management Program aims to provide the necessary maintenance of tree assets as described by this policy. Activities covered in the scope of works for the Proactive Tree Management Program are included in Appendix 2. Each tree asset should be inspected and serviced regularly by qualified Arborists according to the prescribed rotation period for each particular zone.

1. Trees in Bendigo's CBD, major parks and nominated childcare centres, recreation facilities and City managed properties will be inspected and works programmed accordingly on an annual basis. A list of nominated facilities is included in Appendix 3.
2. All City trees within Bendigo's urban declared area will be inspected and works programmed both;
 - a. biennially as part of the Electrical Line Clearance Management Plan, and
 - b. at least once every four years as part of the Proactive Tree Management program.
3. All rural maintenance zones will be inspected and works programmed no less than once every five years.

4. The visit to every tree, regardless of it requiring works or not, is to be electronically recorded in the City's asset management system.

4.4. Veteran Trees

The City of Greater Bendigo manages many noteworthy trees, many of which are captured on the City's Significant Tree Register and/or the National Trust's Register of Significant Trees. Several of these trees are over-mature and nearing the end of their natural life. In recognition of the contribution that these trees make to Bendigo's cultural and environmental heritage, The City will afford these trees extra attention to manage their mortality and prolong their presence in the landscape for as long as practical. The City will;

1. Identify trees worthy of being on the Veteran Tree List.
2. Develop a Veteran Tree Management program in which all nominated trees are inspected annually and works programmed accordingly. Management of these trees may involve;
 - a. A greater level of tree inspection than typical of The City's Proactive Tree Management program.
 - b. Intervention techniques such as;
 - i. Mulching
 - ii. Soil aeration
 - iii. Irrigation and fertilisation
 - iv. Increased frequency of inspection
 - v. Bracing or cabling of weak branches and stems
 - vi. Landscape design interventions to remove possible targets and create a more favourable growing environment
3. Plan for the eventual removal and succession of Veteran Trees including the collection and propagation of appropriate genetic plant material.

4.5. Electrical Line Clearance

The City of Greater Bendigo is required to maintain vegetation clearance from above ground electrical conductors within the 'Bendigo Declared Area' under the Electrical Safety Act 1998 and most recent Electricity Safety (Electric Line Clearance) Regulations.

1. To achieve compliance with the Electricity Safety Act 1998 and the Electricity Safety (Electric Line Clearance) Regulations 2015 the City will prepare and submit to Energy Safe Victoria an annual Electrical Line Clearance Management Plan prior to March 31.
2. A copy of this Plan will be available on The City's website and for inspection at the City of Greater Bendigo offices.
3. The Electrical Line Clearance Management Plan details the requirements that all staff and Contractors must abide by when undertaking line clearance activities within the City's declared area.
4. The City will aim to maintain public safety at all times in relation to fire risk, human injury and continuity of supply resulting from the contact between power lines and vegetation.
5. The City will seek to protect of areas of important local and significant vegetation throughout the City's Declared Area. This protection includes, but is not limited to, sites containing botanically, historically or culturally important vegetation, or vegetation of

outstanding aesthetic or ecological significance, and/or the habitat of rare or endangered species.

6. Wherever possible, all pruning for electrical line clearance within the urban declared area will adhere to *AS 4373 Pruning of amenity trees*.
7. Wherever possible, pruning techniques will be applied that consider the visual amenity and ongoing health and longevity of the tree. Unnecessary wounding is to be avoided at all times.

4.6. Reactive works and requests for maintenance

Frequently, tree maintenance activities are required outside of the Proactive Tree Management cycle such as after severe weather events, as a result of a change in tree condition or in response to customer requests. The City also has specific responsibilities under the Emergency Management Act 1986 in response to and recovery from emergencies such as storms, fires and floods within the City of Greater Bendigo.

1. If tree works are required to be carried out in an emergency situation, the employee on duty or representative on site will be entitled to exercise discretion about what works are carried out in the prevailing conditions.
2. The City of Greater Bendigo will assess customer requests regarding urban trees in line within the parameters of this policy.
3. All customer service requests will be responded to in a timely manner in accordance with The City of Greater Bendigo's Customer Service Charter and Section 8 of this policy.

4.7. Tree Inspections

There are many types of tree inspections that are required as part of the management of the urban forest. The type of inspection required and the qualifications and experience of the personnel undertaking the inspection will vary. Types of inspections may include tree risk assessments, tree planting requests, customer service requests, tree health assessments, and routine inspections as part of a maintenance cycle.

All inspections of City trees undertaken by City staff and contractors;

1. Must be carried out in accordance with the City's most recent Tree Inspection Work Instruction and agreed approaches to risk assessment.
2. Must be undertaken by a suitably qualified arborist.
3. Are to be recorded electronically in the City's asset management system.
4. Any tree defects are to be electronically linked to the tree asset with a timeframe for action depending on the severity of the defect.

4.8. Pests and Disease

1. The City of Greater Bendigo will monitor and treat pest and disease incursions that threaten urban trees as appropriate and as resources permit.

The Victorian state government is responsible for matters of biosecurity including minimising the impacts associated with the entry, establishment and spread of invasive plants, pests and diseases.

5. Tree Planting

Investment in quality tree stock and industry best-practice planting techniques is essential for giving a tree the best chance of fulfilling its long-term intended function. A combination of planning, site preparation, quality stock selection and on-going maintenance is essential for successful tree establishment and for avoiding costly interventions at a later date.

The planting of all new City trees must abide by the following requirements;

1. Tree planting activities will be guided by the Urban Forest Strategy (to be developed), park master plans, community structure plans, neighbourhood character plans and other Council endorsed strategic plans.
2. In order to maximise the environmental benefits that trees provide, large, canopy trees will be planted wherever conditions allow.
3. The City of Greater Bendigo will continue to seek new tree planting opportunities in appropriate locations to maximise tree canopy cover and deliver associated environmental, social and economic benefits.
4. The City of Greater Bendigo will plant the most appropriate tree species for a given location based on site suitability, aesthetic, functional and environmental attributes and the potential to contribute to the predominant or preferred landscape character.
5. The City's tree planting program runs annually from May to September. New trees must not be planted outside of this period unless otherwise agreed with the Arboriculture Unit with an endorsed written tree establishment and management plan.
6. All tree planting must be carried out in accordance with City of Greater Bendigo's most recent standard planting detail.
7. All new tree plantings will have a maintenance period of 24 months post planting to aid establishment.
8. All tree stock must meet AS 2303 *Tree stock for landscape use*. This standard addresses both the above- and below- ground characteristics necessary in determining quality tree stock. In line with this standard, all stock will be free of faults that would be likely to cause the tree to fail at some stage in the future or that would require a greater input of resources to establish. Trees should be healthy, free of pests and disease, structurally sound, have well developed roots, a uniform habit, appropriate taper and calliper and a good balance between the canopy and rootball.
9. Residents are not permitted to plant trees on City managed land without permission by the Parks and Open Space Unit and a works within road reserve permit. Trees that do not meet the objectives of this policy and the Urban Forest Strategy (to be developed) may be removed.
10. The City will not plant tree species that are declared noxious weeds in the North Central region under the Catchment and Land Protections Act 1994 (Appendix 1).
11. The City will not plant tree species that are environmental weeds in the North Central region. These weeds are not classified under the Catchment and Land Protection Act 1994, but are recognised as a serious threat to agriculture and the environment (Appendix 1).
12. The City will not plant tree species that are on the National Environmental Alert Processes List under the Flora and Fauna Guarantee Act 1988 (Appendix 1).

13. Street tree planting will provide minimum interference with existing above and below-ground services and infrastructure.
14. The City will take preventative measures to minimise future conflicts between tree roots and infrastructure. Such preventative measures may include;
 - a. Pursuing the relocation of infrastructure and utilities away from trees.
 - b. The adoption of technologies such as WSUD, structural soils, contiguous tree root trenches.
 - c. Coordinating capital works, streetscape and street tree renewal cycles wherever possible.
 - d. Considered tree species selection and placement.

6. Tree Roots and Infrastructure

Trees are an integral part of the urban fabric and an understanding of tree root behaviour in urban areas is essential for minimising conflicts between trees and other infrastructure.

Trees have horizontal root structures that are typically found within the top meter of the soil profile. Contrary to popular opinion, tree roots do not actively 'seek' water, but are opportunistic and will proliferate where below-ground conditions of water, oxygen, nutrients and temperature are favourable. Frequently, construction techniques employed for the installation of civil infrastructure and services can in fact create favourable conditions for tree root growth such as gravel footings and gaps between joins of kerbs and pavers.

Condensation on the lower surface of pavers due to variations in cooling can also provide moisture for tree roots.

Conflicts between tree roots and infrastructure can generally be classified into three areas;

Direct damage to light built structures

Direct damage is the distortion of built structures due to the exertion of pressure on the structure as the tree grows. Such structures include brick fences, low walls, crossovers and paths. Damage is caused when the intruding root expands as it grows, exerting outwards pressure on the structure. In order to cause damage, the weight of the structure must be less than the expansion pressure of the root.

Light structures will age and deteriorate regardless of the presence of tree roots and tree root activity generally gets a disproportional amount of the blame. Frequently, tree roots will exploit an existing crack or fault.

Indirect damage - Subsidence and heave from soil moisture variations

Subsidence and heave of foundations and built structures are the result of soil moisture changes over time. Indirect damage is most common in clay soils due to the shrink/swell nature of the soil as it dries out or absorbs water. The shrinking effect of the soil that leads to subsidence of structures can be exacerbated by the water demands of surrounding vegetation. Although surrounding vegetation does influence the water balance of the soil to some extent, there are many factors that can contribute to foundation movement including soil type, prolonged periods of drought, leaking pipes and changes in soil hydrology from an

increase in impermeable surfaces. In general, if the foundations of a structure are deeper than where tree roots exist and can extract moisture, damage from tree roots is unlikely.

It can be expected that all residential properties within Greater Bendigo have or will eventually have a tree in the nature strip in front of the property and therefore new dwellings, structures and concrete slabs should be designed and constructed accordingly.

Damager to Sewers, Pipes and Drains

Leaking pipes as a result of poor construction, old earthenware and cracked and faulty joints can create a moisture gradient that encourages roots to proliferate in the direction of the pipe. For tree roots to enter a pipe there would need to be a pre-existing fault or leak as trees do not actively 'search' for water. In some rare instances, root growth can displace pipes (direct damage) causing them to break.

It is the responsibility of the property owner to maintain drains and pipes to the legal point of discharge. Root intrusion can be avoided by ensuring that all joints are watertight and fitted correctly and pipes are manufactured from watertight materials such as PVC rather than earthenware.

The City's policy regarding each of these types of damage is addressed below.

1. The City will not remove public trees for unjustified claims of damage from tree root activity.
2. Claims for indirect property damage should be accompanied by a report from a geotechnical or structural engineer that implicates tree root damage and also considers soil type and the age and type of footings of the structure.
3. Should infrastructure damage be attributed to roots of a public tree an appropriate remedial solution will be sought. Such remedial solutions may include;
 - a. Realignment of paths.
 - b. Selective root pruning.
 - c. Casting concrete kerbs *in situ*.
 - d. Ramping and bridging over existing tree roots.
 - e. Increasing the tree planting/plot area.
 - f. The installation of tree root barriers.
4. Tree removal will only be considered should no practical arboricultural solution be found.
5. In the case of indirect damage, the potential of soil heave as a result of tree removal or tree root barrier installation must also be considered.
6. The City will take preventative measures to minimise future conflicts between tree roots and infrastructure. Such preventative measures may include;
 - a. Appropriate tree species selection and placement.
 - b. Aligning the City's streetscape and street tree renewal cycles.
 - c. The adoption of WSUD treatments, structural soils, and contiguous tree root trenches.
7. Once alerted to existing conflicts between infrastructure the City will investigate in accordance with The City's guidelines for tree root damage claims (to be developed).

8. Should tree removal be deemed necessary by a City arborist, a replacement tree will be planted as close as practically possible to the tree being removed. Every effort will be taken to ensure that the replacement tree will not result in similar damage in the future.

7. Fauna

Urban trees create important habitat for a diverse range of native and exotic fauna including mammals, birds, reptiles and invertebrates and therefore can be either positively or negatively impacted by routine tree management activities.

In recognition of the contribution that urban trees make to biodiversity in the City of Greater Bendigo the City will;

1. Endeavour to relocate native fauna that will be displaced from routine tree management activities where it is possible and reasonable to do so;
2. Leave the task until the end of the breeding or nesting season if safe, reasonable and practical to do so.
3. In accordance with sections 2.1. and 4.2. of this policy, trees will not be removed or pruned to reduce the impact of waste or noise from any bird, bat or other animal.

7.1. Habitat trees

Hollows provided by large old trees provide critical habitat for many species that are typically not present in younger trees. Eucalypts for example will not start forming hollows until they are over a century old and are therefore extremely difficult to replace once they are removed.

1. Hollow bearing trees that meet the criteria for removal as outlined in this policy will be made safe and retained as habitat trees wherever it is safe, practical and appropriate to do so.
2. The City will endeavour to seek practical design and management alternatives to maximise the health and longevity of existing large, hollow bearing trees.

7.2. Termites

Termites are a native species and part of the natural environment where they play important ecosystem functions. Out of the hundreds of species of termites in Australia, only a dozen or so are known to cause damage to property.

Trees that contain termites are not necessarily compromised as the termites will feed on the heartwood (deadwood) and not the living tissues the tree requires for growth and stability. Removal of a tree with termites may in fact increase the chance of damage to property as, once the tree or food source is removed, termites will seek out a new food source which may include timber in and around the home.

The City of Greater Bendigo is in a Declared Termite area and it is the responsibility of property owners to ensure that their property is suitably protected.

Any request to have a City tree inspected or removed for termites will be undertaken in accordance with the inspection and tree removal criteria outlined in this policy. The City will not allow;

1. The drilling or boring of City trees to ascertain the presence of termites.
2. The chemical treatment of City trees against termites.
3. The removal of City trees as a preventative measure against termites.

8. Community Engagement

1. All community engagement activities will be governed by The City of Greater Bendigo's Community Engagement Policy.
2. The community will be informed and consulted about all major projects involving tree removal and planting and any other specialised projects that involve City trees.
3. The type and extent of community engagement will vary depending on the impact of the works on the local community and will be determined in accordance with a number of factors including; the prominence of the location, the significance of the tree, the size of the tree, the number of trees being impacted and the visual impact of proposed works.
4. Community engagement may include direct contact with the customer, letters to immediately affected residents, signage on site and via information on the City's website.
5. The City of Greater Bendigo will assess customer requests regarding urban trees in line within the parameters of this policy.
6. All customer service requests will be responded to in a timely manner in accordance with The City of Greater Bendigo's Customer Service Charter and the following requirements.

8.1. Tree Planting

The City's annual planting program is made up of individual tree requests, capital projects and tree replacements.

1. Individual customer tree planting requests will be followed up with the customer directly as per the City's Customer Service Charter.
2. The City will inform and/or consult affected residents of entire streetscape upgrades.
3. The City's annual tree planting program will be available on the City's website from January preceding the commencement of the planting season in April/May.
4. All public trees that are removed will be replaced as close as practically possible in the following planting season. Planting of replacement trees may not necessitate customer engagement.

8.2. Tree Maintenance Activities

1. The City's Proactive maintenance zones and corresponding maintenance program will be displayed on the City's website.
2. For customer service requests, the City's Inspections Arborist will, at the time of assessment, allocate a timeframe for any required works based on the urgency, risk and severity of the defect. This information is generally passed on to the customer in the form of a letter unless specified otherwise. Depending on the volume of tree works on the City's system at any one given time, it may not possible to give an exact date and time for specific works.

8.3. Tree Removal

1. The City of Greater Bendigo will notify adjoining property owners of the removal of large trees from residential streets.
2. Signage will be placed on large park trees notifying users of any upcoming removal works.
3. The City of Greater Bendigo will notify the community of unauthorised works and undertake site specific responses following tree poisoning, vandalism or prohibited tree removal.
4. Removal of trees that are hazardous will be undertaken as soon as reasonably practicable and therefore it may not be possible to provide a period of notification.

Implementation Action Plan

The City's Parks and Open Space Unit will be responsible for the implementation of this Urban Tree Management Policy and associated Implementation Action Plan.

Timeframes for the completion of specific actions have been allocated as either short-, medium- or long-term from the date the Policy is endorsed.

Short-term	S	Within 12 months
Medium-term	M	Within 24 months
Long-term	L	Within 5 years

Action Plan	Responsible Work Area	Time-lines
1. Tree Protection		
1.1. Update planning and building application procedures and standard permit conditions for works near City trees	Parks & Open Space/ Statutory Planning/ Engineering	M
1.2. Develop a tree protection fact sheet for developers, service providers, builders and others doing works near trees	Arboriculture Unit/ Communications	S
1.3. Implement tree protection measures as part of events in parks and public open space	Parks & Open Space/Events	M
1.4. Develop trees and events fact sheet	Arboriculture Unit/Events/ Communications	S
1.5. Enhance the City's enforcement capacity of tree protection requirements and permit conditions	Statutory Planning/ Engineering/Parks & Open Space	L
1.6. Make tree protection requirements readily available on website and send information to service providers regularly working near City trees	Arboriculture Unit/ Communications	S
1.7. Awareness and uptake of protection measures by other internal work areas undertaking works near City trees	Arboriculture Unit	S
1.8. External stakeholder consultation for proposed tree protection measures	Arboriculture Unit	S

2. Tree Removal		
2.1. Publish tree removal criteria on website	Arboriculture Unit/Communications	S
2.2. update FAQs and customer service scripts	Arboriculture Unit/Customer Focus	S
2.3. Develop process for approving City tree removals	Arboriculture Unit	M
3. Tree Valuation		
3.1. Update planning application procedures and conditions in regard to compensation for tree removals	Arboriculture Unit/Stat. Planning/Engineering	S
3.2. Set up tree removal reserve for revenue generated from the removal of City trees	Arboriculture Unit/Financial Strategy	S
3.3. Develop criteria for how revenue generated from tree removals is spent	Parks and Open Space	M
2.4. External stakeholder consultation for proposed tree valuation	Arboriculture Unit	S
4. Tree Asset Management		
4.1. Update the City's tree asset inventory	Arboriculture Unit	M
4.2. Update Tree Inspection Work Instruction	Arboriculture Unit	S
4.3. Enable asset management systems to accurately record the decisions made and the agreed approaches to risk assessment methodology applied when undertaken tree risk assessments.	Arboriculture Unit/GIS & Asset Information Unit/ Risk Management	S
4.4. Develop Veteran Tree List	Arboriculture Unit	M
4.5. Develop and implement Veteran Tree Management Program	Arboriculture Unit	M
4.6. Develop Veteran Tree propagation program	Parks and Open Space	L
5. Tree Planting		
5.1. Develop handover requirements for 3rd party tree planting	Parks and Open Space	S
5.2. Finalise tree planting protocol and species lists for new developments	Parks and Open Space	M
5.3. Update planning permit conditions to reflect requirements for tree planting by 3rd parties	Parks and Open Space/Statutory Planning	M
5.4. Develop set of standard design details for proposed engineering solutions (i.e. WSUD pits, structural soils)	Arboriculture Unit/Engineering/ Public Space Design	M
6. Tree Roots and Infrastructure		
6.1. Publish tree root and infrastructure information on website	Arboriculture Unit/Communications	S
6.2. Develop guidelines for submitting a claim for tree root damage	Arboriculture Unit/ Risk Management	M
7. Fauna		
7.1. Identify large, old habitat trees as a layer in Conquest	Arboriculture Unit/GIS & Asset Information	M
7.2. Strengthen habitat tree protection and enhancement	Arboriculture Unit/	M

as part of regular tree maintenance activities	Natural Reserves Unit/ Contractors	
7.3. Develop a standard response for termite damage	Arboriculture Unit/ Risk Management/ Communications	S
8. Community engagement		
8.1. Update the City's website for urban tree management in line with the Urban Tree Management Policy	Arboriculture Unit/ Risk Management/ Customer Focus	S
8.2. Update customer service scripts relating to urban tree management	Arboriculture Unit/ Risk Management/ Customer Focus	S
8.3. Review all standard letter responses for customer service requests	Arboriculture Unit/ Risk Management/ Customer Focus	S
8.4. Develop fact sheets for tree protection requirements and for calculating amenity tree values	Arboriculture Unit/ Risk Management/ Communications	S
8.5. Publish proactive maintenance zones and schedule on the City's website	Arboriculture Unit/ Risk Management/ Communications	S
8.6. Publish upcoming tree planting program on the City's website	Arboriculture Unit/ Risk Management/ Communications	S
9. Urban Forest Strategy		
9.1. Develop Urban Forest Strategy	Arboriculture Unit	M
9.2. Implement Urban Forest Strategy	Arboriculture Unit	L
10. Monitoring and Review		
10.1. Review policy two years post endorsement	Arboriculture Unit	M-L

Monitoring and Review

This policy will be monitored and reviewed by the Parks and Open Space Unit.

This policy should initially be reviewed and updated two years post endorsement and every five years thereafter in response to organisational change or industry standards.

Related City of Greater Bendigo Documents

1. Environment Strategy 2016
2. Urban Forest Strategy – (to be developed)
3. City of Greater Bendigo Significant Tree Register
4. Tree Inspection Work Instruction (to be updated)
5. Tree Maintenance Works Contract CT000174
6. Tree Planting and Maintenance Services Contract 2550

Glossary

City tree Refers to all public trees that this policy applies including those that are on land owned or managed by the City of Greater Bendigo within Bendigo's urban boundary townships and along roadsides in zones up to 80 km/hr.

DBH Trunk diameter at breast height. Measured vertically at 1.4m from ground level.

Risk The combination of the likelihood of an event and the severity of the potential consequences. In the context of trees, risk is the likelihood of a conflict or tree failure occurring and affecting a target and the severity of the associated consequences.

TPZ Tree Protection Zone. A TPZ is measured by multiplying the DBH by 12.

ULE Useful life expectancy.

Urban forest Defined by the sum of all trees and vegetation in an around urban settlements.

Urban forestry An integrated, city wide approach to the planting, care and management of trees in an urban area to secure multiple environmental and social benefits for its inhabitants.

WSUD Water Sensitive Urban Design. An environmentally preferable alternative to traditional urban drainage solution.

Noxious weed means; (a) a State prohibited weed; (b) a regionally prohibited weed; (c) a regionally controlled weed; or (d) a restricted weed.

Appendix 1

Weed Species

1. The City will not plant tree species that are declared noxious weeds in the North Central region under the Catchment and Land Protections Act 1994.

Species include;

- *Ailanthus altissima*
- *Crataegus monogyna*
- *Cytisus scoparius*
- *Genista linifolia*
- *Genista monspessulana*
- *Mimosa pigra*
- *Salix* spp. (except *S. alba* var. *caerulea*, *S. alba* x *matsudana*, *S. babylonica*, *S. x calodendron*, *S. caprea* 'Pendula', *S. matsudana* 'Aurea', *S. matsudana* 'Tortuosa', *S. x myrnsinifolia*, *S. x recihardtii*)
- *Vachellia* (formerly *Acacia*) *erioloba*

The State Government of Victoria is responsible for maintaining the List. A current list can be found at <http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/protecting-victoria-from-pest-animals-and-weeds/legislation-policy-and-permits/declared-noxious-weeds-and-pest-animals-in-victoria>

2. The City will not plant tree species that are environmental weeds in the North Central region. These weeds are not classified under the Catchment and Land Protection Act 1994, but are recognised as a serious threat to agriculture and the environment.

Species include;

- *Acacia baileyana*
- *Acacia longifolia*
- *Acer negundo*
- *Ailanthus altissima*
- *Cotoneaster* spp.
- *Fraxinus angustifolia*
- *Koelreuteria elegans* subsp. *Formosana*
- *Ligustrum vulgare*,
- *Ligustrum ovalifolium*
- *Olea europea*
- *Pinus radiata*
- *Pittosporum undulatum*
- *Populus* sp.
- *Robinia pseudoacacia*
- *Tipuana tipu*
- *Salix nigari*,
- *Salix fragilis*,

- *Salix cinerea*
- *Salix babylonica*
- spp. (*Salix alba*, *Salix matsudana* 'Tortuosa', *Salix X rubens*)
- *Vachellia* (formerly *Acacia*) *karoo*

A list of species currently listed as environmental weeds can be found at <http://www.nccma.vic.gov.au/flippingbook/weedsid/index.htm>, or

North Central Catchment Authority. (2012). *Weeds Identification Guide – North Central Victoria*. North Central Catchment Management Authority.

3. The City will not plant tree species that are on the National Environmental Alert Processes List under the Flora and Fauna Guarantee Act 1988.

Species include;

- Spread of *Pittosporum undulatum* in areas outside its natural distribution.
- Loss of biodiversity as a result of the spread of Coast Wattle (*Acacia longifolia* subsp. *sophorae*) and Sallow Wattle (*Acacia longifolia* subsp. *longifolia*) into areas outside its natural range.

The State Government of Victoria is responsible for maintaining the List. A current list can be found at <https://www.environment.vic.gov.au/conserving-threatened-species/flora-and-fauna-guarantee-act-1988>

4. The following species are not listed weeds however should be discouraged from planting in the Greater Bendigo area due to potential weediness and escape into Bushland Reserves;
 - *Acacia decurrens*
 - *Allocasuarina cunninghamii*
 - *Olea europea* (fruiting varieties)

Appendix 2

Proactive Tree Management

Activities that are covered in the scope of works for the Proactive Tree Management program include;

1. Removal of dead, dangerous and declining trees;
2. Removal of deadwood;
3. Removal of hanging, broken or diseased branches;
4. Formative pruning;
5. Canopy lifting;
6. Canopy reduction;
7. Stump removal;
8. Removal of mistletoe;
9. Removal of redundant tree guards, stakes and surrounds;
10. Maintaining clearance from roads, footpaths, traffic signals and street lights as per The City's Road Management Plan. Clearance requirements; and
11. Maintaining required clearances from properties. Overhanging branches to be pruned to 3m vertically from ground level and 2m radially from buildings.

All roads in the City of Greater Bendigo are managed and maintained in accordance with Council's Road Management Plan.

Appendix 3

Nominated places and facilities on the City's annual tree inspection cycle

Facility	Address	Locality
Rosalind Park		Bendigo
Lake Weeroona		
White Hills Botanic Gardens		White Hills
Canterbury Gardens		Eaglehawk
Crook Street Reserve		Kennington
Barrick Reserve		Heathcote
Harry Trot Oval/Reserve		Kennington
Axedale Preschool	94 High Street	Axedale
Bendigo Preschool	90 Myrtle street	Bendigo
Eaglehawk Preschool	15 Bright Street	Eaglehawk
Elmore Preschool	65 Hervey Street	Elmore
Epsom Preschool	46 Myrtle Road	Ascot
Havilah Road Preschool	22-24 Havilah Road	Long Gully
Heathcote Preschool	27 Camp Street	Heathcote
Helm Street Preschool	13-15 Helm Street	Kangaroo Flat
Huntly Preschool	21 Stephenson Street	Huntly
Kangaroo Flat Preschool	1 Carpenter Street	Kangaroo Flat
Kennington Preschool	17 Crook Street	Kennington
Neangar Preschool	25 Watson Avenue	California Gully
North Bendigo Kindergarten	55 Bannister Street	North Bendigo
South Bendigo Preschool	23 Somerville Street	Flora Hill
Spring Gully Kindergarten	113 Spring Gully Road	Spring Gully
Strathfieldsaye Preschool	26 Club Court	Strathfieldsaye
White Hills Kindergarten	62 Raglan Street	White Hills
Annie Galvin Early Learning Centre	136 Mitchell Street	Quarry Hill
Helen Jessen Early Learning Centre	145 Crook Street	Strathdale
Kennington Playgroup Centre	15 Crook Street	Kennington
Bendigo Community Toy Library	156 Spring Gully Road	Spring Gully
Bendigo Regional YMCA		
Bendigo Aquatic Centre	161-167 Barnard Street	Bendigo
Brennan Park Swimming Pool	Brennan Park Pool Road	Flora Hill
Kangaroo Flat Swimming Pool	1 Station Street	Kangaroo Flat
Marong Swimming Pool	Malone Park Road	Marong
Heathcote Swimming Pool	10 Barrack Street	Heathcote
Bendigo East Swimming Pool	33 Lansell Street	East Bendigo
Raywood Swimming Pool	1 Macaulay Street	Raywood
Goornong Swimming Pool	2 Bagshot Street	Goornong
Elmore Swimming Pool	4 Elmore-Raywood Road	Elmore
White Hills Swimming Pool	30 Hamelin Street	White Hills
Golden Square Swimming Pool	14 Maple Street	Golden Square