



**Banyule**  
CITY COUNCIL

# **Banyule City Council Tree Planting Zone Guidelines January 2011**



## **BANYULE TREE PLANTING ZONE GUIDELINES**

### **LARGE CANOPY TREES**

Council requests the provision of large canopy trees for a number of reasons. These reasons can include (but are not limited to); replacement planting for trees being removed due to a development, maintenance of streetscape and neighbourhood character or reinforcing indigenous vegetation in an area of environmental importance.

The planting of trees can provide a number of social, communal, environmental and even financial benefits. Although a tree may be located on a single property, it can have a massive effect on the overall character and visual aesthetic of a whole neighbourhood. Trees can be used to emphasize or screen-out views. They provide a background and soften the often harsh appearance of the built urban environment. Trees can complement architecture if placed in the right locations and do not have to be used to only block views to a building. Trees can be used to control an areas microclimate and improve the local environment by improving air quality, providing shade, reducing the effects of wind and creating habitat for wildlife. On a greater environmental scale, trees are a great way for individuals to start to offset their pollution emissions and help to improve Melbourne's environment. Financially, trees can be used to reduce energy costs by providing shade in summer and providing a wind break in winter. Well landscaped homes are also more valuable than non-landscapes homes.

### **CONFLICTS BETWEEN TREES AND BUILT FORM**

Large trees are often stated as the cause of structural failures in hard paving and buildings. This is not disputed, but it can be avoided. When it is known that a development must incorporate a set number of large indigenous trees, careful planning and considerations can reduce the potential problems that can arise. Since designers and developers are aware of their requirements to provide large canopy trees, it is considered that common concern for eventual damage to paving and buildings lies in the insufficient space commonly allowed for large canopy trees to grow. When insufficient space is allowed for the root systems of large canopy trees to grow and develop, damage to nearby structures can be expected. The reasons for not allowing sufficient space for large canopy trees can be a lack of knowledge in how the root systems of trees develop or an overdevelopment of a site leading to unacceptably small open spaces.

### **CAUSES OF TREE RELATED STRUCTURAL FAILURE**

Trees can cause structural issues in three main ways; limb-dropping / tree falling, direct physical contact of roots, or most commonly, moisture removal from soils causing clay shrinkage and settlement.

Limb dropping and overall tree failure resulting in a tree to fall can be caused by a number of reasons. Mainly these reasons are to do with the health of the tree, the development of the trees root system and a tree growing in isolation. Generally, these causes are best mitigated by allowing a tree to grow and develop naturally, with a minimal amount of obstructions in the healthy development of its root system. Allowing trees sufficient space can help to ensure this type of healthy growth and reduce the risk of tree and / or tree limb failure.

Tree roots exert only a small amount of physical force in their growth. This force can have an impact on light weight structures such as; paving slabs and light-duty retaining walls, however foundations are generally able to withstand this amount of force.

The primary cause of tree related damage to structures is in the removal of moisture from soil and the resulting shrinkage and settlements that occurs. This settlement can cause footings to subside and cracks to appear in masonry work. The overdevelopment of sites and excessive use of hard surfaces can force tree roots to extend further in search of moisture.

There are a number of methods to control tree roots and to minimise the ability for tree roots to damage structures (root barriers, air knife pruning, foundation / wall construction methods such as, lightweight or pier and beam construction), however none of these solutions are as effective as careful planning and consideration for the amount of space that a large canopy tree requires to naturally develop to the desired mature size at the early stages of planning for a development.

The ramifications for not allowing sufficient space for large canopy trees to develop can be severely costly. Remedial works such as underpinning can be a massive operation, can be very expensive and generally will result in the tree being removed (or at least some damage to the tree), which counteracts the reasoning behind providing the large canopy tree in the first place.

## **TREE PLANTING ZONES**

The Tree Planting Zones aim to provide large canopy trees with enough open space to develop naturally and reduce the risk of trees causing long-term structural problems to buildings / hard surfaces. Tree Planting Zones allow for designers to easily determine how much space is necessary to allow for large canopy trees to both meet Council permit requirements and to reduce the potential conflicts between trees and buildings. In addition to hard landscaping, for the life of the tree, storage and other detrimental activities within tree planting zones must be avoided.

## **GUIDELINES FOR TREE PLANTING ZONES**

Trees should be located in a favourable location for healthy tree growth. This location should receive an adequate amount of sunlight and rain.

Tree Planting Zones must not include an area where an easement is present. Water authorities have strict guidelines regarding the planting of trees in close proximity to easements and these must be adhered to.

Tree Planting Zones may “borrow” neighbouring open space however the location of neighbouring trees and structures which could affect or be affected by the proposed tree must be considered.

Some encroachment in to the Tree Planting Zones may be permitted, however such encroachments will be subject to strict building conditions regarding materials and construction methods and the area of the encroachment must be offset.

Tree roots radiate outwards from the trunk in all directions. Tree roots can be biased towards one direction where perhaps moisture is more readily available, however for stability, tree roots need to be allowed sufficient space in all directions, therefore trees must be located as centrally as possible within its Tree Planting Zone.

An automated drip irrigation system connected to a water tank is to be provided to cover the area of the Tree Exclusion Zone. The Tree Planting Zone should be predominantly a mulched surface (minimum 50mm mulch cover) and may include understorey planting.

Existing trees that are retained on-site that meet the requirements for large indigenous canopy trees may be considered by Council as contributing to the requirement for the provision of large canopy trees. These trees will require a Tree Exclusion Zone that is to be nominated as a Tree Protection Zones by a qualified Arborist to Australian Standards.

## INDIGENOUS CANOPY TREES SUITABLE FOR RESIDENTIAL DEVELOPMENTS

To establish the area needed by a tree the following methodology is considered to be useful.

There are a number professional recognised methods for calculating how much soil a tree needs within an urban environment. Ross Clark published an equation for calculating adequate soil volume in *Trees Impact Newsletter, December 2000*.

A species of tree that is capable of heights greater than 13 metres (as per the table below) is assumed as well as a desired height of 15 metres and applied in the following formula with an assumed Diameter and Breast Height (DBH) of 600 mm

$$\text{Soil volume (m}^3\text{)} = \frac{\text{Height (m)} \times \text{DBH (mm)}}{100}$$

$$\text{Soil volume (m}^3\text{)} = \frac{15 \times 600}{100}$$

$$\text{Soil volume (m}^3\text{)} = 90$$

As roots will utilise soil within a 1 metre depth of the ground level an area of 90 m<sup>2</sup> is derived.

Botanic Name	Common Name	Height x Spread (Maximum anticipated)
<i>Eucalyptus leucoxylon</i>	Yellow Gum	20 m x 15 m
<i>Eucalyptus melliodora</i>	Yellow Box	20 m x 15 m
<i>Eucalyptus polyanthemos</i>	Red Box	20 m x 15 m
<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint	14 m x 15 m

## MEDIUM AND SMALL TREES

In some cases it may also be appropriate to provide medium (8+ metres in height) and small trees (5+ metres in height). Application of the above methodology suggests that 30 m<sup>2</sup> should be provided for a medium tree and 7.5 m<sup>2</sup> for a small tree.

## LANDSCAPE PLANTING ZONES

It is a requirement that Landscape Planting Zones be nominated on architectural plans in addition to Tree Planting Zones so that a clear delineation is made between open space areas for service and activity and those areas dedicated to landscaping.

## NUMBER OF TREES

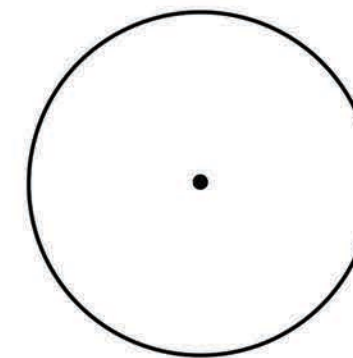
Council's Residential Neighbourhood Character Strategy contained in Clause 22.02 of the Banyule Planning Scheme sets out the number of trees to be provided per sq. metre of site area for Bush Garden and Semi-Bush areas as well as unique guidelines for Bush Woodland areas.

For Garden Court and Garden Suburban areas a minimum of one medium to large sized canopy tree should be provided per 400 sq. metres of site area as per the Council resolution of 22 November 2010.

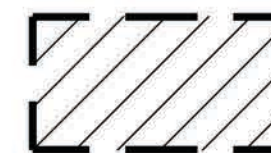
## ILLUSTRATED GUIDELINES

To accompany this document, a set of illustrated guidelines have been prepared which demonstrate correct and incorrect provision of Tree Planting Zones. This includes an ideal scenario as well as how the zones may borrow from adjoining land or in a shape that is offset. A further diagram illustrates the relationship between activity/entertaining, service areas, tree planting zones and landscape planting zones.

# LEGEND



Proposed large indigenous canopy tree



Nominated Exclusion Zone. Total m<sup>2</sup> area as specified by Council - dependant on tree species and the anticipated size of the tree.



Proposed built form



Proposed outdoor paved area



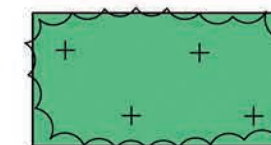
Proposed stepping stone pavers



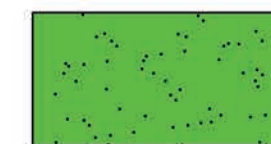
Proposed concrete path



Proposed shrub planting



Proposed groundcover planting



Proposed grassed surface



Existing easement



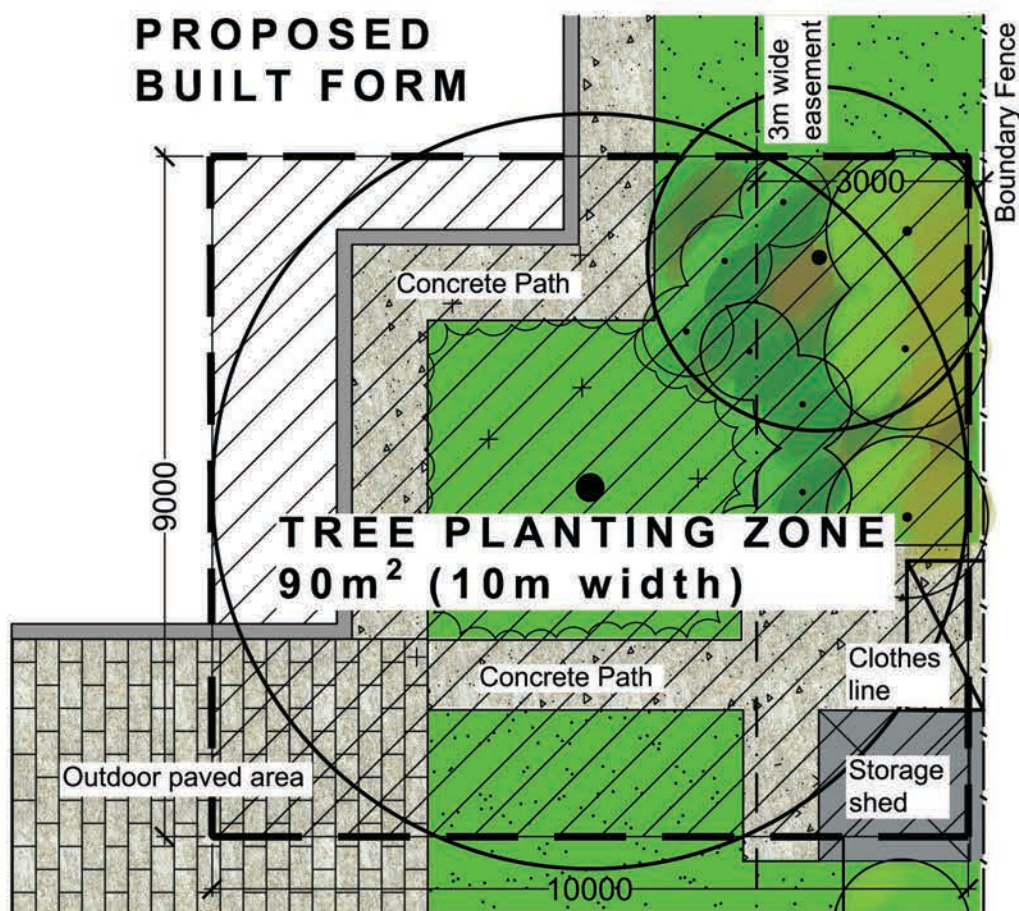
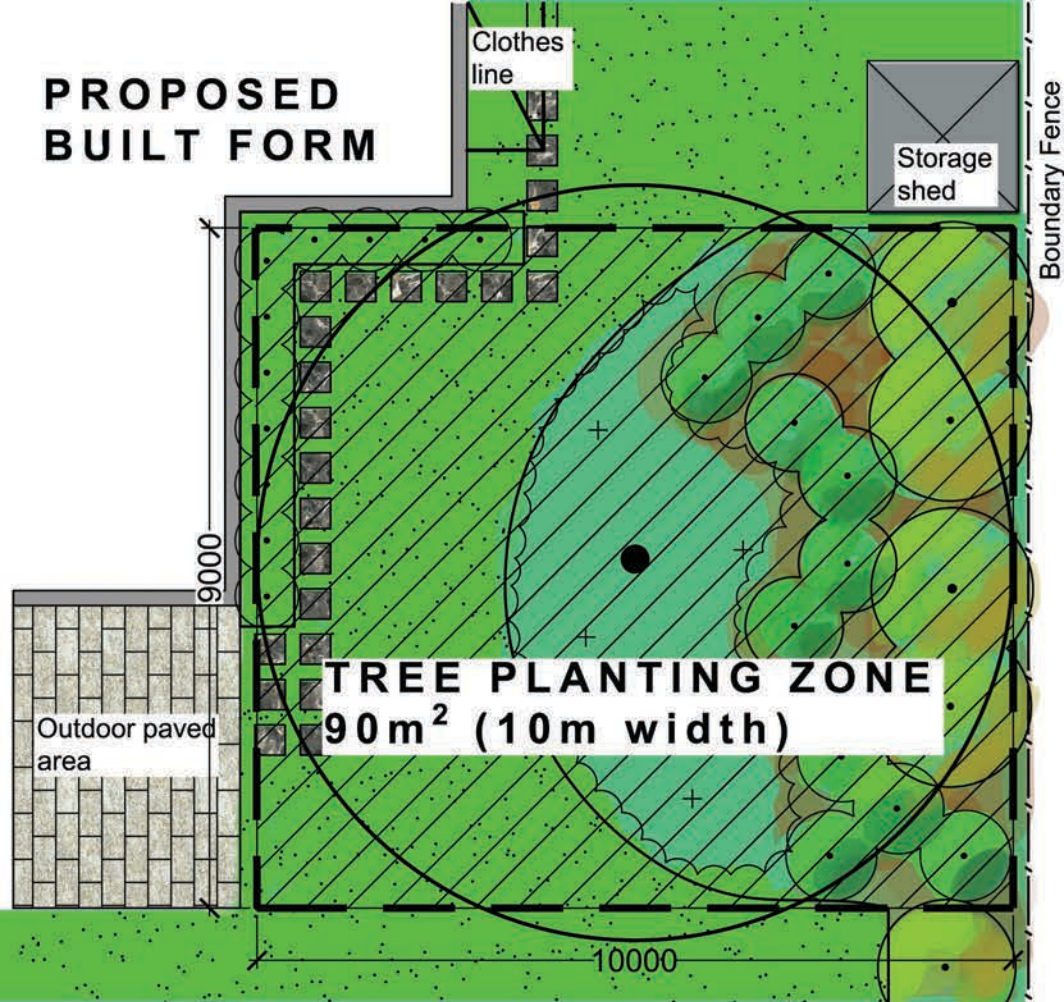
Boundary fence

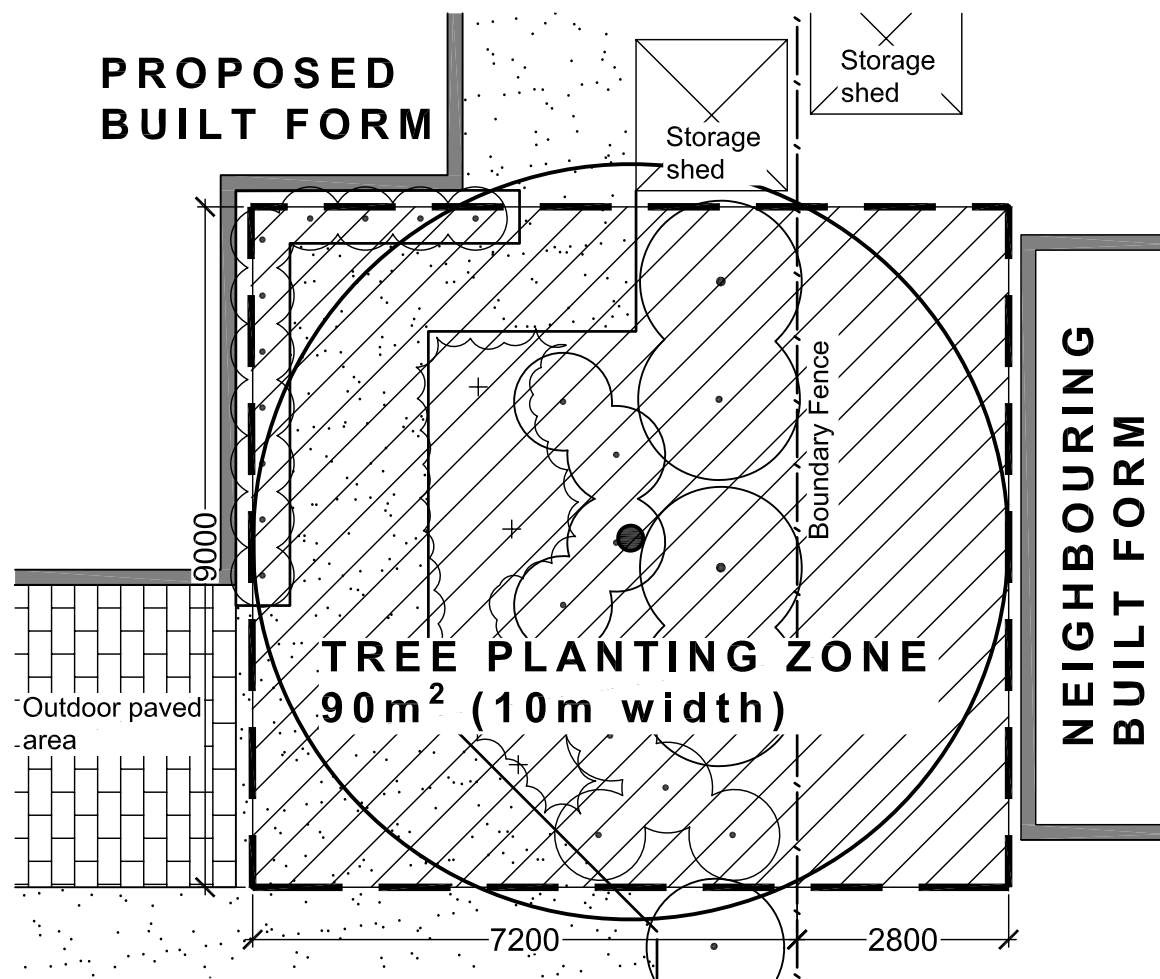
## Correct ✓

- No encroachment of built form or hard paving within the nominated Exclusion Zone.
- No hard landscaping within the Exclusion Zone.
- Acceptable use of permeable paving path with the Exclusion Zone.
- Acceptable planting of shrubs and groundcover plants within the Exclusion Zone.
- Storage shed and clothes line located outside of the Exclusion Zone.
- Exclusion Zone does not cover an area where an easement exists.

## Incorrect ✗

- Encroachment of built form and hard paving within the nominated Exclusion Zone.
- Provision of a concrete path within the Exclusion Zone.
- Provision of a second canopy tree within the Exclusion Zone.
- Provision of a storage shed and clothes line within the Exclusion Zone.
- Exclusion Zone covers an area where an easement exists.

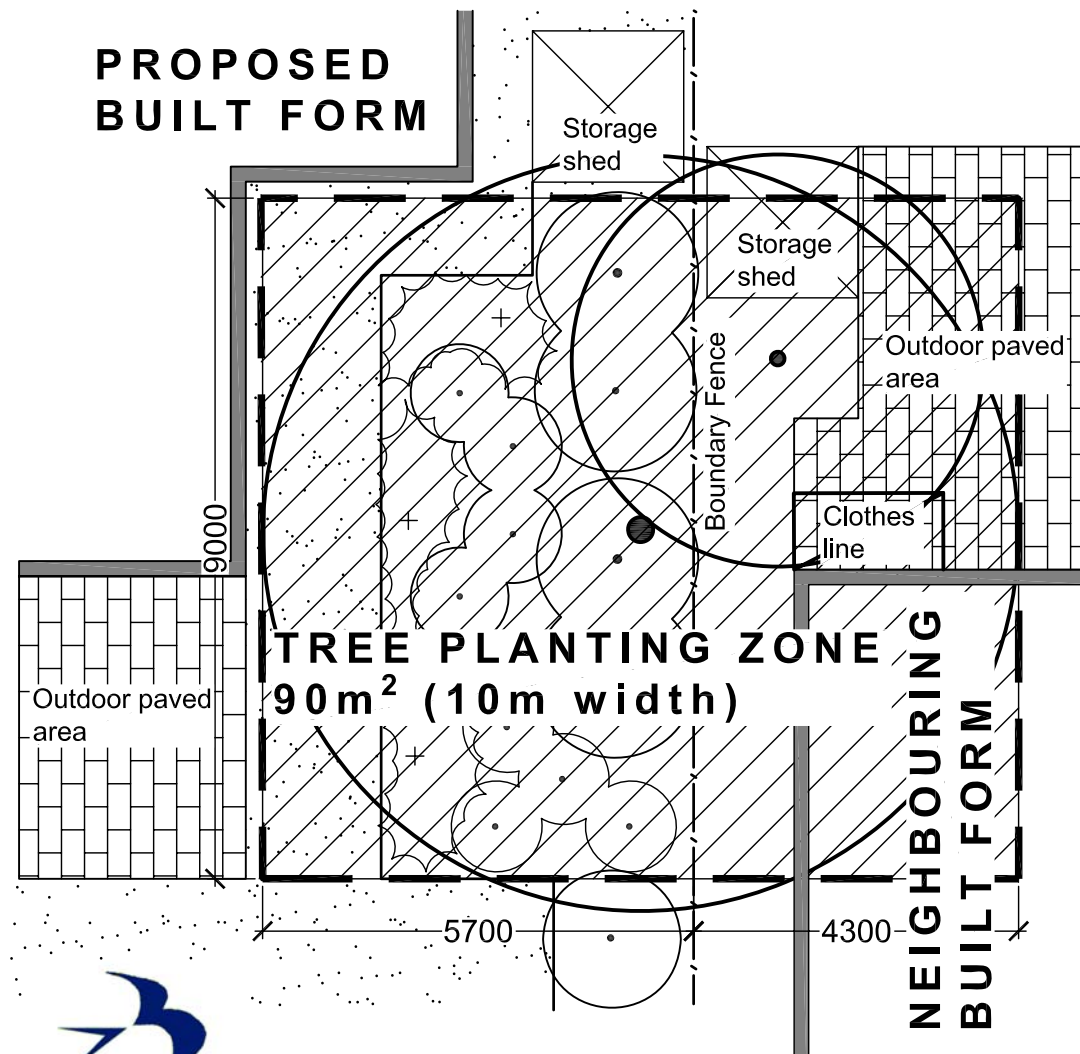




Correct



- No encroachment of built form or hard paving within the nominated Exclusion Zone.
- Acceptable planting within the Exclusion Zone.
- Storage shed and clothes line located outside of the Exclusion Zone.
- No built form, hard paving, structures or existing trees on the neighbouring property within the Borrowed Land of the Exclusion Zone.

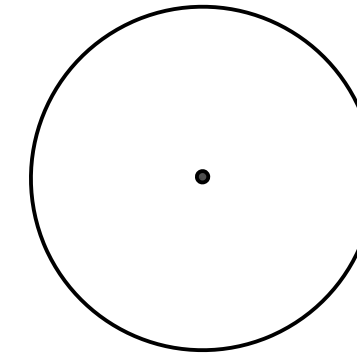


Incorrect

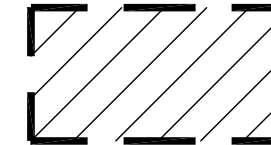


- Existing built form and hard paving within the Borrowed Land of the Exclusion Zone.
- Existing canopy tree within the Borrowed Land of the Exclusion Zone.
- Existing storage shed and clothes line within the Borrowed Land of the Exclusion Zone.

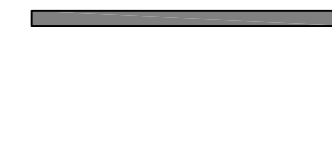
**LEGEND**



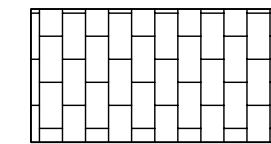
Proposed large indigenous canopy tree



Nominated Exclusion Zone. Total m<sup>2</sup> area as specified by Council - dependant on tree species and the anticipated size of the tree.



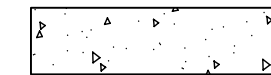
Proposed built form



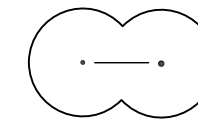
Proposed outdoor paved area



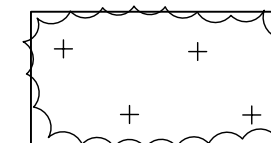
Proposed stepping stone pavers



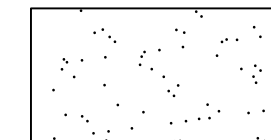
Proposed concrete path



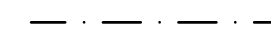
Proposed shrub planting



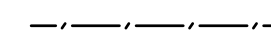
Proposed groundcover planting



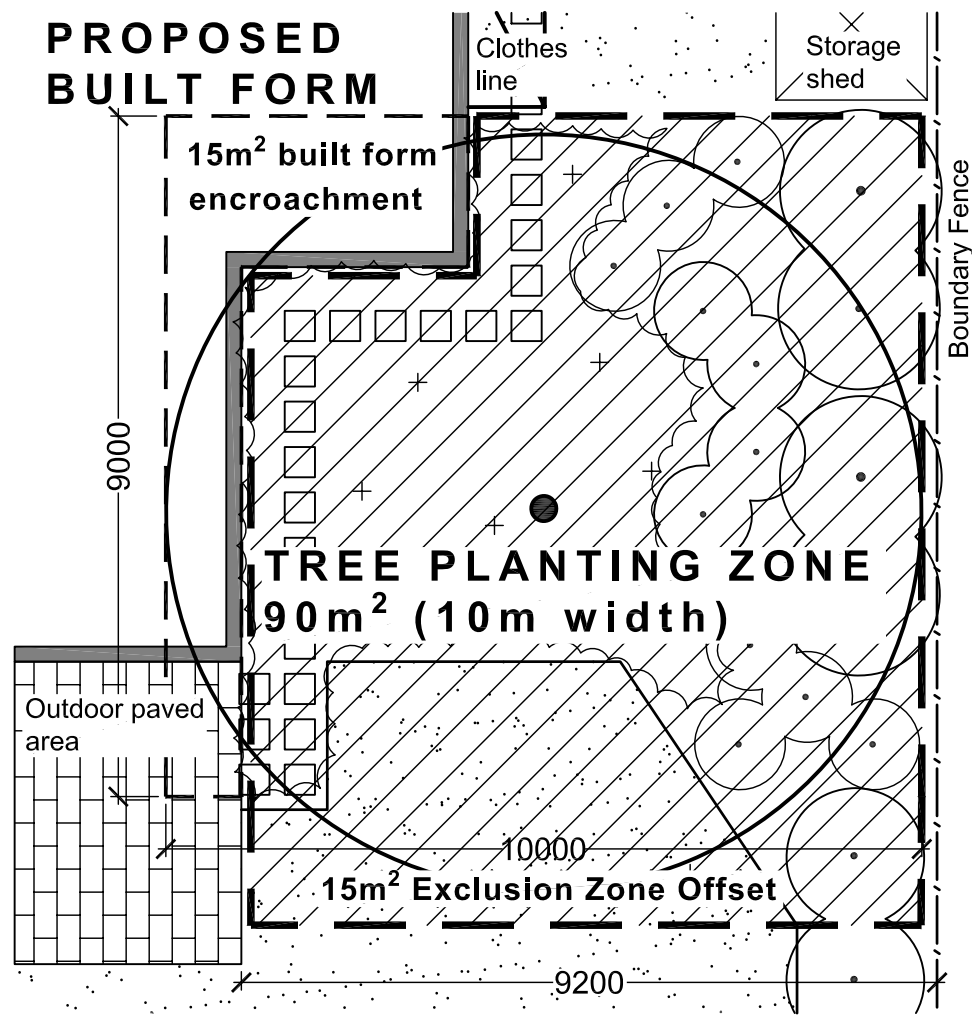
Proposed grassed surface



Existing easement

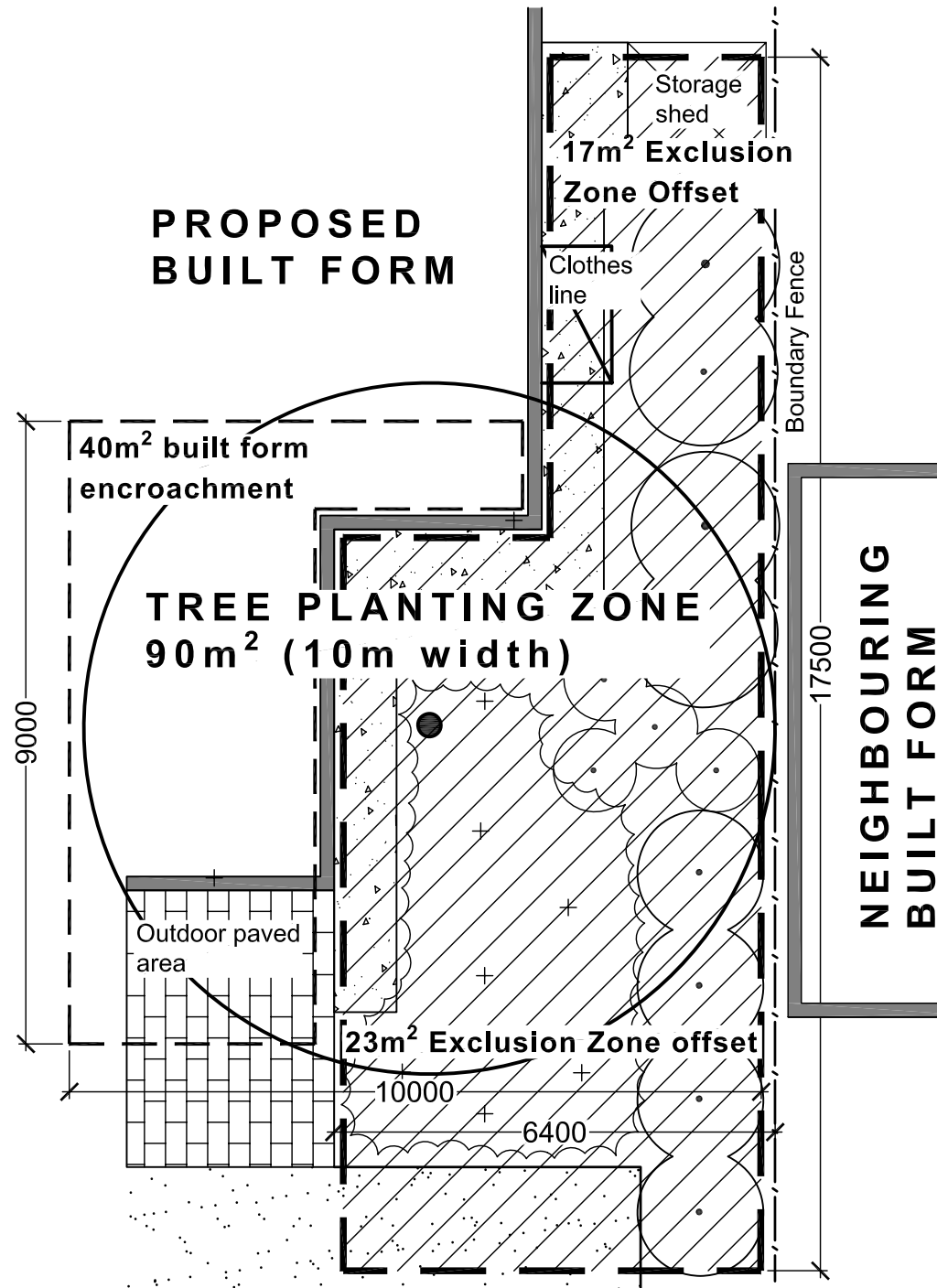


Boundary fence



# Correct ✓

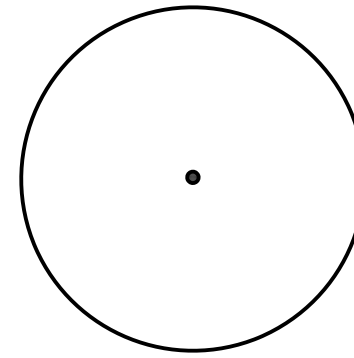
- Some encroachment of built form or hard paving within the nominated Exclusion Zone.
- Offset provided matching the m<sup>2</sup> area of encroachment.
- Exclusion Zone generally retains the desired and mostly symmetrical shape, allowing for suitable placement of the proposed tree.
- Any encroachment into the optimal exclusion zone will be considered based on the extent and nature of encroachment.



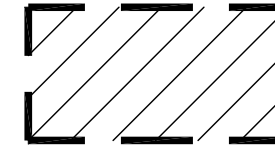
# Incorrect ✗

- Severe encroachment of built form and hard paving within the nominated Exclusion Zone.
- Offsets are provided to match the m<sup>2</sup> area of encroachment, however the Offset areas do not allow for a desirable Exclusion Zone shape.
- The proposed Exclusion Zone shape does not allow for acceptable placement of the tree within the Exclusion Zone. The proposed tree is too close to the proposed built form.
- Much of the Offset Areas provided are outside of the future typical root zone of the proposed tree.

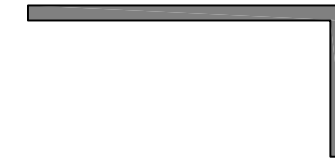
# LEGEND



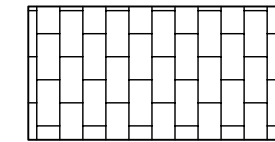
Proposed large indigenous canopy tree



Nominated Exclusion Zone. Total m<sup>2</sup> area as specified by Council - dependant on tree species and the anticipated size of the tree.



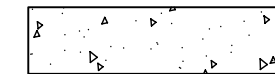
Proposed built form



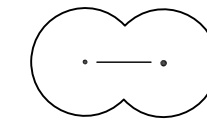
Proposed outdoor paved area



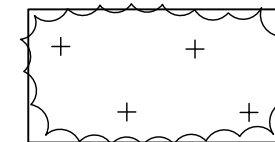
Proposed stepping stone pavers



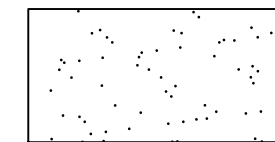
Proposed concrete path



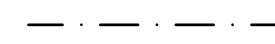
Proposed shrub planting



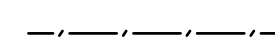
Proposed groundcover planting



Proposed grassed surface

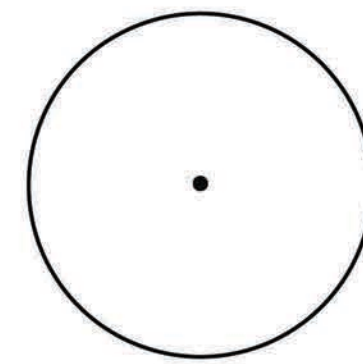


Existing easement

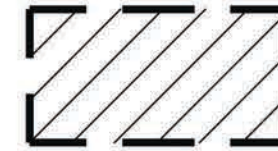


Boundary fence

# LEGEND



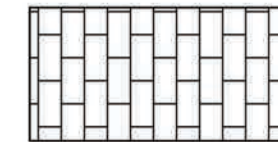
Proposed large indigenous canopy tree



Nominated Exclusion Zone. Total m<sup>2</sup> area as specified by Council - dependant on tree species and the anticipated size of the tree.



Proposed built form



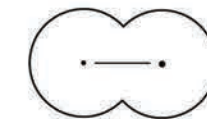
Proposed outdoor paved area



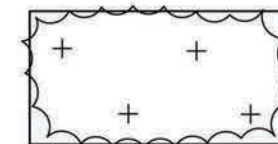
Proposed stepping stone pavers



Proposed concrete path



Proposed shrub planting



Proposed groundcover planting



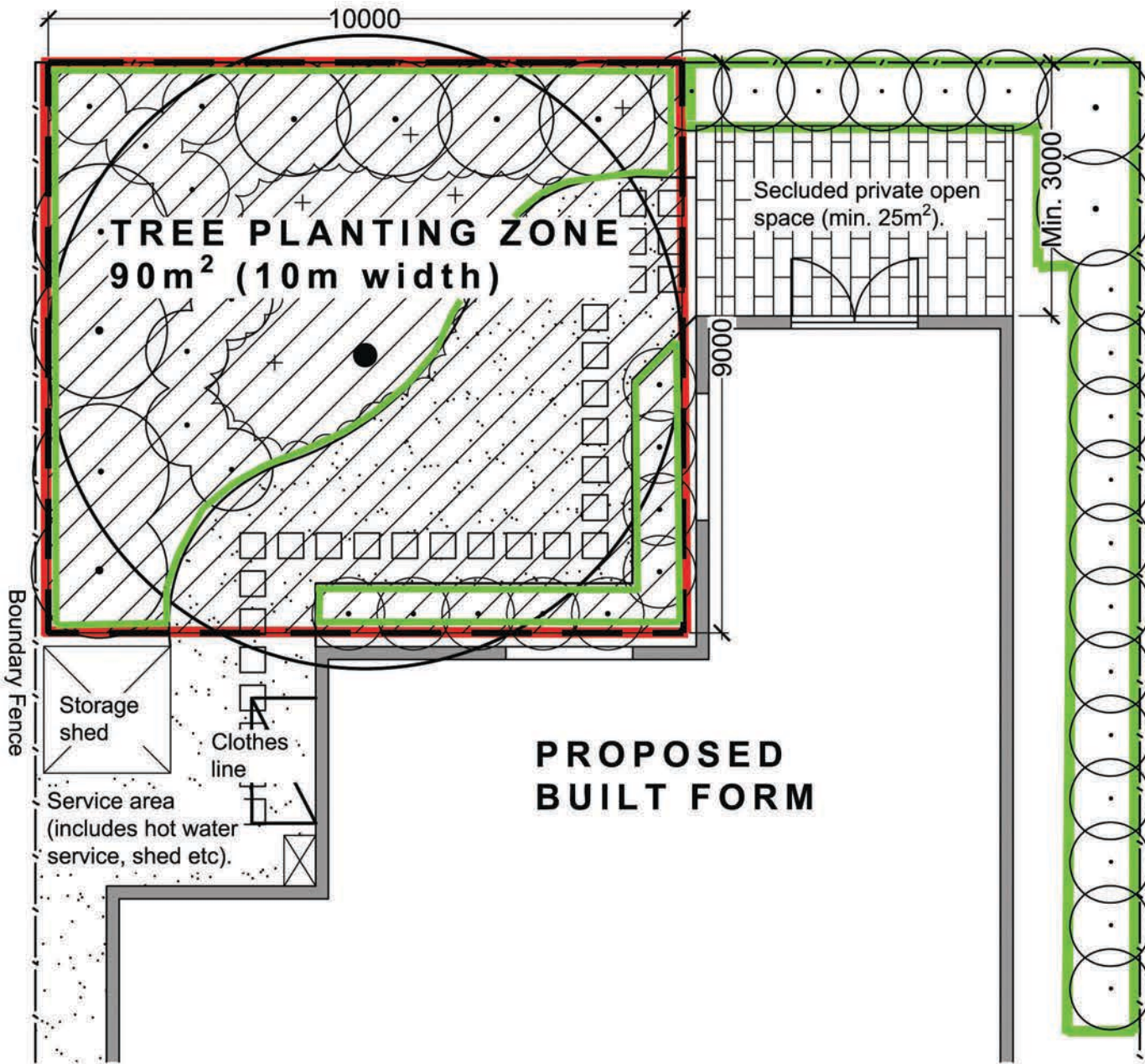
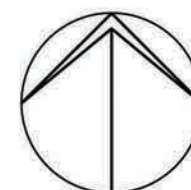
Proposed grassed surface



Existing easement



Boundary fence



- The Red area identifies the Tree Planting Zone
- The Green area identifies Landscape Planting Zones.
- Tree and Landscape Planting Zones must also be shown in front yards.
- Landscape Planting Zones must also be shown adjacent to driveways and within side setbacks. Driveways must be of a varied or meandering alignment to provide for planting of small trees and avoid straight 'gun barrel' expanses of concrete and hard paving.