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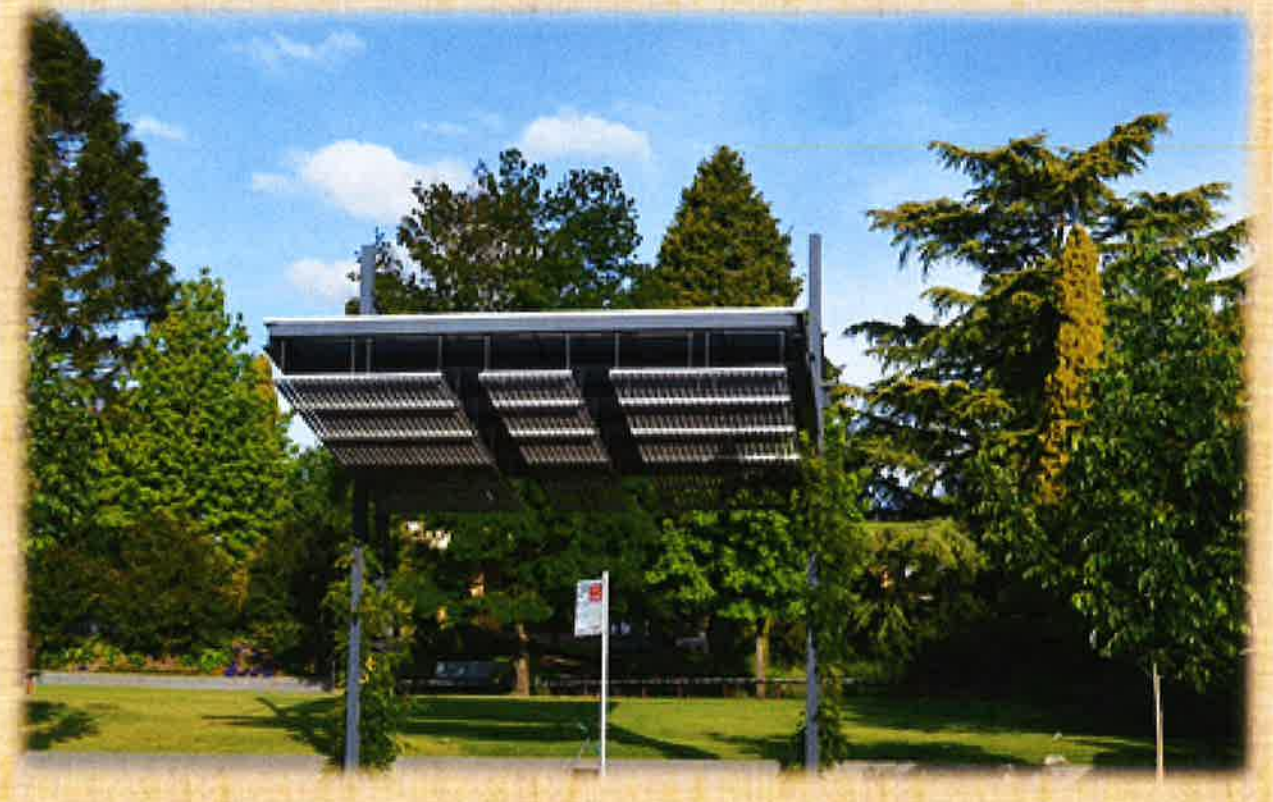

TENTERFIELD SHIRE COUNCIL

TREE MANAGEMENT PLAN

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Version Control

Version	Date	Modified by	Details
V1	Draft	Mark Cooper	

1. INTRODUCTION

1.1. Background

Tenterfield Shire Council is located in the New England region of New South Wales, Australia. The Shire covers an area of more than 7,300 Km2 and contains a large range of fauna & flora that enhances the region, and has a large range of deciduous trees visited by travelers, and enjoyed by the local community, for the vibrant autumn colors.

Tenterfield has mature, healthy trees that create a passageway throughout streets and parks that form habitat for birds and other wildlife. The community values and appreciates the town's trees for their shade, appearance and the economics.

1.2. Purpose

The purpose of the Tree Management Plan is to manage the existing trees especially trees that have or about to reach there safe useful life.

Trees like all living organisms, grow, age and eventually die. The process of aging and death is a natural part of a tree's life cycle. As trees grow and develop over time, a number of changes occur in their biology. As they approach their maximum age, they become more vulnerable to disease, wind and other causes of death.

Tenterfield Township has an ageing population of trees that will require constant monitoring to maintain an acceptable level of hazard or risk.

This Tree Management Plan will provide direction for the continual care and maintenance of all existing trees, undertaking regular tree assessments and inspection, and set out a plan for future tree plantings and budgets for replacements.

1.3. Scope

The Tree Management Plan will address the following:

- Address trees and their significance within parks and streets;
- Establish and asses the health and condition of all existing trees;
- Provide planning, develop & timeframes for the long term removal and replacement of the either the street or park's trees;
- Develop a consistent proactive management approach for the existing tree population;

- To outline community awareness and acceptance of tree management issues including tree removal, replacement and maintenance management of trees. Provide a framework for decision making by standardising processes;
- Establish future strategic direction for tree planting, protection and maintenance;
- Guidelines for tree removals, protection and replacements;
- Trees managed under this Tree Management Plan are as follows; and
- Tenterfield Township and Villages
    - Street Trees;
    - Trees in Parks and Gardens; and
    - Trees in Council managed facilities.

The Tree Management Plan will encompass recreation reserves, open spaces and other Council managed sites, such as the sale yards, sports grounds, building complex, and swimming pool facilities.

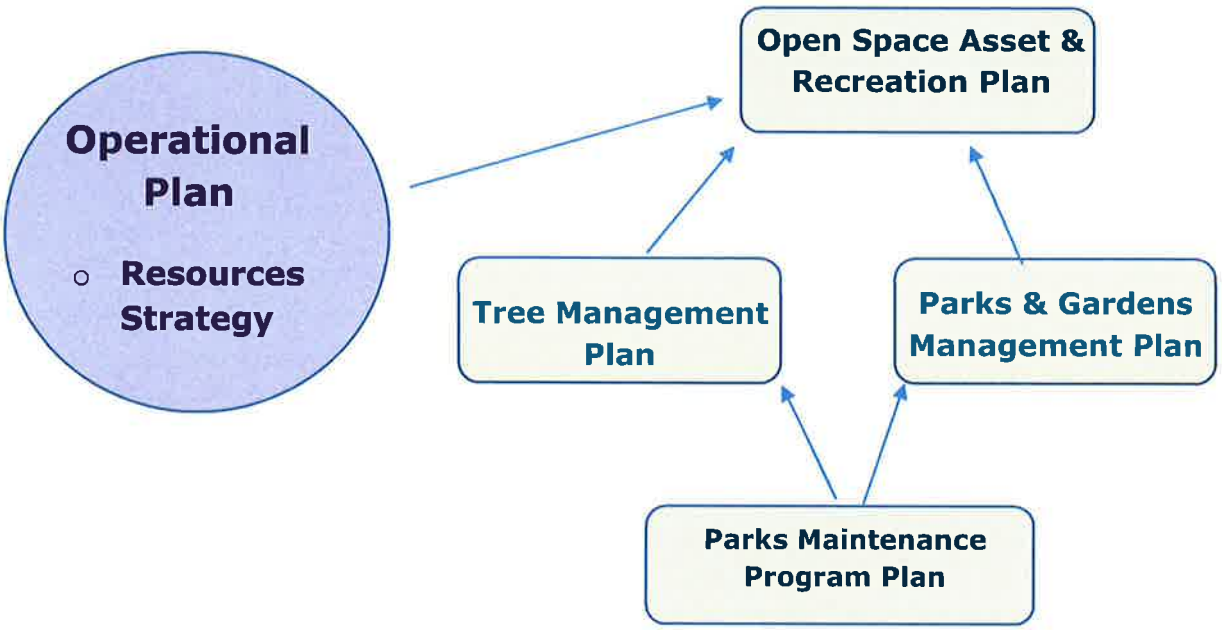
Trees actively planted within nature-strip reserves identified as 'street trees' are generally expected to number one street tree per property frontage. All trees in parks and within 80 Km zone are managed by the Parks, Gardens & Open Spaces Services within Council, and the approval and review of the Tree Management Plan will be through the Parks, Garden & Open Spaces Advisory Committee.

1.4. Tree Management Framework

The Tree Management Framework is a guide to provide planning and management of all trees across the Tenterfield Shire Council Local Area.

The Tree Management Framework will guide information and data to develop future budgets and resources required for tree maintenance works and service levels and provide strategic direction & objectives.

TREE MANAGEMENT PLANNING FRAMEWORK



Legislations and Australian Standards

- NSW Local Government Act 1993
- The Pruning of Amenity Trees AS 4373-2007
- Protection of Trees on Developed Sites AS 4970-2009
- Tree Safety Management Plan Aus-grid 2015
- Electrical Supply Act 1995
- Urben Green Cover NSW Technical Guide
- Tree Stock for Landscape use AS 2303-2019
- The Protection of Trees on development Sites AS 4970-2009
- Statewide Mutual Best Practice Manual- Trees and Tree Roots 2011

The statutory requirements are part of the framework along with Council's policies and practices and Australian Standards.

2. STRATEGIC DIRECTION & OBJECTIVE

2.1. Strategic Direction

The Tree Management Plan will reflect the Tenterfield Shire Council Community Strategic Plan and the Quality Nature, Quality Heritage and Quality Lifestyle values of the shire.

This plan covers strategic direction is provided by the Community Strategic Plan and embraces the opportunity to generate a new direction for the management of all trees through the shire. The Tree Management Plan is based on factors including tree condition, species type and growth rate, aesthetics value and locality values. Over the coming years the strategic direction, objectives and goals will embedded in be standard practices to assist with ongoing asset management review of the trees, tree data and appropriate resource allocation.

2.2.1 Strategy Goal

By implementing this strategy, Council will be able to improve the current tree management practices. This will allow for the delivery of a healthier, more diverse and stable tree population. The key benefits are:

- Implementing processes that will allow improved clarity and efficiency for Council in fulfilling its tree management responsibilities;
- An improvement in Councils ability to monitor and manage tree related risk;
- Optimisation of tree health and the benefits trees provide to the community;
- The ability to schedule and prioritise tree works;
- Ensuring long term sustainability in delivering adopted levels of service;
- Improved community awareness and involvement in the maintenance of street and park trees; and
- Increased canopy cover across Council's areas.

2.2. Existing Controls, Policies, Operations & Management Plans

Tenterfield Shire Council has current management, operational and policy plans that helps create this tree management plan and should be considered with the implementation of this plan. The following are the existing adopted policies or operational and management plans:

- Plan of Management for Parks & Sportsgrounds (Res No. 473/14) 2014
- Tenterfield Shire Council Operational Plan 2019-2020
- Tenterfield Shire Council Delivery Program 2017-2021

The following are areas that the tree management will be directed

2.1.1 GOALS: COMM 1

- 1.5- Provide informative, Vibrant and welcoming town entrances, centers and streets with places to meet that are creatively reflect the diversity of our townships;
- 1.6- Our Public spaces and places are designed to minimise risk to users.

2.1.2 GOALS: COMM 3

- 3.1- Ensure that public places and spaces are clean and well maintained.

2.1.3 GOALS: ENVO 9

- 9.3- Town and Villages planning supports and enhances local place making principles and practice celebrating the diversity of our natural environment.

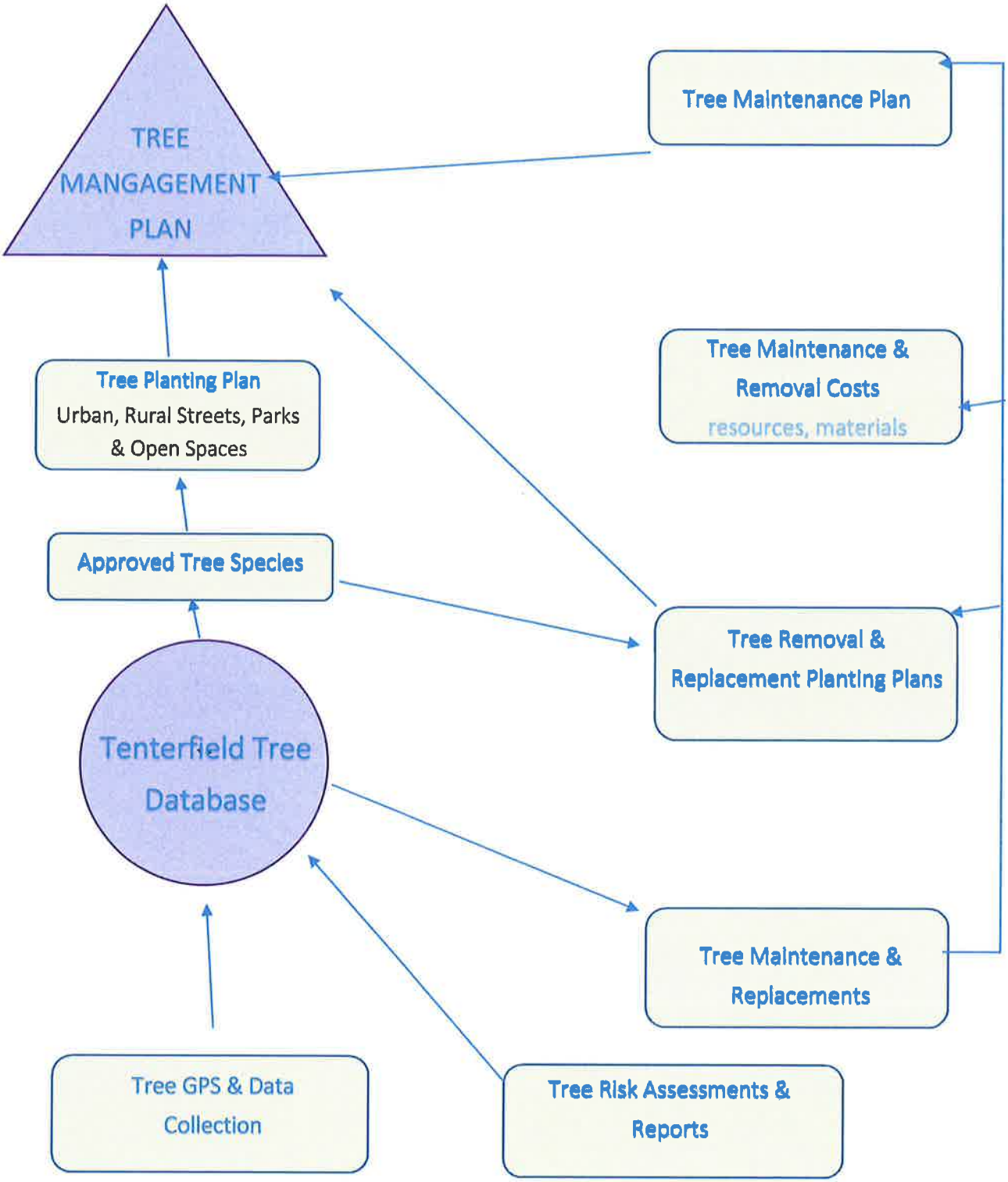
2.3. Strategic Objectives

The Tree Management Plan forms part of the framework that will lead to the effective and co-ordinated management of trees in the Tenterfield Shire Council's Local Government area. This document provides a transparent strategy for the management of Council's street trees that will rely on the development of the following primary objectives:

- Established Tree Database;
- Manage GPS mapping and information sharing within Council cooperation software;
- Establish a tree species planting list;
- Create tree planting plan for street, park and open spaces;
- Tree inspections risks assessments reports;
- Provide planning for trees removals, replacement at the end of their functional life or failure;
- Tree pruning;
- Establish a tree maintenance program; and
- Identify ongoing maintenance and resources costs.

Other strategic objectives

- Conservation and enhancement of the historic character of the towns;
- Protect and manage heritage trees;
- Planting species selection for roads, streets, reserve and lane ways; and
- Tree planting and species for public open space



2.4. Tree Management Plan Initiatives

	SECTION	OBJECTIVES	INITITIVES
I	3	Established Tree Database	▪ Select appropriate Tree Database software; ▪ Identify & collect all current tree species in parks and streets (Information from the data collection will facilitate decision making and funding requirements) ▪ The developed implementation of maintenance schedules that will ensure an accurate history of works recorded on the tree asset.
II	3.2	Manage GPS mapping and information sharing within Council cooperation software	▪ Intergrade Tree Database software into mapping information; ▪ Tree data and GPS information to be updated as required.
III	4	Tree species planting list	▪ Existing species; ▪ A preferred species list for planting and documentation of preferred species in certain locations or areas created; ▪ Species selected will be informed by community expectations; ▪ Species selected will have the following characteristics; o Foliage colour; o Tree form for street trees; o Flowers; o Give reference to location i.e. under power lines and other utilities.
IV	5	Create tree planting plan for street, park and open spaces	▪ The focus will be on the sound arboriculture practices of planting "the right tree in the right place"; ▪ A planting program will be established in advance to plant in areas that require infill planting, or remove (and replant) trees that are at end of life, and to satisfy requests; ▪ The planting plan will reflect the existing tree plantings.
V	6	Tree inspections risks assessments reports	▪ Tree Inspections to be recorded into database; ▪ Tree inspection and risk assessments to be undertaken;

			▪ Establish reactive response timeframes; ▪ Establish frequency of proactive inspections Identify priority risk inspection areas; ▪ Identify acceptable mitigation actions.
VI	7	Provide planning for trees removals, replacement at the end of their functional life or failure	▪ Tree removals are undertaken only if it meets the tree management plan; ▪ Safe useful life expectancy to be applied; ▪ Trees programmed for removal if identified as unsafe; ▪ Any tree removed should be replaced with trees consistent with a planting plan scheme; ▪ Trees removed will inform an infill planting program, with the eventual goal of replacing trees removed within two seasons of removal.
VII	8	Tree Pruning	• Trees will be pruned as to Australian Standards; • Correct pruning will help reduce disease and insect issues; • Pruning of trees will be conducted so that minimal visual & health impact will be effected; • Trees pruned in line with current Australian Standards.
VIII	9	Tree maintenance program	• Process for ongoing maintenance, required to ensure trees kept safe, healthy and structurally sound condition; • Program developed to ensure Council are more proactive and less reactive; • Actions include: o Regular pruning; o Watering, feeding and mulching (new tree establishment); o Pest and disease treatment.
IX	10	Identify ongoing maintenance, material and resources costs	▪ Once a maintenance plan is developed create costs for; o Mulching or tree root zone; o Resources for pruning works, and tree inspection reports; o Tree Contractors.

3. TREE DATABASE

3.1. Tree Database

To manage street tree assets it is fundamental to have a Tree Database. Council's currently has not developed a tree and maintenance database.

The new Database to be developed will meet the initiatives set out in the 2.4 Tree Management Plan Initiatives, subject to Council resources and budget, and amalgamated into a single database that is consistently used by all Council officers concerned with any aspect of street & parks tree maintenance and management. A street tree register is a means to store, retrieve, display, and sort and summaries data (information) that relates to Council's street tree assets. Given the large number of street trees throughout the Tenterfield townships, the annual expenditure on maintenance and planting will need to be reviewed once the exact number of street trees are included on a register.

The main aim of this register will be to give accurate figures of the number of trees, the different species types, condition, age, maintenance requirements and assist in managing our responsibilities. In addition, information that was previously difficult to obtain such as how different tree species performed in the Council area, their maintenance requirements, maintenance work performed, how many times a tree had to be replaced in a particular site or the reason for its removal will now be easily accessible.

Council will develop the Tree Database, using the recommended fields in Appendix A as a minimum guide that:

- Can be used to determine maintenance responses;
- Can identify tree removals;
- Can help identify new tree planting opportunities;
- Can help identify more suitable replacement species, where tree replacement is required; and
- Applies standard arboriculture terminology.

Refer To Appendix A - Main Database Fields

3.2. Tree Mapping

Previously all tree locations and mapping were by either property address, street or sighted on a hard copy map.

Tenterfield Shire Council will be identifying and recording all trees locations by GPS and this will be mapped on IntraMaps software, which will be available to all Council staff.

Tenterfield Shire Council will GPS all trees through the local government area in all Urban and Rural areas mapping trees that a present on streets, parks and open spaces.

The tree mapping will provide the following information

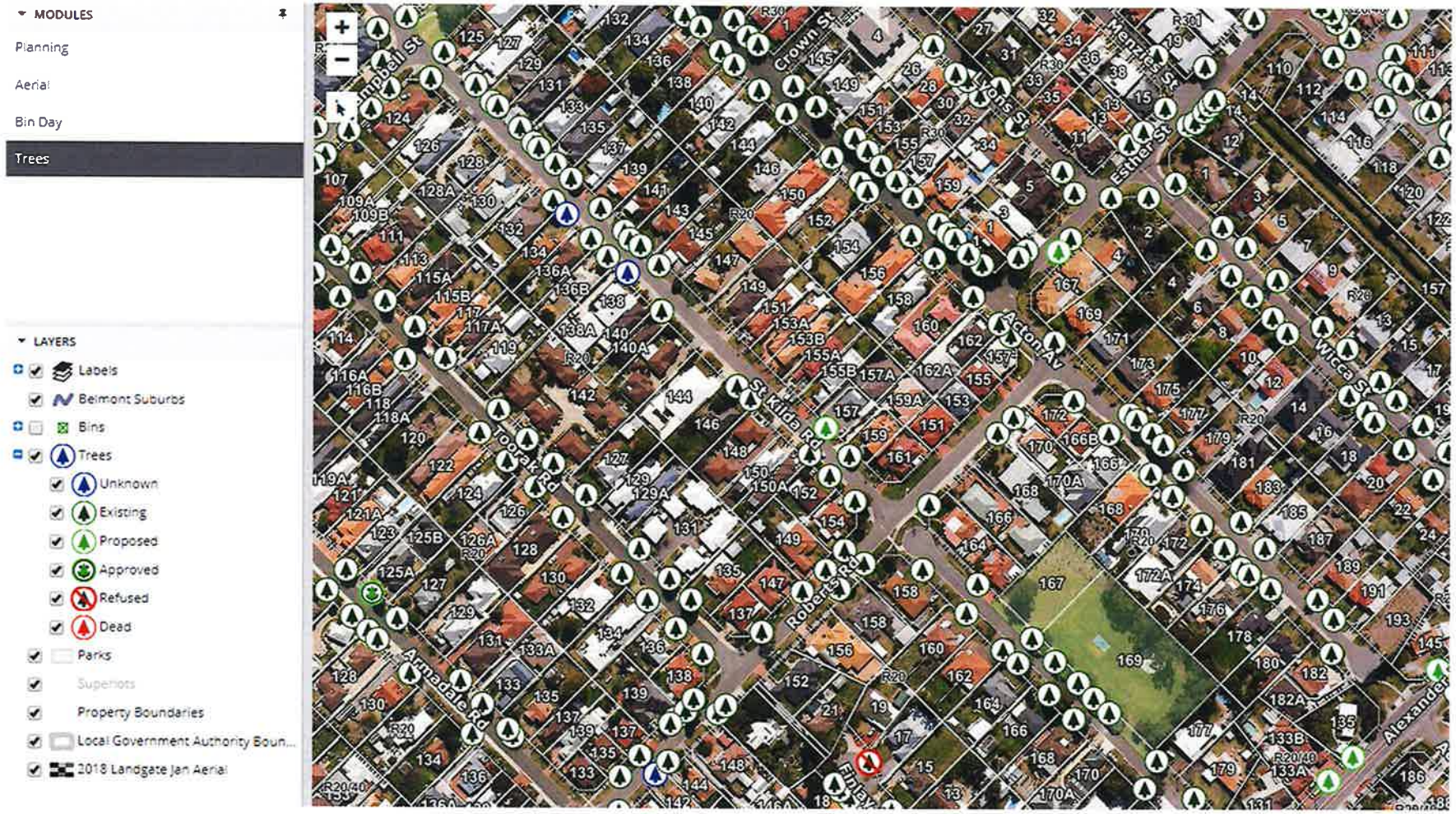
- Existing species in streets;
- Streets were no trees are at present or missing;
- Contribute to planning new plantings plans; and
- Provided updated information to tree health and condition on the mapping software.

Below are two pictures of the existing tree mapping and the new IntraMaps. IntraMaps will allow access to information of that tree this would include history, maintenance and inspections.

Below is the current mapping of Tenterfield Shire Council township of Tenterfield.


Old Tree Mapping Plan

Tenterfield Shire Council will be integrating IntraMaps into Councils system as shown below

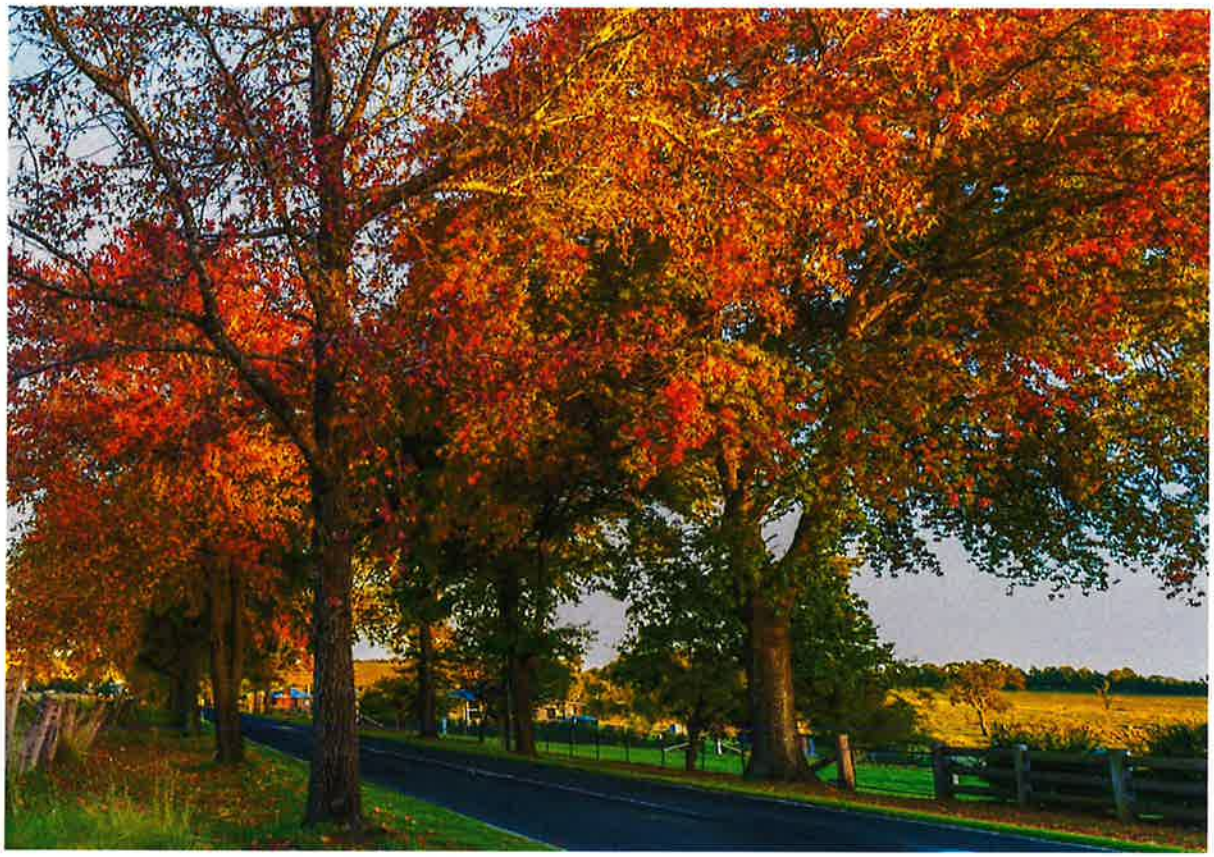


4. TREE SELECTION FOR REPLACEMENT AND NEW PLANTINGS

4.1. Current Trees

Traditionally Tenterfield street trees have been introduced species which a dominantly deciduous trees providing vibrant colors and attraction.

Most street within the Tenterfield Township are deciduous trees and are the preferred tree species used throughout the shire, based on the strategic goals of increasing visitors to the region.



4.2. Current Species List

Refer to Appendix B - Tree Species list. This list can be expand to included new species that would be more acceptable for areas that have infrastructure that may cause problems in the future.

4.3. Tree Replacement Criteria

Proposed tree planting will be csupport the landscape character of the locality and form alliance with Council's current Land Development Guidelines and Landscape Strategies.
Tree planting and selection will engage with the unique qualities of the towns natural and environment such as the locally unique flora and fauna, indigenous culture and post European settlement heritage as well as the contemporary urban values.

Tree species selected for planting will be based on the following:

- The site suitability, aesthetics, functionality, biological attributes; performance and potential to contribute to the heritage value;
- That all tree replacements reflects the species selection criteria;
- Increase in species diversity throughout Tenterfield Shire Council area; and
- Selected species that will be available for over 20 year period (This is where species are changed to create different varieties, this can cause street plantings to change from the original species).

4.4. Tree Selection Criteria

When selecting the appropriate tree species for either street, parks, open spaces or Streetscape the following factors must be considered:

1. Adopted master plans, strategies, planning overlays and development plans
    I. When parks open spaces and street scapes have adopted a plan or has an overlay of a design all tree species must be in line with the above.

2. The significance of previous history of tree planting
    I. Tenterfield has a long history of significant and heritage trees and any tree selection must meet same species unless line 5 is an issue.

3. Drought tolerance/ water usage
    I. Were possible tree selection will reflect water availability and soil structure.

4. Growth habit, size and structural integrity
    I. Growth habit and size must reflect current species along streets and roadways;

II. Trees selected along street need to be of a hard wood with branch failures very low; and
III. Tree canopy must be of an upright growth, columnar, round, fastigiated, V Shape and Pyramidal.

5. Utilities & services
   I. Trees that will be effected by utilities or services such as power lines, communications, sewage, water and any other services that may be impede or damaged by the tree must be considered prior to selection;
   II. Trees to be selected under power lines must meet the Electrical Supply Act 1995; and
   III. Please refer to Table 1.1 Tree species for areas of utilities & services.

6. Root growth characteristics and tolerances
   I. Trees selected must have a root growth that will not cause damage to utilities, services and infrastructure; and
   II. Tree Protection Zone Refer to Figure 3:2.

7. Trees foliage and flowers
   I. All trees selected will be as to existing species in type and foliage; and
   II. Trees selection will provide a range of foliage color and flowers.

8. Planting zone area
   I. Trees must meet the zone planting area criteria refer to diagram 1.2

9. Street Plantings
   I. Trees selected and planted should be the same as the existing planting plan as to this Tree Management Plan.

Refer to Appendix C - Street Species and Future Street Planting List

10. Tree purchase:

- Strong single leader;
- Free from pest and disease;
- Tree structure has ideal spacing;
- Bare roots have abundant root growth;
- Tree has no poor pruning; and
- Buds are active not dry.

4.5. Planting Species Selection for Roads, Streets, Reserve and Lane Ways

- Promote tree lined roads, including feature tree specimens (native or exotic);
- Contribute to local streetscape quality, storm water management, foot/bike-path and bus stop shade coverage;
- Concentrate on strategic whole-street planting along the entire street in preference to more costly individual plantings; and
- Enhance heritage character streetscapes.

4.6. Tree Planting and Species for Public Open Spaces

1. Maintain and enhance historically significant plantings
    I. All trees planted within Parks and Open Spaces should be the same species or will maintain current environment and historical.

2. Promote shade and amenity at picnic nodes, spectator areas, playgrounds, car parks and along pedestrian and cycle routes
    II. Trees selected for any of the areas above shall;
        a. Shade all year round (Park tables and playground were high UV may continue); and
        b. Root zone (Car Parks small root zones to reduce damage to infrastructure).

4.7. Tree Replacement

4.7.1 Specific Species for Streets with Power Lines

The following species that would be suitable as replacement tree should have the following characteristics

- The canopy should not reach a height greater than 6 meters;
- The tree will provide an avenue of foliage color or flowers; and
- The canopy type will be an upright or round growth habit, which should allow minor pruning, works so not to imbalance and cause the overall look of the tree to be lost.

4.7.2 Trees under Power Lines

Tree species selected that are around power lines and comply with the Electrical Supply Act 1995

Refer to Appendix D – Species for Under Power Lines

5. TREE PLANTING PLAN

5.1. Street Trees Plan

Listed under Appendix B – Tree Species List - the current trees planted through the township of Tenterfield Shire Council and under power lines. The list also provides suitable species to be used for new planting under power lines.

5.2. Acceptable Reasons for Non-Replacement of Tree after Removal

Tree replacement will not occur if the following instances are meet

- The location of the tree is not suitable and no alternative location is available;
- There is a high rate that any tree species will cause damage to infrastructure and there is no type of barriers or changes to the surrounds that will reduce the infrastructure from being damaged;
- Future street or infrastructure work is to occur within a two year period; and
- Due to water availability or long term drought replanting tree would cause tree degradation and long term issues such as pest and diseases.

5.3. Street Tree Planting Strategy

The Tenterfield Street trees strategy is developed to achieve the following:

- Provide a consistent approach to choosing tree species and the types of plantings within Tenterfield;
- Provide for a structured and planned approach to street tree planting over a specific time frame i.e. 5 years - 10 years;
- To identify streets, and particularly sections of streets or precincts that may be prioritised or provide the most visual benefit for the community;
- In the interest of good public relations advise residents and rate payers of proposed new street planting programmed, removals and replacements;
- Select species suitable for street tree planting considering the various site constraints and in some situations existing street trees;
- Address the outcomes of the inventory and analysis pertaining to existing trees' health and condition so as to determine their safe useful life expectancy, removal, retention or replacement;

- Ensure a consistent approach to tree selection and planting that will provide trees with the best potential to establish within typical street environments; and
- Recognize tree risk and the need for public safety. As tress age, they require increasing management to maintain them as low risk.

5.4. Tree Planting

A key objective to be addressed in tree selection and management is the identification of the new planting locations for trees throughout the townships of Tenterfield Shire Council and opportunities for new locations.

Planting locations will be identified by visual survey, soil type, infrastructure surrounds and property.

Where street and parkland trees are aging and have reached safe useful life expectancy over-maturity and are declining the planting of replacement trees may become a priority. It's recommended that before planting, a plan must be developed.

The development of a planting plan should consider several issues;

- What is the outcome of the planting?
- Who will be involved in this planting?
- What are the limiting factors at this site (overhead wires, confined root zone, soil conditions, climate conditions and the like)?
- At what time of the year should new trees be planted?
- How will these new plantings be established and maintained?
- Do the new trees require trunk support?

6. TREE INSPECTIONS AND RISK ASSESMENTS REQUIREMENTS

Council responsibility for trees along streets, parklands, roadsides also in public facilities such as Council buildings, swimming pools and community halls.

Trees will be inspected and assessed to determine their potential risk to the public and infrastructure. Trees in "High Risk or High Use" areas and "Significant Trees" may require more frequent and / or detailed inspections. Inspections and risk assessments require standardised and documented procedures. Appropriately, qualified and experienced people will undertake inspections. This may involve

Council use of external expertise and / or include education of Council personnel in appropriate Hazard Tree Assessment procedures.

6.1. Tree Inspection by an Authorised Persons

Tree Inspections will be carried out in line with the following

- Yearly visual inspection;
- Customer request; and
- Tree or branch failure.

When a tree is required to be inspected, the inspection shall only be undertaken by a declared 'authorised person', as determined by a responsible person when a tree is inspected, it will only be inspected for visually obvious defects;

A detailed technical inspection of a tree will only be undertaken if, and only if, a visual inspection reveals the need to do so.

A comprehensive inspection may involve the following:

- Upper Canopy inspection by a certified Arborist;
- Picus Sonar test;
- GPR Root radar inspection;
- Increment tree borers;
- Soil test; and
- Foliage analysis.

6.2. Tree Roots Damage to Infrastructure

If any issue below arise an inspection must be carried out

- Tree root invasion into, or root damage to, any private dwelling or public building;
- Utility service such as but not limited to water, sewer, gas, telecommunication or electricity services;
- Tree root damage to any public road; - bridge, culvert or crossing; - also any stormwater drainage floodway system, - pipe, gutter or kerb;
- Footpath, - pathway, - walking trail or track; - car park; - cycleway; - fire trail or emergency access track or road; and
- Also any paved or unpaved pedestrian surface; -any public place; - any public reserve; -park or nature reserve; -any public open space area, - any playing field or oval.

The following will be determined for root pruning prior to tree being removed also as to Section 6:1 Basis for removal:

- Will pruning of roots away from any of the above areas be greater than 40%;
- Will pruning of roots reduce or stop damage to infrastructure;
- Can a suitable barrier be built or installed without damaging root structure detrimentally; and
- Will pruning of root imbalance the tree causing the tree to incline and fall.

If any of the above is a probability between medium to high, tree removal can be considered along with a comprehensive report.

Refer to Appendix G - Planting Trees Information.

6.3. Branches & Trunk Issues

Any tree which has or may possess a known or suspected propensity to injure persons or to damage any building or structure, road, footpath, cycleway, walking track or trail, sewer, drainage, water, gas, telecommunication or public utility system through: 'sudden branch drop syndrome'; the dropping of leaves, flowers, fruit, gum; or by the existence of poisons, allergens etc.; and

Whether or not any injury to persons or damage to property is occurring, has occurred or is likely to occur as a direct or indirect consequence of:

- A standard visual tree inspection will be conducted if requested by the public;
- If, a visual inspection reveals issues that require a full technical inspection be conducted, this will be undertaken by a qualified Arborist level 5;
- Once a comprehensive inspection report has been compiled actions will be taken as to the reports grading;
- Report grading will be as to refer to Section 3.1.

6.4. Tree Inspection Schedules

Tree inspections and assessments will be carried as to the below table, by keeping to a determined time for inspections this will help being proactive and reducing risks. Once all trees have had a completed comprehensive tree assessment, the following will be followed.

Tree Inspection Schedules

	Tree Specific	Inspection Frequency	Inspection Type
1	High Risk Areas	Every 6 Months	Basis Tree Assessment
1		Every 2 years	Comprehensive or QTRA
2	Heritage or Significant	Every 6 Months	Basis Tree Assessment
2		Every 4 years	Comprehensive or QTRA
3	Street trees	Every 12 months	Detailed Tree Assessment
3		Every 5 years	Comprehensive or QTRA
4	Park Trees	Every 12 months	Basis Tree Assessment
4		Every 5 years	Detailed Tree Assessment

7. TREE REMOVAL

7.1. Basis for Removal

Street trees are generally less long lived than trees in their natural habitats because of the harsh environment in streets.
The removal of trees that have reached the end of their safe useful life expectancy is part of the tree management process, and requires consideration of community reaction.

The following should be considered as a basis for tree removal if tree has reached their intended safe useful life expectancy.

- All trees have a useful life expectancy and this cannot be a set length of time for a tree but will be as to overall condition, environment and surrounds (Environment and surrounds would include interaction with infrastructure, soil condition, high use causing compaction of soil, water availability.

7.2. Removal Criteria

The removal of a tree shall be approved if one or more of the following criteria are satisfied

7.3 Tree Assessment

I. The tree has been assessed by a qualified Arborists level 5;

II. The tree has less than 20% of leaves or live tissue within the canopy;

III. The tree has substantial fungal disease that cannot be treated:

- Fungal disease such as and more
- Lingzhi
- Phellinus noxius - Brown root rot
- Fusarium solani – Pink disease
- Phytophthora

I. Is structurally defective and is a high risk of failure or collapse;
   - The tree is deemed high risk to property or public due to tree trunk and overall structure is at failure stage

II. Is causing damage to infrastructure and that there is no action or maintenance works that could be undertaken to repair the infrastructure;

   - Refer to Section 5.2.2 Actions;
   - The tree is causing damage that is greater than the asset cost.

III. The tree will be effected by new infrastructure work;
   - Refer to Section 5.2.1;

IV. The tree effects a development and there is no alternative and reasonable design alterations that will help protect the tree;

V. The tree is contacting power lines and selective pruning will cause significant issues to the tree in the future;

VI. The tree is removed as part of a schedule and future tree management plan;

7.4 Removal of Heritage Trees

As they reach a safe useful life expectancy, the trees have a reduced capacity for defense and so are prone to attack by pests and diseases. Their management often requires greater care than for young healthy vigorous trees. With heritage trees and if they are considered a risk to public or infrastructure prior to removal all reasonable, action available will be taken to help maintain the tree before removal is considered.

These may include resources by providing tools or new methods of tree preservation. If pruning the trees is required to reduce, risk should be considered but only were it would not cause the tree to become unbalanced or cause significant further stress to the tree.

7.4.1 Removal Criteria

All trees classified as a heritage tree or a significant tree must have the following for approval.

- Must have a comprehensive inspection, the inspection may also include a QTRA (Quantified Tree Risk Assessment). This inspection will be used were the trees asset cost is to be determined for risk cost;
- An application is submitted with the NSW Heritage department for approval; and
- Also an application along with a tree inspection report is submitted within Tenterfield Shire Council for approval.

7.4.2 Non-Removals

Trees will not be considered for removal due to the following:

I. Complaints of leaves falling into residence guttering

(Some residence may feel that the leaves falling into their gutters is the responsibility of Council and that the removal of the tree is necessary. It is the responsibility for the residence to remove leaves from their own property.)

Residence may request removal of branches that are deemed a hazard, but must liaise with Council in the first instance.

II. Increase of bird activity and droppings

- If birds are an issue that is becoming and increased population in a tree, appropriate actions may be taken to help remove or lower bird or bats habitation of the tree. These may include
  - Placing eye balloons in trees that may resemble a predator
  - Bird spikes
  - Predator sounds
  - Smoke

III. Restricting sunlight to a residence solar panel
- Any tree that restrict sunlight to solar panel may have an inspection undertaken to see if the trees overall condition is poor;
- If the tree condition is poor the tree may be removed for solar panels.

IV. Loss of views to household or business
- No tree will be removed to improve views either for houses or business;
- Trees may be removed if they meet the Section 6.1 Basis for removal.

V. The tree causes allergy and other health problems
- No tree will be removed sue to allergies

7.5 Documentation of Tree Removals

As part of the management plan all tree removals will be documented and placed in the tree database for future reference, this will inform future request for information and future activities that may be requested.

The tree removal document must contain the following:

- Tree significant Number;
- Inspection assessment record number; and
- Date of removal of tree.

8 PRUNNING TREES

8.1 Introduction

Pruning of trees can be effective way of reducing potential hazards and risks that may result in injury to public or property, Tree pruning should result in a healthy, structurally and aesthetically pleasing tree. This can be achieved by undertaking regular pruning.

In addition, pruning can guide the form of the tree and correct imbalances and poor structures prior to maturity.

8.2. General Requirements

All pruning works must be carried out:

- By an arborist with a minimum qualification of AQF level 3;
- According to the Australian Standard AS4373-2007 Pruning of amenity trees; and
- According to the Electrical Supply Act 1995.

The extent of pruning of an individual tree must take into account the age, condition, shape and form of the tree. Pruning has to produce a well-balanced, safe tree, while maintaining its overall amenity and significance to the street.

Many of our mature street trees do not conform to statutory clearance standards above footpaths, kerbs and roads. Given the age of these trees, any attempt to prune to normal requirements may be detrimental, leading to heavy canopy loss and large, intrusive wounds. In accepting that many trees may not be pruned to the required standards. Council acknowledges that there may be some sporadic limb loss and Council will attempt to mitigate these risks where possible.

8.2.1. Pruning

Council staff will undertake a coordinated, cyclic pruning program based on a 'palliative' approach to tree maintenance. The Tree Management Plan will try to prune every street tree over a four-year period. The necessity to undertake further pruning of particular trees outside this cycle will be determined on a needs basis, with a particular attention to safety.

Pruning too near the onset of cold weather or post freezing temperatures can trigger dieback and encourage disease. The best time for pruning, is dependent on the species but most pruning is during the heat of summer.

Most deciduous trees should be pruned when active buds appear and after frost through to late spring or mid-summer.

8.3. Pruning around Power Lines

Pruning works carried out around power lines must comply with the Electrical Supply Act 1995.

If there are existing trees that will grow or is within power lines distance as to the electrical supply act 1995, the following pruning method should be carried out if possible.

Medium sized trees (7.0m – 15.0m) to be trained around overhead power lines to achieve aesthetically acceptable results. This strategy requires correct species selection and formative pruning when the tree is young. The aesthetic result of directional pruning is most successful when the safety clearances between the lines and the tree are minimal.

Refer to Appendix E - Pruning methods & standards

9 TREE MAINTENANCE PLAN

9.1 Introduction

Audits of street and park trees will be undertaken on an ongoing basis to ensure that high quality delivery standards are maintained at all times. It is envisaged that high risk sites such as arterial roads, sites adjacent to major playgrounds and car parks will receive specific attention proportional to the level of risk that may exist in that location.

9.2. Tree Maintenance on Existing Trees

All trees need to be serviced and maintained as they are a living thing which has an circulatory system which feeds the tree branches and leaves and vice versa. Due to this trees need regular checkups and any issues fixed and these include:

- Treatment of termites, borers, and pests;
- Control of diseases; and
- Removal of dead or infected parts of the tree.

Along with the checkup or tree inspections there is also other maintenance activities that can be applied to help strengthen the trees as listed below

Below is a list of maintenance that will be part of a maintenance program

Watering

- Watering of trees should be considered in the maintenance program, mainly with young newly planted trees;
- All new trees planted shall have a root rain pit irrigation installed to help get the water deep around the trees root system.

Mulching

- Mulching trees should be a yearly program in the winter;
- Mulching trees will help protect roots from damage by mowers, ring barking from brush cutting and it helps reduce moisture loss.

Fertilising

- As part of the new planting maintenance plan regular fertilising will help promote a healthy tree;
- Tree fertiliser tablets to be placed into soil as to instructions.

Refer to Appendix F - for more information on watering, mulching, and fertilizing

EXAMPLE OF TREE MAINTENANCE SCHEDULE

Months	Sep-Nov	Dec- Feb	Mar-May	June-August
Pruning deciduous trees				
Watering new trees				
Pruning works				
Mulching trees				
Fertilise trees				

By implementing a maintenance program, the following will be achieved.

- Achieve a proactive approach to the management of risks of the trees
- Achieve implementing Australian standards for better practices with maintaining trees
- Achieve developing appropriate staff skill levels to ensure the works are carries out with the best tree management practices
- Achieve controlling pests and diseases in trees
- Achieve longevity of trees life

10 TREE MAINTENANECE RESOURCES COSTS & BUDGETS

10.1 Introduction

The tree maintenance resources and costs will be created as to the maintenance plan and tree inspection schedules 6.4 Tree Inspection Schedules but at this stage, until inspections of all trees have been carried out and documented along with data collected. The actual costs for undertaking maintenance works cannot be quantified.

The information gathered will be as follows:

- Trees requiring pruning of dead and dangerous branches;
- Removal of potential unsafe trees;
- Replacement of trees that are removed; and
- New plantings.

10.2 Tree Maintenance Costs Existing Trees & New Planted Trees

Tenterfield Shire Council has over the past few years have planted new street trees which require regular maintenance.

To quantify the costs for resources and create a budget for these the following needs to be considered:

- To use a watering truck to water all trees planted up to 5 years old;
- Mulch yearly;
- Apply fertiliser or organic fertiliser;
- Contract works for pruning; and
- Unforeseen issues requiring urgent works.

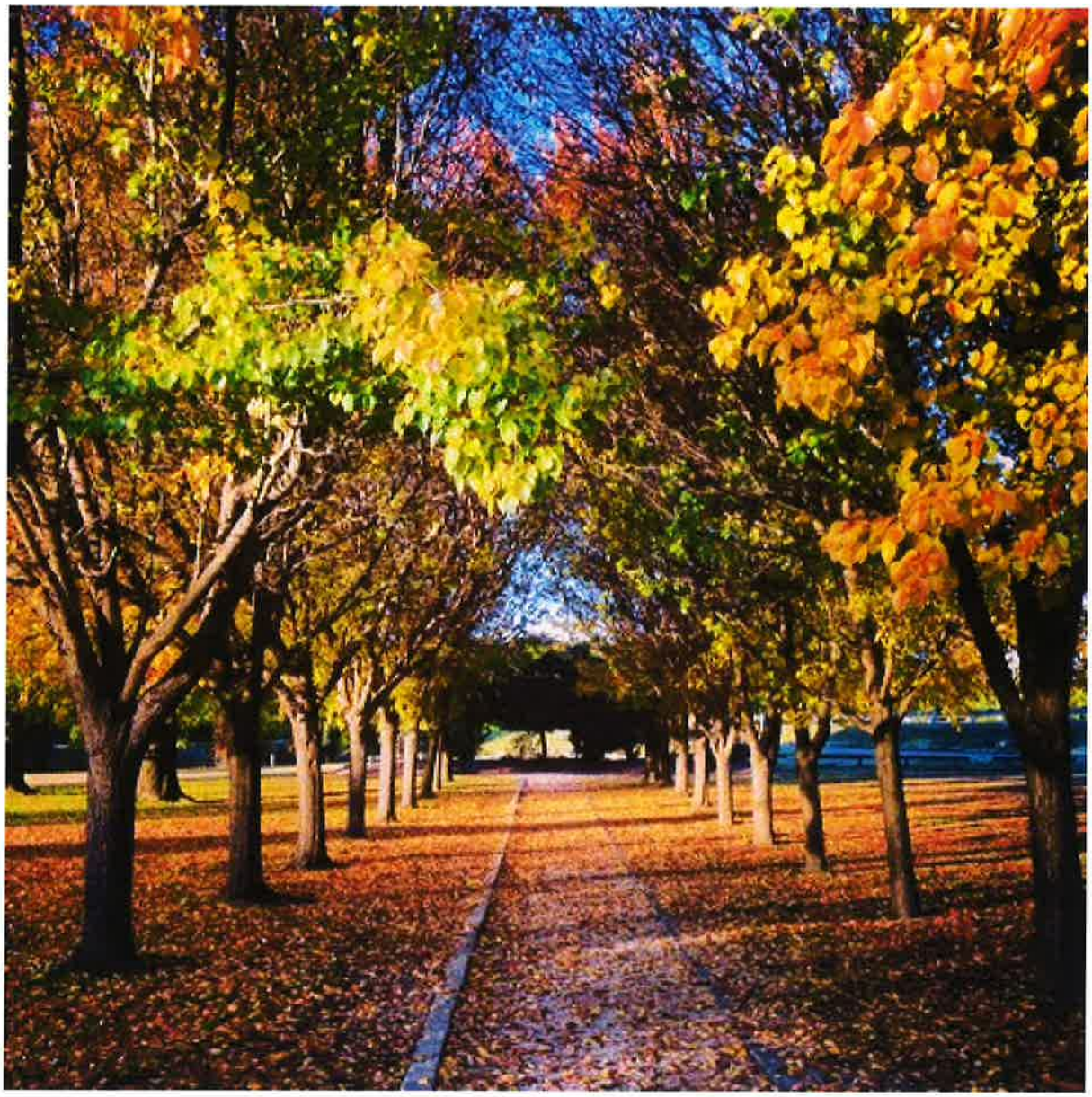
10.3 Overview

The collection of tree data and a basic tree assessment will be completed by June 2020, which will allow time to prepare budget costs for the next financial year and long-term budget. This will also include new plantings and maintaining all newly planted trees.

11 CONCLUSION

This tree management plan will help develop a process and successfully manage all the trees that are throughout Tenterfield Shire Council shire.

It will help maintain and create future vibrant coloured foliage and flowering trees throughout all the townships for the enjoyment and pleasure of the many visitors and local communities for now and for many years in the future.



Appendix A – Main Database Fields

Table Field 1	Definition
1. ID number	Each tree will be given a unique ID number and will not be changed during and after the trees life
2. Location	The database will set up areas of location Urban and Rural areas
3. Park/Street	The tree will be located in the following areas. Parks, Streets, Open Spaces, and Sport fields
4. Suburb	Each location will contain suburbs within that area. This helps create easy search and reporting system
5. Roads	Each Suburb will include roads and streets which will be displayed in a hierarchal system
6. GPS	Each tree will be GPS to be incorporated into the councils mapping system to allow ease for location
7. Tree species	Each tree will have the exact species name
8. Height, Spread & trunk DBH	The trees will have their height, spread and truck girth measured. This will be part of a 5 year update inspection routine
9. Age	The tree will be given an age that would reflect height and spread. Some trees will not be an accurate age but will be given the following- Young, Semi mature, Mature, Over mature
10. Safe Useful Life Expectancy	Safe useful life expectancy ratings of a tree are to be assessed independently and recorded as general information

Table 2: Sub Database Fields (Infrastructure)

This sub database will provide information to any infrastructure or utilities that are present within the trees canopy and root zones
This will contain the following information

Field 1	Definition
1. Power Lines	Yes/No- if present. Underground/ Distance to power lines/ Damage to infrastructure high low/ Existing issues
2. Kerb	Yes/No- if present/ Distance to trunk/ Damage to Kerb high low/ Existing issues
3. Footpaths	Yes/No- if present/ Distance to trunk/ Damage to footpath high low/ Existing issues
4. Roads	Yes/No- if present/ Distance to trunk/ Damage to road high low/ Existing issues
5. Water service	Yes/No- if present/ Distance to trunk/ Damage to water pipes high low/ Existing issues
6. Sewage service	Yes/No- if present/ Distance to trunk/ Damage to sewage pipes high low/ Existing issues

7. Communication services	Yes/No- if present/ Distance to trunk/ Damage to communication cables high low/ Existing issues
8. Private Driveways	Yes/No- if present/ Distance to trunk/ Damage to Driveways high low/ Existing issues

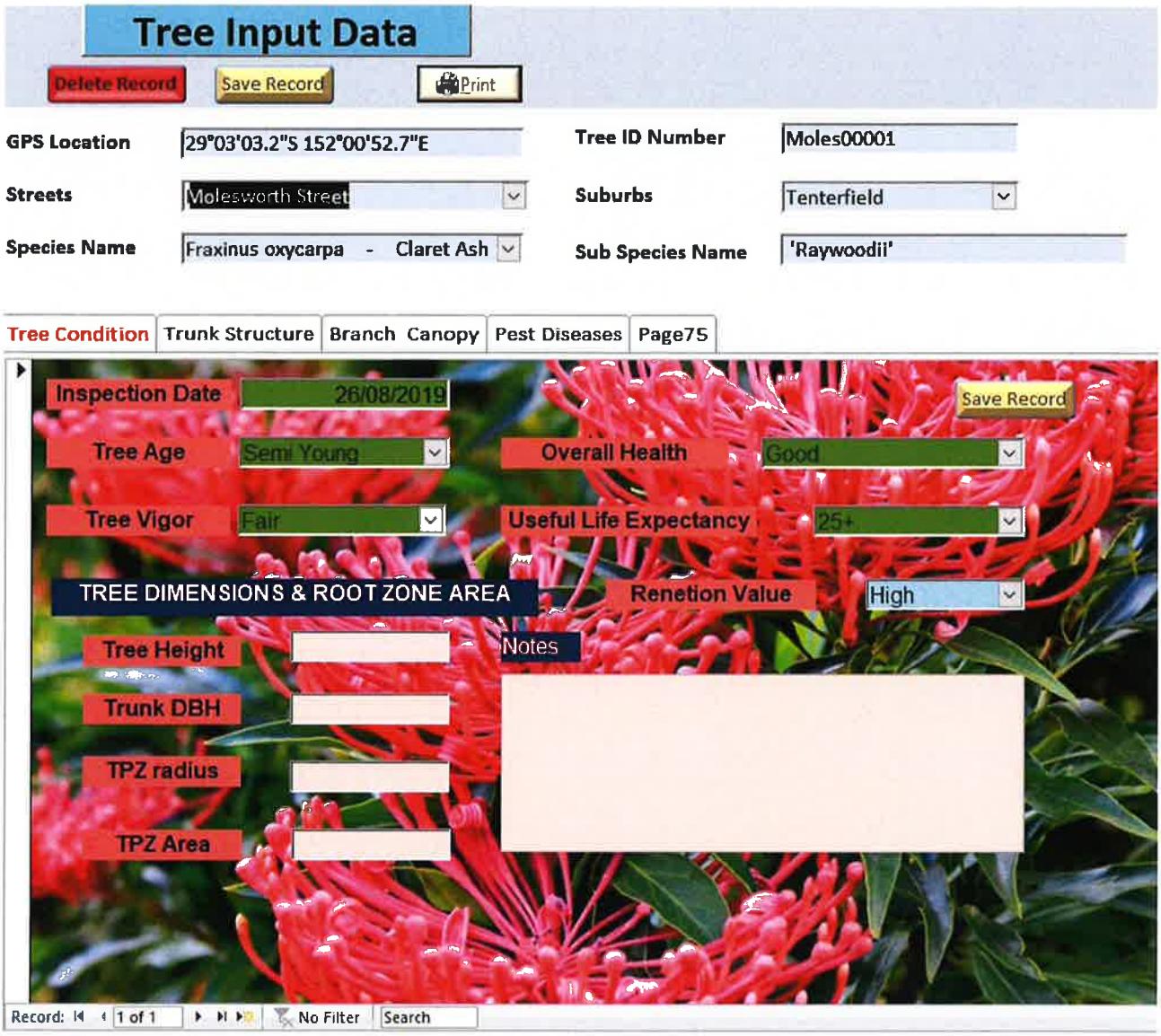
Table 3: Sub Database Fields (Tree assessment)

The tree assessment will calculate the score of each field providing information to tree maintenance required or removal and replacement

Field 1	Definition
1. Tree condition	1. **Good:** a tree in good health, and does not require any further action. A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species 2. **Fair:** a tree with something wrong in terms of its health or further action required. Tree with slight decline in vigour, small amount of twig dieback, minor structural defects that could easily be rectified. 3. **Average;** Tree has health or structural issues that will require treatment with in a short period before becoming poor. 4. **Poor:** a tree that is approaching over-maturity to be removed because it is in very poor health or of defective structure. Tree in decline, epicormics growth, extensive dieback of medium to large branches, epicormics and significant structural defects that cannot be mitigated 5. **Dead:** a tree that has no living vascular tissue
2. Structural Characteristics ▪ Canopy density ▪ Canopy Dead wood ▪ Trunk damage ▪ Trunk decay ▪ Trunk cracks ▪ Dead Branches ▪ Epicormic growth	Each structural characteristics will be graded Good, Fair, Poor, 1. Good 2. Fair 3. Average 4. Poor 5. Very Poor There will also be a percentage given ▪ 80 -100% ▪ 60 - 80% ▪ 40 - 60% ▪ 20 - 40% **Refer to Section 5 Tree structures**
3. Pest & disease ▪ Borers present ▪ Fungal present ▪ Leaf insects	Each situation will be graded Good- no signs, Fair- low signs, Poor-severe signs. 1. Good 2. Fair 3. Average 4. Poor 5. Very Poor Also provided will be type pest or disease and treatment

4. Vigor	Each tree will be graded as follows 1. High 2. Fair 3. Average 4. Poor 5. Very Poor
5. Root Zone-Tree Protection Zone	The following will be considered ▪ Root zone covered by grass, road, concrete path or driveways ▪ The area covered will be given a percentage ▪ 70 - 100% Coverage ▪ 40 - 70% Coverage ▪ 10 – 40% Coverage Damaged Roots 1. 0 -10% Damaged/ Good 2. 10 - 30% Damaged/ Fair 3. 30 - 50% Damaged/ Poor 4. 50 – 80% Damaged/ Server **Refer to Section 5 Root Zones**
6. Pruning History results ▪ Crown Cleaned ▪ Reduced ▪ Thinned ▪ Branch cuts	Each will be rated to condition of previous pruning works Good Fair Average Poor Very Poor

TREE INPUT DATA



Record: 1 of 8 No Filter Search

Appendix B – Tree Species List

Botanical Name	Common Name	Sub Species	Height	Evergreen/ Deciduous	Showy Foliage	Flowers	Shape
Acer buergerianum	Trident Maple		6m x 6m	Deciduous	Yes	No	Branches Ascending
Acer palmatum	Japanese Maple		4m x 3m	Deciduous	Yes	No	V Shape
Acer palmatum	Japanese Maple	'Atropurpureum	4m x 3m	Deciduous	Yes	No	V Shape
Acer rubrum	Japanese Maple	'Fairview Flame'	4m x 4.5m	Deciduous	Yes	No	V Shape
Agathis robusta			15m x 8m	Evergreen	No	No	Fan
Araucaria bidwillii	Bunya pine		15m x 8m	Evergreen	No	No	Symmetrical
Betula pendula	Silver Birch		12m x 6m	Deciduous	Yes	No	Pendulous
Betula pendula	Upright Silver Birch		8-10m x 2-4m	Deciduous	Yes	Yes	Fastigata
Cedrus alantica	Blue Atlas Cedar		30m x 20m	Evergreen	No	No	Pendulous
Cedrus deodra	Deodra		20m x 8m	Evergreen	No	No	Pendulous
Cinnamonmum camphora	Campor Laurel		20m x 10m	Evergreen	No	No	Round
Cupressocyparis cahmeriana	Kashmir Cypress		20m x 15m	Evergreen	No	No	Pendulous
Cupressocyparis leylandii	Leylandii	'Castlewellen Gold'	20m x10m	Evergreen	Yes	No	Conical
Cupressocyparis leylandii	Leylandii	'Leighton's Green'	20m x10m	Evergreen	No	No	Conical
Cupressocyparis Macrocarpa	Monteray Cypress		20m x10m	Evergreen	No	No	Columnar
Cupressocyparis Macrocarpa	Pencil Pine		15m x 1m	Evergreen	No	No	Columnar
Fraxinus excelsior	Golden Ash	'aurea'	7m x 7m	Deciduous	Yes	No	Round
Fraxinus oxycarpa	Claret Ash	'Raywoodii'	12m x 7m	Deciduous	Yes	No	Oval
Fraxinus angustifolia	Desert Ash	'angustifolia'	10m x 12m	Deciduous	Yes	No	Round

Fraxinus pennsylvanica	Cimmaron Ash	'Cimmaron TM'	13m x 8m	Deciduous	Yes	No	Round
Gleditsia triacanthos	Ruby Locust	'Ruby Lace'	10m x 6m	Deciduous	Yes	No	Pendulous
Gleditsia triacanthos	Golden Honey Locust	var. inermis 'Sunburst'	15m x7m	Deciduous	Yes	No	Pendulous
Gleditsia triacanthos	Weeper	var. inermis 'Emerald Cascade	2m x 2m	Deciduous	Yes	No	Round
Ginkgo biloba	Ginkgo			Deciduous	No	No	
Lagerstroemia indica	Crepe Myrtle	'Best red'	3mx 2.5m	Deciduous	No	Yes	V shape
Lagerstroemia indica	Crepe Myrtle	'Pink Blush'	3m x 2.5m	Deciduous	No	Yes	V shape
Lagerstroemia indica	Crepe Myrtle	'Crimson Red'	3m x 2.5m	Deciduous	No	Yes	V shape
Lagerstroemia indica	Crepe Myrtle	'Pure White'	3m x 2.5m	Deciduous	No	Yes	V shape
Liquidambar styraciflua	Liquid Amber		20m x 6m	Deciduous	Yes	No	Ascending Branches
Liquidambar styraciflua	Liquid Amber Burgundy	'Burgundy'	10-15m x 5-8m	Deciduous	Yes	No	Ascending Branches
Livistona australis	Cabbage Palm		15m x 2m	Evergreen	No	No	Fan
Lophostemon confertus	Brush Box		15m x 10m	Evergreen	No	No	Oval
Malus x atrosanguinea		'Gorgeous'	3m x 3m	Deciduous			Upright Spreading
Malus floribunda	Japanese Crab Apple		5m x 5m	Deciduous	Yes	Yes	Round
Malus floribunda	Crimson Knight	'Criknzam'	8m x 4m	Deciduous	Yes	Yes	Round
Malus floribunda	Royal Raindrops		6m x 5m	Deciduous	Yes	Yes	Upright Spreading
Malus ioensis	Rubra	'Purpurea'	5m x 3m	Deciduous	Yes	Yes	Round
Malus tschonoskii	Upright Crab Apple		7m x 4m	Deciduous	Yes	Yes	Fastigata
Nyssa sylvatica	Tupelo		11m x 6m	Deciduous	No	Yes	Round
Photina robusta	Red Leaf Photinia		8m x 8m	Evergreen	No	Yes	Round
Picea glauca	White Spruce		15m x 5m	Evergreen	No	No	Conical
Picea pungens	Blue Spruce		2m x 2m	Evergreen	Yes	No	Conical
Pistacia chinensis	Chinese Pistachio		8m x 6m	Deciduous	Yes	No	Round

Platanus acerifolia	London Plan tree		15-20 x 10m	Deciduous	No	No	Horizontal Branches
Platanus orientalis	Oriental Plane	'Digitata'	15-20 x 10m	Deciduous	No	No	Horizontal Branches
Populas canadensis	Canadian poplar tree		15m x 10m	Deciduous	No	No	V Shape
Populas deltoides	Poplar		20-30m x 20m	Deciduous	No	No	Pyramidal
Populas nigra	Lombardy Poplar	'Italica'	20-30m x 3m	Deciduous	Yes	No	Columnar
Populas simonii	Chinese Poplar		12m x 3m	Deciduous	Yes	No	Columnar
Prunus cerasifera	Black Cherry Plum	'Nigra	5m x 4m	Deciduous	Yes	Yes	Round
Prunus	Purple Leafed Plum	'Blireana'	5m x 4m	Deciduous	Yes	Yes	Round
Prunus surrulata	Weeping Cherry		1.8m	Deciduous	Yes	Yes	Weeping
Pyrus calleryana	Ornamental Pear		11m x 2m	Deciduous	Yes	Yes	Fastigata
Pyrus calleryana	Bradford pear		18m x 9m	Deciduous	Yes	Yes	Pyramidal
Pyrus calleryana	Frontier	'Fronzam'	10m x 4m	Deciduous	No	Yes	Upright branching
Pyrus ussuriensis	Manchurian Pear		9m x 7m	Deciduous	No	Yes	Pyramidal
Quercus palustris	Pin Oak		15m x 8m	Deciduous	Yes	No	Horizontal Branches
Quercus robur	English Oak		11m x 11m	Deciduous	Yes	No	Ascending Branches
Quercus robur		'Fastigata'	13m x 4m	Deciduous	Yes	No	Fastigata
Quercus robur	Red Oak		20m x 9m	Deciduous	Yes	No	Round
Robinia pseudoacacia	Golden Robinia	'Frisia'	9-12m x 6m	Deciduous	No	No	Round
Robinia pseudoacacia	Mop Top Robinia	'Inermis'	2mx 3m	Deciduous	No	No	Oval
Sapium sebiferum	Chinese Tallowood		8m x 8m	Deciduous	Yes	No	Round
Taxodium distichum	Cypress		20m x 6m	Deciduous	No	No	Horizontal Branches
Ulmus glabra	Golden Elm	'Lutescens'	10m x 12m	Deciduous	Yes	No	Round
Ulmus parvifolia	Chinese Elm		13m x 10m	Deciduous	Yes	No	Branches ascending

Appendix C – Street Species & Future Street Planting List

Current Species in street color text	Fraxinus excelsior
Species to be planted in future color text	Acer buergerianum
Species to be planted under power lines in future color text	Prunus cerasifera nigra
No trees to be planted in Street, Lane or Road	

STREET NAME	TOWN	TREE SPECIES SELECTED OR CURRENT	TREE SPECIES REPLACEMENT SELECTED UNDER POWER LINES
Albert Street	Tenterfield	Acer buergerianum	Prunus cerasifera nigra
Aldershot Road	Tenterfield	Prunus x blireana	Prunus x blireana
Banksia Drive	Tenterfield		
Barney Downs Road	Tenterfield		
Bellevue Road	Tenterfield		
Billirimba Road	Tenterfield		
Bismark Street	Tenterfield		
Black Swamp Road	Tenterfield		
Bluff Creek Road	Tenterfield		
Boundary Road	Tenterfield	Fraxinus excelsior	Fraxinus excelsior
Bruxner Highway	Tenterfield	Quercus palustris	Quercus palustris / Prunus cerasifera nigra
Bruxner Way	Tenterfield		
Bryans Gap Road	Tenterfield		
Bulwer Street	Tenterfield	Fraxinus excelsior	Acer palmatum 'Atropurpureum'
Bungulla Road	Tenterfield		
Bungulla Platform Road	Tenterfield		
Bungulla Reserve Road	Tenterfield		
Cataract River Road	Tenterfield		
Clifton Street	Tenterfield	Prunus cerasifera nigra	Prunus cerasifera nigra
Clive Street	Tenterfield	Pistacia chinensis	Pyrus fauriei 'Korean Sun'
Common Road	Tenterfield		
Cowper Street	Tenterfield	Quercus palustris	Quercus palustris/ Prunus x blireana
Lower Cowper Street	Tenterfield	Prunus x blireana	Prunus x blireana
Coxalls Road	Tenterfield		
Crown Street	Tenterfield	Shop side	Magnolia x soulangeana
Dairy Mountain Road	Tenterfield		
Daisy Mount Road	Tenterfield		
Dam Lane	Tenterfield		

Derby Street	Tenterfield	Pistacia chinensis	Pistacia chinensis
Douglas Street	Tenterfield	Pistacia chinensis	Pistacia chinensis
Drummond Street	Tenterfield	Magnolia x soulangeana	Magnolia x soulangeana
Duncan Street	Tenterfield	Pistacia chinensis	Pistacia chinensis
Nth Duncan Street	Tenterfield	Ulmus glabra	Prunus cerasifera nigra
East Street	Tenterfield	Magnolia grandiflora 'Little Gem'	Magnolia grandiflora 'Little Gem'
Erindee Avenue	Tenterfield	Mixture of species	
Finnertys Road	Tenterfield		
Finns Road	Tenterfield		
Francis Street	Tenterfield	Quercus rubra 'Red Oak'	Cornus kousa chinensis
Fraser Street	Tenterfield		
George Street	Tenterfield	Populas simonii	Fraxinus oxycarpa / Pyrus fauriei 'Korean Sun'
Geyers Road	Tenterfield		
Green Swamp Road	Tenterfield		
Gum Flat Road	Tenterfield		
Gunyah Road	Tenterfield		
Haddocks Road	Tenterfield		
High Street	Tenterfield	Fraxinus oxycarpa / Platanus acerifolia	Fraxinus oxycarpa / Pyrus fauriei 'Korean Sun'
Homestead Road	Tenterfield		
Imbergers Road	Tenterfield		
Jubilee Street	Tenterfield	Prunus x blireana	Prunus x blireana
Kellys Road	Tenterfield		
Kiely Street	Tenterfield	Magnolia x soulangeana	Magnolia x soulangeana
Kildare Road	Tenterfield		
Kochs Road	Tenterfield		
Laird Street	Tenterfield	Fraxinus pennsylvanica 'Urbanite TM'	Acer rubrum
Landers Street	Tenterfield	Park side/ Liquidambar styraciflua	Magnolia grandiflora 'Little Gem'
Lee Street	Tenterfield		
Link Street	Tenterfield	Prunus cerasifera nigra	Jubilee park
Logan Street	Tenterfield	Quercus palustris	Quercus palustris / Prunus cerasifera nigra
Mackenzie Court	Tenterfield	Brachychiton discolour	Brachychiton discolour
Manners Street	Tenterfield	Pistacia chinensis/ Photinia robusta	Pyrus calleryana
Margaret Street	Tenterfield	Liquidambar styraciflua / Quercus palustris	Liquidambar styraciflua / Prunus x blireana
Martin Street	Tenterfield	Crataegus phaenopyrum / Pyrus calleryana	Pyrus calleryana
Mathiesons Road	Tenterfield		
Melaleuca Circuit	Tenterfield		
Middle Creek Road	Tenterfield		
Miles Street	Tenterfield	Quercus rubra 'Red Oak'	Magnolia x soulangeana

Molesworth Street	Tenterfield	Pistacia chinensis	Pistacia chinensis / Pyrus fauriei 'Korean Sun'
Mount Lindesay Road	Tenterfield	Liquidambar styraciflua	Liquidambar styraciflua
Mount Mackenzie Road	Tenterfield		
Myon Mount Road	Tenterfield		
Naas Street	Tenterfield	Platanus acerifolia / Ulmus glabra / Liquidambar styraciflua / Populas nigra	Platanus acerifolia / Ulmus glabra / Liquidambar styraciflua / Populas nigra
New England Highway	Tenterfield	Quercus palustris	Quercus palustris
Nutshell Road	Tenterfield		
Old Ballandean Road	Tenterfield		
Old Racecourse Road	Tenterfield		
Park Street	Tenterfield	Acer buergerianum	No Overhead power lines
Parkes Drive	Tenterfield	Acer rubrum	No Overhead power lines
Pelham Street	Tenterfield	Pistacia chinensis / Lagerstroemia indica / Ulmus glabra /	Pistacia chinensis / Lagerstroemia indica / Ulmus glabra /
Petre Street	Tenterfield	Pool side- Malus floribunda	Malus floribunda
Polworth Street	Tenterfield	Acer rubrum	Acer rubrum
Railway Street	Tenterfield	Cornus kousa chinensis	Cornus kousa chinensis
Railway Avenue	Tenterfield	Liquidambar styraciflua / Populas nigra / Platanus acerifolia	Fraxinus oxycarpa
Riley Street	Tenterfield	Prunus cerasifera nigra	Prunus cerasifera nigra
Roos Road	Tenterfield		
Rosehill Road	Tenterfield		
Rosemount Road	Tenterfield		
Rouse Street	Tenterfield	Robinia pseudoacacia / Pyrus calleryana	Gleditsia triacanthos var. inermis 'Emerald Cascade
Saddlers Road	Tenterfield		No Overhead power lines
Schroders Road	Tenterfield		
Scott Street	Tenterfield	Cornus kousa chinensis	Cornus kousa chinensis
Scrub Road	Tenterfield		
Scrub School Road	Tenterfield		
Simpson Street	Tenterfield	Ulmus glabra 'Golden Elm'	No Overhead power lines
Snakes Valley Road	Tenterfield		
Sommerlads Road	Tenterfield		
Steinbrook Hall Road	Tenterfield		
Sunnyside Hall Road	Tenterfield		
Sunnyside Loop Road	Tenterfield	Liquidambar styraciflua	No Overhead power lines
Sunnyside Platform Road	Tenterfield		
Swamp Oak Creek Rd	Tenterfield		

Tarban Loop Road	Tenterfield		
Thomas Parade	Tenterfield	Quercus rubra 'Red Oak'	No Overhead power lines
Timbarra Road	Tenterfield		
Wades Road	Tenterfield		
Western Boundary Rd	Tenterfield		
Willgoose Road	Tenterfield		
Wood Street	Tenterfield	Pistacia chinensis	Pistacia chinensis / Prunus cerasifera nigra
Young Street	Tenterfield	Liquidambar styraciflua	No Overhead power lines
STREET NAME	TOWN	TREE SPECIES SELECTED OR CURRENT	TREE SPECIES REPLACEMENT SELECTED UNDER POWER LINES
Bates Road	Torrington		
Torrington Road	Torrington		
Allison Street	Drake		
Fairfield Street	Drake		
Fairfield Road	Drake		
Acacia Street	Liston		
Mount Lindesay Road	Liston		
Acacia Avenue	Legume		
Acacia Park Road	Legume		
Flagstone Road	Legume		
Mount Lindesay Road	Legume		
Tooloom Street	Legume		
Beaury Street	Urbenville		
Clarence Street	Urbenville		
Stephen Street	Urbenville		
Tooloom Street	Urbenville		
Urben Street	Urbenville		
Apsley Street	Jennings		
Ballandean Street	Jennings		
Carrington Street	Jennings		
Duke Street	Jennings		
High Street	Jennings		
Gladstone Street	Jennings		
Graham Street	Jennings		
New England Hwy	Jennings		
Ross Street	Jennings		

Appendix D – Species for Under Power Lines

Species acceptable under power lines and underground services			
Species	**Height**	**Species**	**Height**
Acer buergerianum	6m x 6m	Malus floribunda	6m x 5m
Acer japonica	6m x 6m	Malus ioensis	5m x 3m
Acer palmatum	4m x 4m	Malus tschonoskii	7m x 4m
Acer rubrum	4m x 4.5m	Pistacia chinensis	8m x 6m
Cornus kousa chinensis	4-6m x 4m	Prunus cerasifera	5m x 4m
Gordonia axillaris	5m x3m	Pyrus fauriei 'Korean Sun'	5m x 4m
Hymenosporum flavum	6-8m x 5-6m	Prunus x blireana	5m x 3m
Lagerstroemia indica	3mx 2.5m	Prunus surrulata	1.8m
Magnolia figo	3m x 2m	Robinia pseudoacacia	2mx 3m
Magnolia grandiflora 'Little Gem'	6m x3m		
Magnolia x soulangeana	7m x 6m		
Malus x atrosanguinea	3m x 3m		
Malus floribunda	5m x 5m		

Species selected

Magnolia x soulangeana

The Magnolia x soulangeana is a great species for street plantings allowing corrective pruning without causing an imbalanced canopy.
Deciduous Magnolias are known for their spectacular display of flowers during late winter through to early spring. Needs a sunny but protected spot

Height: 5m **Width:** 4m

Growth Rate: Moderate

Foliage: Large soft green leaves appear after flowers have finished.

Flower: Large, rose pink and white on the outside of the petals and white on the inside

Species selected

Acer palmatum 'Atropurpureum'

Acer palmatum 'Atropurpureum' A very attractive maple with typical five-lobed maples leaves. The new leaves are a rich crimson-red in spring, turning to bronze-green in summer and finally a bright crimson-red in autumn.

Height: 6 m **Width:** 5m

Great specimen for use under power lines

Species selected

Cornus kousa chinensis

Cornus kousa chinensis is a deciduous tree late spring to summer; Dogwood 'Chinensis' covered in gorgeous, white bracts, with small yellow-green flowers at the center. The bracts fade to pink as they age.

Height: 6m **Width**: 4-8m

An open or vase shaped tree with an elegant, spreading habit, Excellent under power lines.

Species selected

Malus floribunda

Malus floribunda an attractive ornamental tree that puts on an outstanding floral display in spring. White and reddish-pink flowers are in abundance over this time making it a distinctive focal point flowering in spring

Height: 5-6 Meters **Width:** 4 meters

Species selected

Prunus cerasifera nigra

Has colored foliage through spring to autumn then at the end of winter has showy display of light pink flowers.

Height: 5-6 meters **Width:** 5 meters

Species selected

Magnolia grandiflora 'Little Gem'

This tree is an evergreen small tree that flowers spectacular and highly fragrant pproducing beautiful creamy white, saucer shaped flowers in spring and summer. Leaves are a classic glossy deep green color with furry brown undersides forming a nice compact evergreen tree with a dense covering of foliage.

Height: 5-6 meters **Width:** 3 meters

Species selected

Pyrus fauriei 'Korean Sun'

This is a compact ornamental pear tree with a dense growth habit. It has a glossy green foliage that changes to bright tones of red and orange in autumn. Flowering seems to occur quite early in spring.

Height: 5 meters **Width:** 4-5 meters

Species selected

Prunus x blireana

This deciduous tree is relatively small growing to around 5m tall. It has slender, arching branches, double mauve-pink flowers, and reddish purple leaves, which turn purplish green in summer.

Height: 5 meters **Width:** 4-5 meters

Appendix – E Pruning Methods & Standards

Pruning Trees

Health, appearance, and safety are the main reasons why street and parkland trees are pruned. There are many different pruning needs; this depends on the location, size, and growth habits of the trees.

There are three basic types of pruning methods used to address most situations:

These types include:

- **Crown Cleaning:** includes the removal of dead, diseased, obstructing, split, and/or broken branches that are 50 mm. in diameter or greater. Limbs that are susceptible to failure from dense foliage will be thinned.
- **Crown Raising:** includes the removal of lower tree branches to allow safe movement of vehicles and pedestrian under the canopy of the tree. Limbs above the adjoining paved area shall be no lower than 2.4 metres. Limbs above the road shall be no

lower than 5.5 metres.

- **Crown Reduction:** includes reducing the overall mass by thinning out the top and sides or just removing individual limbs of the tree. Reduction pruning is commonly associated with the pruning away from buildings, structures, or overhead utility wires.

Pruning methods around power lines

Pruning may be necessary to gradually lift the crown above the height of pedestrians and traffic, or to train branches around overhead wires. To promote sound branch structure, pruning or training of young trees must be incremental. The following diagrams and information is a guide to pruning works around power lines.

Diagram 1

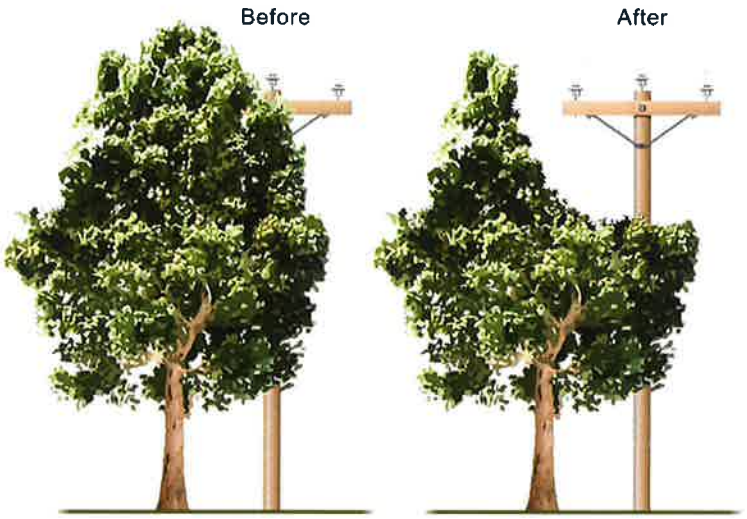
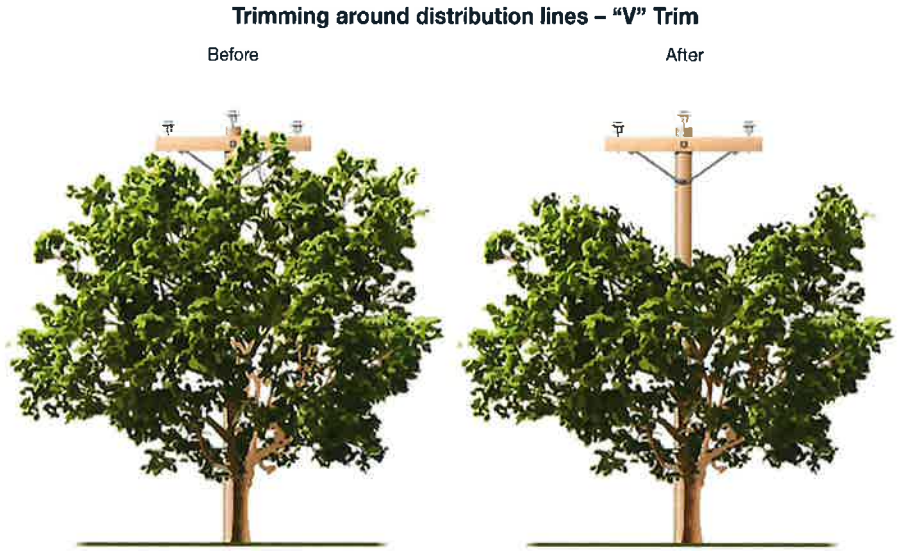
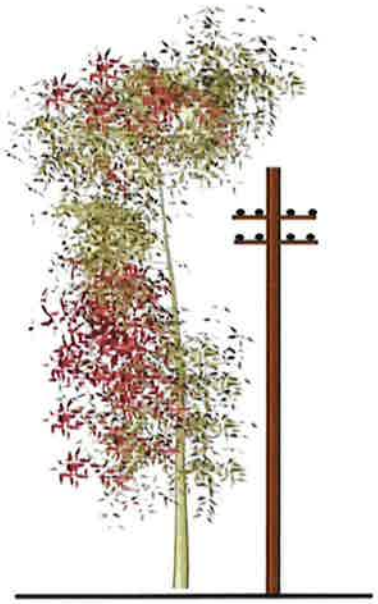


Diagram 2



This method is suitable for low growing species. The important method here is to start doing remedial pruning and to increase thicker canopy in centre by pruning prior to reaching the power lines. If pruning is done at a later stage it is imperative that pruning is cut lower than final centre height to allow more thicker canopy

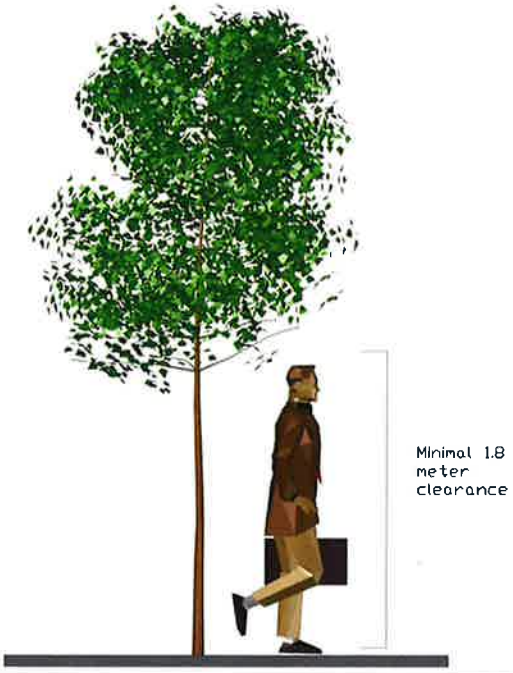
Diagram 3



Pruning along pathways

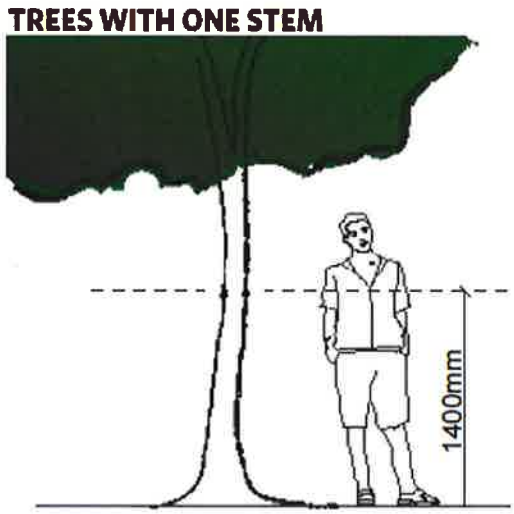
All pathways must be clear to reduce injury to pedestrians by branches

Diagram 1



Appendix F – Tree Protection Zone

- Calculating the circumference of a tree stem



- Calculate the DBH (Diameter at Breast Height)
- Take measurement at 1400mm height then divide by 3.14
- Then calculate the Tree Protection Zone
- Multiply the DBH by 12 e.g. .230mm x 12m
- Measure the Tree Protection Zone area on ground
- Place measuring tape at tree trunk base and circle the tree

Appendix G – Planting Trees Information

Planting Trees

All new trees will be planted according to industry standards, the following are a guide

- Planting hole:
  i. The hole width is to be dug 2 times and half the size of the root ball
  ii. The depth shall be slightly deeper than the root ball depth to allow good loose soil and allow the tree to be placed level
  iii. Add fertiliser tablets under soil at base of tree

- Planting Tree:
  I. Before placing tree into hole measure root height and make sure the hole is no deeper than the top root ball height

II. If there is a lot of soil that is absent on the top of the root ball adjust depth height

III. Place in hole carefully if the tree is large use a sling only and protect with hessian

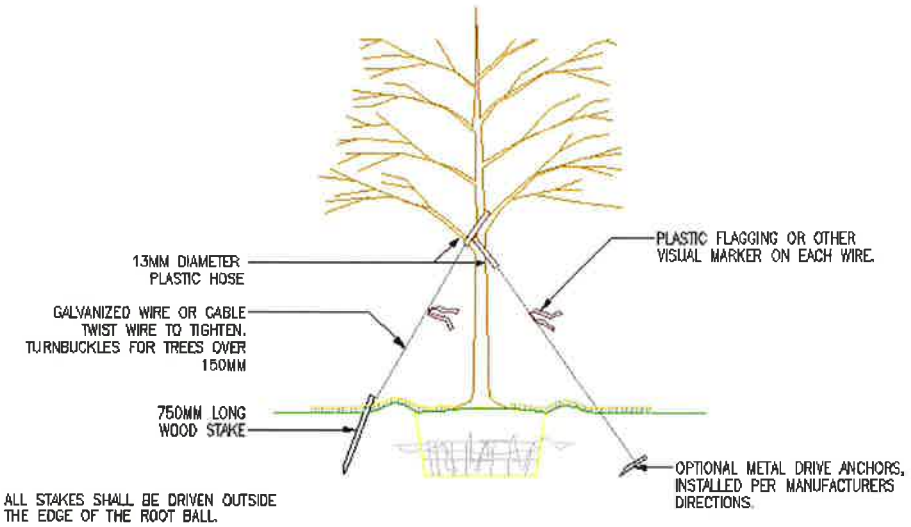
IV. When placing soil into hole around tree make sure the soil is faible and loose

V. Fill half way and press soil down using hand (do not Compact) then place root rain pit

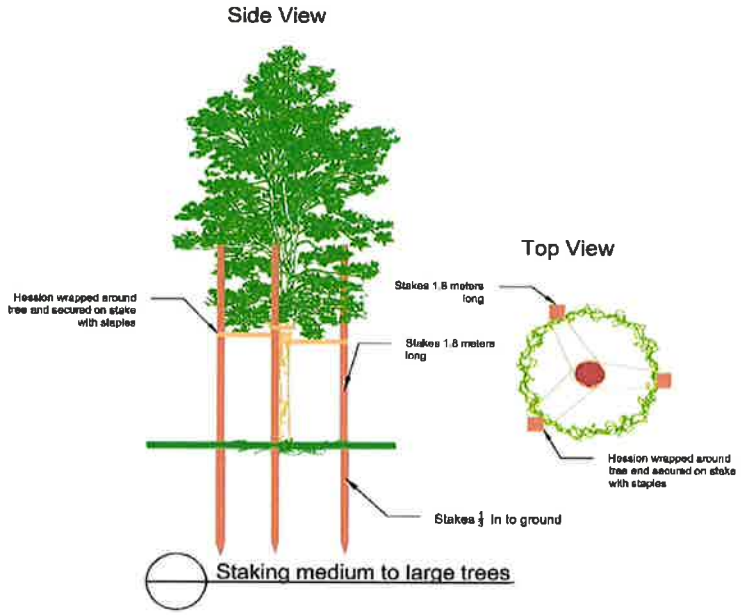
VI. Fill soil to the top of root ball and press down with hands and water the soil until saturated

Staking Tree

I. Trees are to be staked as to industry standards



STAKING LARGE TREE DETAIL



Appendix H – Pruning Roots Standards

Root pruning is generally to be discouraged, as the long-term results cannot be fully known.

Where root pruning is required, the following general guidelines will apply

I. Roots with a diameter less than 60 mm shall be cleanly cut with a sharp saw at the discretion of the on-site staff or contractor
II. Roots of a diameter greater than 60 mm shall not be cut unless authorised by the Council Arborist or an authorised representative
III. All root pruning is to be carried out using a sharp saw or specialised root-pruning equipment. Under no circumstances shall roots be ripped or pulled by machines.

Where roots have been inadvertently damaged during excavation works, the damaged roots must be cut clean as outlined above. Where these roots are in excess of 60mm in diameter, the Council Arborist must inspect the tree and damaged roots before work continues.