CITY OF SYDNEY

Tree guidelines for pruning, reporting and using an arborist

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Green Global Connected

Using an arborist

Trees are large, complex and living structures that usually require some maintenance during their lives. These guidelines will help you choose an arborist and understand different tree reports, root mapping and pruning.

Engaging a consultant arborist

Please use a qualified arborist when seeking advice on your tree. It can take a tree decades to reach maturity, but poor tree works can do irreparable damage in just a few minutes.

What a consultant arborist does

A consultant arborist advises on tree management advice and prepares tree reports. A practising arborist or tree worker does tree pruning and removal works.

We only accept tree reports prepared by consultant arborists with a qualification equivalent to the Australian Qualifications Framework Level 5. The report is assessed by a City of Sydney officer who also holds this level of qualification. Tree reports must be impartial and only contain opinions that can be substantiated.

Most consultant arborists are members of professional organisations that require ongoing professional development. This helps ensure they provide up-to-date and appropriate advice.

Costs for consultant arborists

Consultant arborists charge for written and verbal advice. The cost of a tree report depends on the report type, scope and number of trees to be assessed.

There are no standardised professional rates but most consultant arborists have similar hourly rates to engineers and landscape architects. You should agree on the consultancy fees and confirm this in writing before work starts.

If we ask for further information after you send in your application, the consultant arborist should not charge you for completing this. It's their responsibility to ensure the application is complete and to quote for these costs upfront.

If there are changes to the scope of work, or the consultant has to assess revised or new plans for arboricultural impact assessment reports this is likely to cost you extra. Where root mapping and reporting has been recommended in a report, these works would be considered additional works, unless they were included in the original scope.

Insurance for a consultant arborist

Consultant arborists should carry professional indemnity and public liability insurance. Levels of insurance cover vary. You will need to check if the level of cover is adequate for your consultant arborist's services.

Tree reports

There are different types of tree reports for different tree management issues. If you're engaging a consultant arborist, you'll need to understand the type of report that's best for your situation.

Arboricultural assessment report

An arboricultural assessment report assesses the overall condition of a tree and its growing environment and gives management recommendations. It's usually part of an application for approval to remove or prune a tree on private property.

Tree risk assessment report

A tree risk assessment report determines the level of risk posed by a tree over a specific timeframe. The consultant arborist must follow and be qualified in a recognised risk assessment method such as TRAQ or QTRA.

If your consultant arborist finds a potential major, internal structural defect in your tree, they may recommend internal diagnostic testing. The two most common testing devices are resistance drilling (Resistograph) and sonic tomography (Picus Tomograph).

Resistance drilling gives the most accurate picture of the tissue density at the specific test location but requires interpretation by an experienced operator.

Sonic tomography uses software to interpret the results but its accuracy can be significantly affected by some types of wood decay.

Both resistance drilling results and tomography scans must be included with the report.

Pruning specification

A pruning specification details the pruning work needed, including branch sizes and locations, and the percentage of the crown to be removed.

It includes photographs that clearly show the individual branches to be pruned. It also lists the pruning class under *Australian Standard 4373 (2007) Pruning of Amenity Trees.*

This can be a standalone document or included with other tree reports.

Tree management plan

A tree management plan is a long-term management strategy for a tree or group of trees.

Tree development reports

We expect the design process to keep good quality trees where possible. Trees must be considered early in a project's planning stages and you should engage a consultant arborist before design work begins.

Tree development reports can include preliminary arboricultural assessment reports, arboricultural impact assessment reports, and tree protection specifications and plans.

A preliminary arboricultural assessment report

A preliminary arboricultural assessment report is done at the pre-design stage and identifies opportunities and constraints to guide the design. It allocates a retention value and calculates the protection zone and structural root zone for each tree.

An arboricultural impact assessment report

An arboricultural impact assessment report is part of a development application and is usually the main tree report. It determines how a tree may be impacted by the development works and includes recommendations for managing this. The report must be objective – it should not argue for or against the development.

A tree protection specification and plan gives specific recommendations on protecting trees on development sites. It usually includes a written document and a graphical plan. On smaller projects, it can be part of the arboricultural impact assessment. On larger or more complex projects, it is a separate document and is part of the conditions of development consent.

The structure of these reports is outlined in *Australian Standard 4970 (2009) Protection of Trees on Development Sites.*

Framework for managing trees

Below is a framework to help you assess, integrate and manage trees in the development context. It details when you need arboricultural advice during the development assessment and implementation stages of the project.

This framework is based on *Australian Standard 4970 Protection of Trees on Development Sites 2009*. The standard does not argue for or against development, or to retain or remove trees, but provides a process for managing trees through the development process.

Stages	
1. Preliminary arboricultural report	Prepared at pre-design stage and used to guide the design process
	States a retention value and the tree protection zone and structural root zone for each tree
	Identifies opportunities and constraints for the trees
	Determines which trees may be appropriate for removal or retention
2. Arboricultural impact assessment	Submitted with a development application
	Provides the City of Sydney with required information to assess the tree management part of the development application
	Determines the extent to which trees may be impacted by the development works
	Makes recommendations on managing those trees throughout the development process
	Guides the tree protection plan and specification
3. Tree protection plan and specification	Outlines tree-specific protection measures
	Usually includes a graphical plan and a written specification
	May be included with the arboricultural impact assessment
	Can be a separate document for larger or more complex developments
4. Site monitoring and tree protection certification	The development consent may require arboricultural monitoring and certification for specified parts of the project
	If the inspections specified in the conditions do not take place, the consultant arborist cannot provide tree protection certification. This may delay or impact our ability to issue an occupation certificate

Information you need to include

The Australian standard clearly outlines the process for preparing an arboricultural impact assessment.

Allocating a retention value to each tree helps us, the architect, and project consultants to identify the most valuable trees.

It may not be possible to retain all existing trees on a development site. But the proposal should show that higher value trees have been prioritised in the design process.

The standard provides formulae for the calculation of two zones that are critical for the health and stability of a tree.

The tree protection zone is the minimum area needed for a tree's health. It can extend well beyond the tree canopy. It is the area sufficient to preserve the small diameter roots the tree needs for the uptake of water and nutrients.

The structural root zone is the minimum area the tree needs for stability. It is a smaller area around the base of trunk which usually contains most of the large diameter, structural roots.

Tree protection zone encroachments may include:

– demolition works
– altering ground levels (raising and lowering)
– doing structure and building works
– adding pavement surfaces and other landscaping works
– installing services and other infrastructure
– providing construction access or any other construction activity that could impact the tree

Encroachments can be:

– a minor encroachment – less than 10% of the tree protection zone and outside of the structural root zone
– a major encroachment – greater than 10% of the tree protection zone or within the structural root zone

A minor encroachment does not require further arboricultural investigations or tree sensitive design and construction methods. If the tree protection zone is reduced in one area due to the encroachment, it should be extended by the same degree in another contiguous area.

A major encroachment has the potential to impact the health, long-term viability and stability of a tree. If there is a major encroachment, the impact assessment must reference the factors in clause 3.3.4 of the standard and show that the tree would remain viable. This often requires detailed onsite investigations such as root mapping.

The consultant arborist must assesses all the plans submitted with the development application and ensure these are the most up to date plans available. This includes architectural, landscape, stormwater and construction management plans.

If there are changes to the plans, the consultant arborist will usually need to review these and amend the arboricultural impact assessment. This can be expensive and cause project delays.

We often require changes to plans so that good quality trees are retained. This is why you need to engage a consultant arborist in the early stages of the project. It is the clients role to make sure the arborist has the most up to date plans.

Root mapping

Root mapping should be done if the assessment cannot clearly show that the tree will remain viable.

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This involves excavating a narrow trench along the line of a proposed excavation in a tree protection or structural root zone. It exposes roots that would be impacted by the works.

The presence of existing buildings/structures may mean root mapping in the exact location of the proposed structure is not feasible. In these cases, the trench should be in the most logical position to collect information on roots and determine the likely impacts to the tree. Root mapping trenches should be a minimum depth of 700mm or to the proposed excavation depth in the design.

Several tree sensitive excavation methods can be used for root investigations, and each method has advantages and disadvantages. All roots greater than 25mm in diameter should be retained and protected from desiccation, mechanical and sun damage during the root mapping process.

The excavated trench should be assessed by the consultant arborist and relevant data collected for the report.

Please note that ground penetrating radar does not produce enough detail for a root mapping report. In certain cases, such as over large areas, the radar can be useful to show where root mapping should be done.

Hand excavation

– suitable for small areas
– requires hand tools only
– labour intensive

Vacuum excavation

– suitable for large areas
– good for hard compacted soils
– requires vehicle access
– requires experienced operators and arboricultural supervision to ensure roots are not damaged by the high-pressure water jet
– disposal of soil slurry can be costly

Air spade excavation

– suitable for small areas
– less labour intensive than hand excavation
– creates mess and unsuitable for use if soil contamination may be present

Checklist

For tree reports in the City of Sydney area.

All tree reports

- **Title page**: site address, client, date, revision number, and name, contact details and qualification of the author
- **Introduction:** scope of the report and purpose
- **Method:** methods used in the report, limitations and list of plans and documents reviewed as part of the report, and noting any revision or issue numbers and date
- **Site:** description of the site and any site/ environmental conditions which may impact the trees
- **Tree data:** species, dimensions and health and structural condition assessment – this must reflect the size and condition of the trees at the time the report is submitted to us
- **Discussion and recommendations:** interpretation of results and recommendations
- **Bibliography:** resource material referenced using the Harvard system
- **Appendices:** supporting information, clear photographs of trees and identified defects, and plan showing tree locations

Extra information for an arboricultural impact assessment

- **Summary** of the proposal
- **The retention value and tree protection zone** and structural root zone for all trees within 5m of the property boundaries and any tree protection zones of trees on adjoining properties that extend into the site
- **Impact assessment:** list of trees proposed for removal or retention, percentage of tree protection zone and structural root zone encroachment and if this is minor or major, and consideration of factors for major encroachments (clause 3.3.4), options for mitigation of impacts, and recommendations for alternative/tree sensitive design and tree protection methods
- **Pruning works:** pruning requirements, pruning class as defined by *Australian Standard 4373 (2007) Pruning Of Amenity Trees*, branch size and location (including photographs which clearly show individual branches to be pruned) and percentage of crown to be removed
- **Plans:** trees shown for removal (dashed line) or retention (unbroken line) and tree protection zone and structural root zone for trees proposed for retention. These plans must be drawn to scale and show the existing canopy

Checklist

For tree reports in the City of Sydney area.

Extra information for root mapping assessments

- **Scaled plan** showing trench location in relation to the subject tree and relevant structures, and tree protection zone and structural root zone areas
- **Trench information** including orientation, length and depth (including impediments to achieving the required excavated depth), along with clear photos of the trench and roots
- **Root information:** location, size and orientation of roots greater than 25mm in diameter
- **Discussion and recommendations:** evaluation of the impacts of the proposed works on the tree, mitigation of impacts, and recommendations for alternative/tree sensitive design and tree protection methods
- **Appendices:** supporting information, clear photographs of trees and identified defects, and plan showing tree locations

Extra information for pruning specifications

- **The reason for the pruning,** including the pruning requirements and pruning class as defined by *Australian Standard 4373 (2007) Pruning of Amenity Trees*
- **Branch information:** branch size, location and percentage of crown to be removed
- **Photographs:** annotated photos that clearly show the individual branches to be pruned