



PRACTICAL STEWARDSHIP

TAKING CARE OF YOUR SIGNIFICANT TREE



NATIONAL TRUST

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What is a significant tree?

A significant tree is a special class of tree that has a wide range of environmental, historical, cultural, aesthetic and scientific value over and above the accepted benefits of an everyday tree.

There is a growing awareness of the vital role trees play in our heritage. Many historic buildings, streetscapes and landscapes owe much of their character and charm because of trees. These trees may be remnants of the original forests, plantings by the early settlers, commemorative plantings dedicated to important people or marking significant historical events. Many of the early plantings have reached a considerable size and outstanding form and some are now rare in cultivation.

WHY CARE?

Caring for a culturally significant tree is an intergenerational challenge, and your chance to leave a legacy.

The basic aims of caring for your heritage tree are to conserve and maintain the safety, health, attractiveness and integrity of the tree and any associated cultural or natural history, for as long as is practicable. With good management it is possible to extend the life expectancy of your special tree.



FIGURE 1. MORETON BAY FIG ON THE NATIONAL TRUSTS' OF AUSTRALIA REGISTER OF SIGNIFICANT TREES IN RENMARK, SA.

CARING FOR YOUR TREE

THE REALISATION OF COMPLEMENTING NATURAL PROCESSES

The 'survive and thrive' factor

A culturally significant tree is a living entity. Over its life-span, basic conditions need to be met in order for it to survive and thrive. There is a need for adequate environmental allocation above and below ground.

ABOVE GROUND

- Access to sunlight
- Canopy space
- Limited grass competition
- Active surface layer of organic matter (mulch)

BELOW GROUND

- Compaction free soils
- Air
- Water
- Drainage

Other requirements influencing the 'survive and thrive' factor for the tree, especially over time, may include targeted intervention to maintain the tree's health, form and structure (including aesthetics and addressing potential risk).

There may be a need to control pest and disease issues, or undertake specific pruning for structural repair or to mitigate public risk.

At times, changing political / social values will also have a far more direct and untimely influence on the survival of a culturally significant tree, particularly through unsympathetic property development which causes adverse groundwork activity such as cutting, filling and compacting within the root zone of the tree.

The basic 'survive and thrive' factors may have already been compromised in the past, due to historical events and pre-established conditions, and as a steward, you may have limited influence to alter some of these circumstances.

Reducing Competition

Wherever possible provide the tree with sufficient room to develop full growth characteristics. The aim should be to enhance the significant tree in its landscape by providing supportive surroundings (refer to 'survive and thrive' above and below ground requirements).

*"Your positive efforts
and nurturing will
support the
conservation of the
tree for the term of
its natural life."*

Changes in Soil Level

As the roots are hidden, their role is often ignored and it is common to find trees that have declined or died because changes were made to their soil environment.

It is important to avoid building up the soil level (filling) within the root zone of the tree. This may occur when the land is developed, or where garden beds are constructed around trees. The added soil layer within the root zone will cause root decline and death through the build-up of carbon dioxide under the area of fill.

Destructive lineal soil excavations for service trenches, building footings and pools etc. are to be avoided near trees to prevent root severance. Most of the tree's absorbing roots are located within the top 30cm of the soil and broad, shallow excavations within this important zone should also be avoided.

Where possible site development should be planned to avoid changes to the tree's existing water regime, where this is interrupted compensatory summer irrigation should be arranged.

Avoiding Compaction

When oxygen levels in the soil are reduced to below 10%, root growth declines, after a certain amount of roots have died and the situation is not remediated the death of the tree is likely.

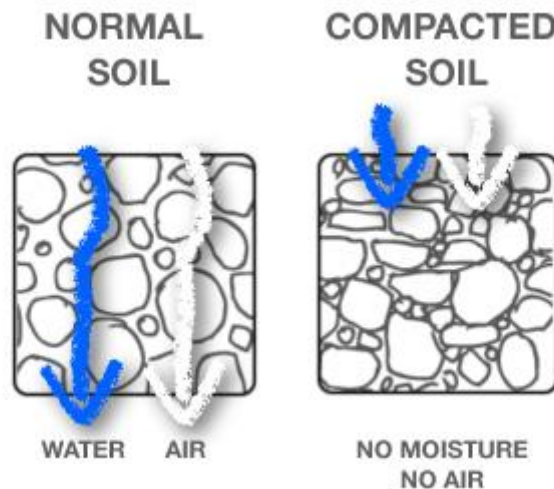
Compaction is the compression of soils which breaks down soil aggregates and results in increased soil density and decreased porosity. Small air pockets or voids in soils are called macropores. These gaps allow sufficient air and water movement which is vital for tree health. When soil becomes compacted these voids are collapsed, which results in a greater proportion of micropores (much smaller gaps) through which a limited amount of air and water move slowly.

Compacted soils greatly affect tree health; roots suffer lack of water, nutrients, oxygen and presence of beneficial organisms. The results of compaction for a tree are slow annual growth, reduced leaf area and reduced ability to cope with unfavourable factors within the trees environment such as drought, fungal colonisation and insect attack.

The construction of pathways, driveways and car parks over the root zone interferes with the critical requirement of the tree's roots to respire oxygen and carbon dioxide. The foliage of trees affected in this way becomes thinner, branches die and depending on the species and extent of compaction, the tree may also die.

Where paving is required beneath a tree, it should be designed and installed in a tree-sensitive manner using principles of above grade 'vented' construction. Alternatively a simple above grade aerated material like a thick allocation of screened aggregate or recycled brick and concrete material with no fines in it can be used for paths and drive ways. It is often easier and more economical to undertake tree sensitive design and construction than to attempt to save a damaged tree post development. do this than to attempt to save the damaged tree after construction. Tree owners should seek professional advice when planning new constructions near trees.

FIGURE 2. SIMPLE DIAGRAM SHOWING HOW WATER AND AIR STRUGGLE TO PERMEATE COMPACTED SOILS WHEN ALL THE INTERPARTICLE GAPS ARE ELIMINATED BY SOIL COMPACTION.
(PIC CREDIT: LANDSCAPERESOURCE.COM)



Soil Health and Mulching

To maintain an actively growing and healthy tree, it is important that sufficient soil-moisture is available during dry periods.

Compost and other mulching materials used above the surface, will help to retain soil moisture and provide nutrients to the tree during its breakdown. Earth worms and beneficial micro organisms depend on the mulch for their existence and assist in its breakdown and assimilation into the topsoil.

THE EFFECT OF EARTH WORMS AND OTHER SOIL FAUNA ON SOIL FERTILITY

- Improve pathways for root growth
- Transfer nutrients from the soil surface
- Increase soil microbial activity
- Increase the rate of nutrient recycling
- Neutralise the soil

THE EFFECT OF EARTH WORMS AND OTHER SOIL FAUNA ON SOIL STRUCTURE

- Soil mixing
- Creation of soil aggregates
- Improved soil aeration
- Increased proportion of soil macropores
- Burrows promote water entry into the soil
- Formation of vertical airways/waterways

Improved soil structure results in improved percolation of water and exchange of atmospheric gases which is vital for the success of the tree.

More about Mulch

The correct use of mulch is the greatest nurturing action available to gardeners in order to promote tree health.

Mulch not only alleviates and protects from compaction, it also excludes turf competition which is an avoidable challenge for trees. Mulch correctly applied to establishing trees promotes greater tree root densities in comparison to trees growing in competition with grasses and no mulch applied.

Mulching of mature deciduous trees is simply a matter retaining all leaf litter under the tree. This mulch layer should be at least 75mm to 100mm deep and spread out from a compulsory space of 300mm around the trunk (avoiding bark damage and root crown rot) to at least the drip-line of each targeted mature tree. Mulch can be contained by the use of some form of mulch-guard installed at the desired circumference.

The retention of fallen leaves, sticks, fruit and flowers is the preferred mulching method as this simulates a forest situation where this type of mulch material frequently breaks down and is quickly assimilated back into the topsoil. It is there readily usable by soil fauna which aid in the nutrient recycling process, promptly returning nutrients back to the soil where they are then available to the tree. This system promotes natural processes and is better than applying other mulches which may require longer periods to compost and assimilate with the topsoil.

Menaces of Mulching

Mulch layered against trunks of mature trees and stems of establishing trees can greatly stress and even cause death to the roots. Like the use of fill/soil against the trunk, piling mulch against the trunk will generate root stress through suffocation, malnourishment and reduced moisture and nutrient up-take.

Fungal and bacterial diseases which encourage root and root crown decay (collar rot) are potentially promoted in a situation of inappropriate mulching.

Thick applications of mulch in boggy or poorly drained areas promotes the retention of excessive soil moisture leaving roots prone to rots and suffering from poor soil aeration.

A super thick layer of mulch may lead to anaerobic decomposition producing toxic substances harmful to soil organisms and the plants the mulch is intended to protect.

Significant water repellent conditions may arise when dry fungal masses inhabit overly thick undisturbed mulches.

“Mulching is not as simple as it seems, occasionally it is applied incorrectly for little or adverse effect”

Pests and Disease

The presence of pests and disease is often a secondary indicator for a primary environmental issue, for instance severe borer infestations in eastern states forest eucalypts planted in South Australian gardens. Or, the presence of pests and diseases may be a primary issue in its own right, Elm Leaf Beetle for example.

Tree owners should seek professional advice before deciding on a relevant course of action for the particular issue at hand.

Tree Pruning

When considering the pruning of your tree it is an advantage to understand pruning is only for specific targeted reasons, such as:

- Removal of dead wood and broken branches mostly for aesthetics
- Removal of branches in conflict with the typical habit of the canopy
- To correct or manage poor structure in young and semi mature trees
- To install habitat
- To repair storm damage
- To address a specific hazard issue
- Addressing senescence and severely declined structure with veteran tree management principles

The practice of pollarding (lopping and topping) amenity trees is now a discredited practice. This is due to the severe drain on the tree's energy reserves and the vividly appalling aesthetics. More importantly the increased hazard potential it affords the tree where it grows back to near its original size but with a drastically inferior form with unavoidable wood decay within its main branch structure.

Planning Controls

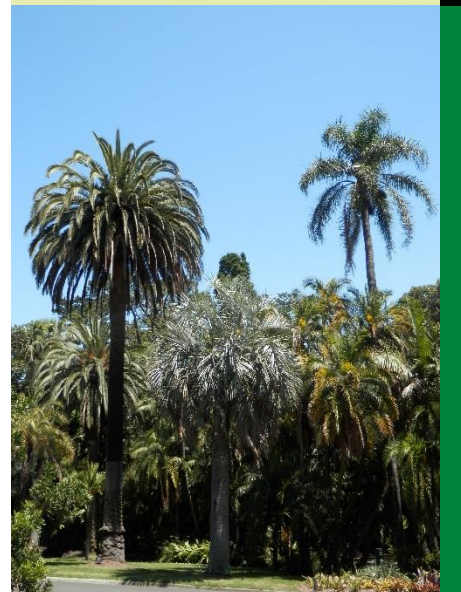
Owners intending to arrange for the removal of a limb or tree should consult their local council to ascertain whether any development / planning controls exist or depending on the tree's history and location its potential listing as a local or state heritage item or contributing place.

CAN PRUNING HURT THE TREE?

Yes, contrary to popular belief, pruning of a tree is actually injurious to its health.

Pruning inflicts wounds which the tree must spend time and energy producing chemical compounds to seal with new bark and wood, to keep out disease.

Pruning also leads to a drop in the photosynthesis potential of the tree due to reduction in foliage.

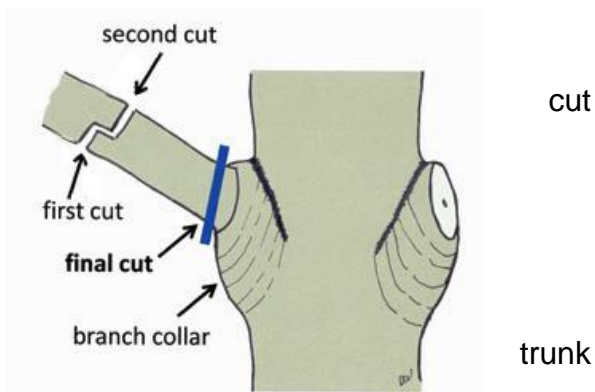


Branch Removal

Due to trees specific requirements in any pruning episode or indeed to establish whether it is actually required or not consult qualified arborists for any potential large branch removal or major pruning.

For minor pruning requirements manageable by home gardeners the following procedure is recommended for removal of a branch:

1. Undercut the branch to avoid bark and wood tearing as it separates from the parent stem. This should be made through the bark and just into the wood.
2. Remove the branch by cutting through from above a few centimeters back from the undercut.
3. Remove the remaining branch stub back to the apparent collar without cutting the collar off the or parent stem.



In the case of live branches remove as shown in the diagram; avoid cutting or wounding behind the branch collar. A dead or dying branch that has formed a collar of live wood should be cut just at the outer edge of the branch collar.

Standards and Professional input

Owners are urged to seek knowledge and advice on matters relating to the management and care of their trees from *Australian Standard 4373 -2007 'Pruning of Amenity Trees'* and *Australian Standard 4970 -2009 'Protection of Trees on Development Sites'*. Professional, qualified, accredited and reputable arborists can be engaged to assist explaining and delivering the requirements of the above standards.

What else can you do?

Observation is a powerful tool when interacting or seeking to intervene with the natural world. Tree time and human time do not run on the same clock, challenges and changes within in our human existence (be it positive or negative) occur a lot more rapidly than in the day to day life of a tree. Trees experience and manifest the ups and downs of life in 'super slow motion' therefore regularly observe your special tree for signs that it remains in its best possible health or for any slight or indeed radical changes suggesting it requires potential intervention and help.

***Take pleasure and delight in your role as custodian of a special tree,
knowing your stewardship positions the next generation
of custodians to follow in your footsteps.***
