

Context Landscape Architecture

12th July 2017

Attn: Darren Mansfield

Context

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Sydney South NSW 1235

RE: Campbell's Cove Promenade

TREE PROTECTION SPECIFICATION & TRANSPLANT METHOD STATEMENT

This Tree Protection Specification and Transplant Method Statement was prepared for Context Landscape Architecture, on behalf of Property NSW, in relation to the Campbell's Cove Promenade Upgrade.

It is understood that the City of Sydney has raised concerns regarding amendments to the garden bed and pavement areas within the Tree Protection Zone (TPZ) of a *Ficus microcarpa* var. *hillii* (Hills Weeping Fig) located at the Promenade. TreeIQ have worked with Context to devise tree sensitive design and construction methods which align with both *Australian Standard 4970 2009 Protection of Trees on Development Sites* (AS-4970) and arboricultural best practice.

Refer to Plan **(Appendix 1)**

The supplied plan shows permeable paving and a raised timber deck are proposed within the TPZ of the *Ficus microcarpa* var. *hillii* (Hills Weeping Fig). These works represent a *Major Encroachment* as defined by *Australian Standard 4970 2009 Protection of Trees on Development Sites* (AS-4970). Clause 3.3.4 of the AS-4970 outlines that design factors and tree sensitive construction methods should be considered when determining the potential impact of the encroachment.

The following tree sensitive design and demolitions/construction methods are proposed to minimise the impact of encroachment:

- The existing structures and pavement within the TPZ are to be demolished using tree sensitive methods.
- The new paving within the TPZ is to be installed at existing grade (with existing sub base left in situ) and comprise of permeable materials to allow for infiltration of rainfall and gaseous diffusion through the soil profile.
- The timber deck is to be installed above existing grade, supported on a low profile steel sub frame. The sub frame is to be supported on isolated posts, which are to be located to enable the retention of significant roots.

Refer to Tree Protection Specification **(Appendix 2)**

The supplied plan shows fourteen (14) existing *Livistona australis* (Cabbage Palm) located within garden bed and pavement areas are to be relocated within the site as part of the Promenade upgrade works. The trees were assessed by treeIQ (12.07.17) and were determined to be in good health and structural condition, and suitable for transplanting.

Refer to Transplant Method Statement (**Appendix 3**)

It should be noted that multiple underground services are located in close proximity to the trees. In addition, the three (3) northernmost trees are growing in close proximity to a brick wall/staircase. The Transplanting Contractor should assess access requirements before undertaking transplanting works to determine if the proximity of services/structures may impede the relocation of any tree.

Where possible tree pits should be linked to increase available soil volumes, and either structural soils or structural soil cells utilised within the tree pits to support the overlying pavement surface to promote tree health over the long term.

Yours sincerely



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Appendix 1: Plan



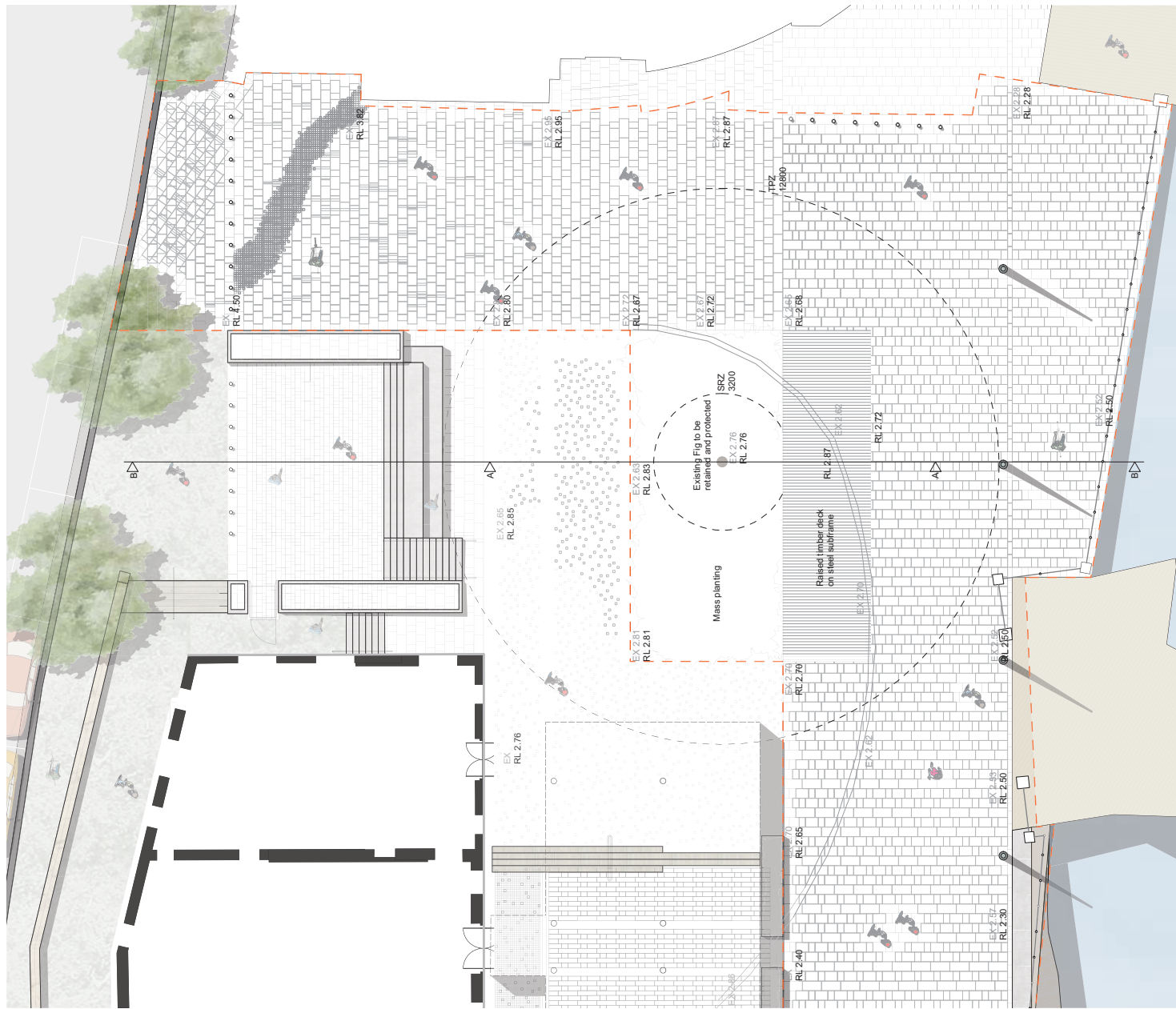
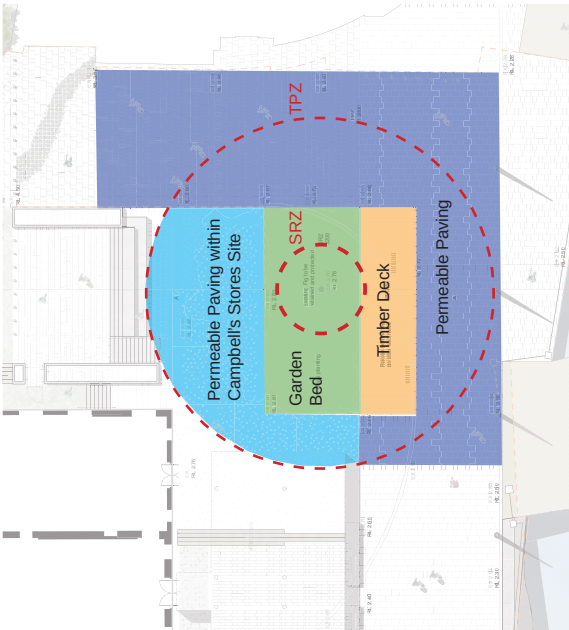
Existing Hills Fig Tree

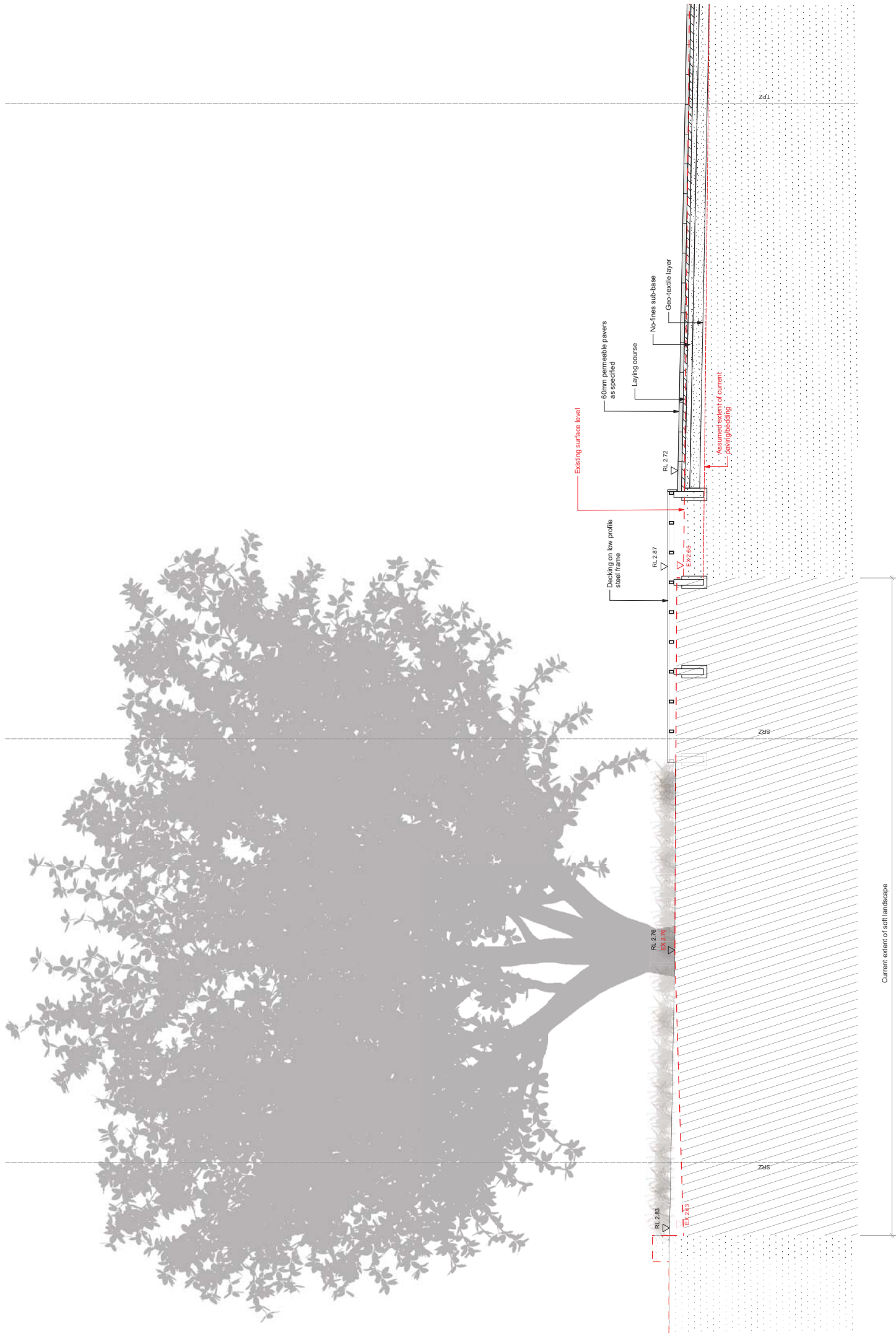
Submission

".....modifications to the garden and grassed area within the 13 metre TPZ for the purpose of footpath widening is not supported" City of Sydney submission.

Response Summary

- Existing pavement – Brick pavers 75 and 80mm thick with fill comprising silty sand.
- Proposed pavement – 60mm granite permeable paving (corners removed for drainage void filled with 2.5mm free draining aggregate over with 30mm no-fines sub base.
- Permeable pavement extends 5 metres east beyond the 12.8 metre TPZ
- Raised timber deck on low profile steel subframe to current soft landscape area.





Appendix 2: Tree Protection Specification

1.0 TPZ Establishment

Trunk protection should be provided for the *Ficus microcarpa* var. *hillii* (Hills Weeping Fig). Based on the trunk and branching structure of the tree, trunk protection should comprise of four (4), 1.8m high wire mesh panels supported by concrete feet surrounding the trunk. Ground protection, comprising of 100mm of mulch overlaid with plywood sheeting or HDPE ground mats, should be installed within existing garden bed areas.

2.0 Demolition

The demolition of the existing brick kerb should be undertaken using hand held breakers only. The existing pavement should be removed either by hand or by compact excavator (<2T) fitted with a flat bladed bucket and guided by a spotter to ensure the existing sub base is not disturbed. Machinery movements should be restricted to areas of existing pavement or from areas where ground protection has been installed. The existing sub base layer provides adequate ground protection for pedestrian traffic. Demolition waste should be removed immediately from the TPZ. Existing turf should be removed using hand tools only.

On completion of demolition works, TPZ fencing should be extended to the perimeter of the new garden bed. The fenced area should remain isolated until the final landscaping stage of the project.

3.0 Root Pruning

In the event that removal of the existing pavement exposes surface roots within the sub base layer, these roots should be retained in an undamaged condition and advice sought from the Project Arborist. Exposed roots should be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute mat. The mat should be kept in a damp condition at all times. Root pruning should be undertaken by the Project Arborist only. Where significant roots are present which cannot be pruned, the new sub base layer should be thinned to enable the retention of these roots. It should be noted that the condition of the existing pavement surface indicates that no significant roots are likely to be present immediately beneath the pavement.

4.0 Raised Timber Deck

The raised timber deck should be supported on isolated posts. Post hole locations should be hand excavated and adjusted to enable the retention of roots (>25mmØ) as deemed necessary by the Project Arborist. Post holes should be sleeved (where required) to prevent the encapsulation of roots in concrete.

5.0 Underground Services

Underground services should be located outside of the TPZ. Where this is not possible, they should be installed using tree sensitive methods (i.e hand, airspade or hydrovac) with the services installed around/below roots (>25mmØ) as deemed necessary by the Project Arborist. Boring methods are permissible when approved by the Project Arborist.

6.0 Landscape Planting

New planting within the garden bed area should use small size stock, installed using hand tools only. Cultivation of soils and auguring of planting holes should not be permitted.

Appendix 3: Transplant Method Statement

1.0 Appointment of Transplanting Contractor

A Transplanting Contractor should be engaged prior the commencement of the tree transplanting operation and should have a minimum qualification equivalent (using the Australian Qualifications Framework) of NSW TAFE Certificate Level 5 or above in Arboriculture. The Transplanting Contractor should have a minimum of 5 years' experience in practical tree transplanting.

The Transplanting Contractor should meet with the Principal Contractor prior to the commencement of works on-site to discuss the transplanting process including factors which may influence transplanting success or failure.

Prior to the commencement of the tree transplanting operation, the Transplanting Contractor should outline/determine the following for both the tree removal and relocation site:

- Location and protection of services (above and below ground)
- Impediments to transplanting/excavation e.g. soil type, sub surface rock or other impervious materials
- Protection measures for adjacent plant material/landscape structures
- Constraints to site access
- Transplant timing
- Rootball size calculations
- Tree weight
- Equipment/machinery requirements
- Lifting methods

2.0 Labelling

The trees to be transplanted should be labelled with the following information prior to the commencement of the transplanting works:

- Tree number
- Relocation position
- North side of the trunk

3.0 Pre-Transplant Preparation

The Transplanting Contractor should determine and undertake pre-transplanting preparation works as necessary to ensure the successful reestablishment of the trees, such as:

- Irrigation
- Fertiliser application
- Staged root pruning (where required)
- Pest and disease treatment
- Wetting agent application

4.0 Crown Preparation

Dead/older fronds should be removed prior to the commencement of the transplanting works. No more than 40% of the live, lower fronds should be removed. The remaining fronds should be bunched and tied/wrapped together before tree removal to prevent damage and assist with handling prior to the commencement of the transplanting works.

Works to the tree's crown should be carried out by an experienced and qualified Arborist. The Arborist should hold a minimum qualification equivalent (using the Australian Qualifications Framework) of NSW TAFE Certificate Level 3 or above, in Arboriculture and a NSW TAFE Tree Surgery Certificate or its recognised equivalent. The Arborist should have a minimum of 3 years experience in practical Arboriculture including demonstrated experience in tree surgery. Pruning work should be undertaken in accordance with *AS4373: Pruning of Amenity Trees* (2007) and the *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work* (2016).

Tree foliage should be treated with an anti-transpirant prior to the commencement of the transplanting works where deemed necessary by the Transplanting Contractor.

5.0 Trunk Protection

Trunk protection should be installed by wrapping sufficient padding/protection around the trunk to prevent trunk damage. Straps/slings used for lifting should be placed over the padding.

6.0 Excavation

The rootball radius and depth should be determined by the Transplanting Contractor prior to the commencement of the tree transplanting operation. Adequate rootball volumes should be retained to preserve the Root Initiation Zone.

The trees' rootballs should be cut vertically using a high-pressure water jet or other similar approved technique. Bulk excavation should be undertaken using excavation machinery. The rootball base should be cut horizontally using a high-pressure water jet or other similar approved technique. Following excavation the rootball should be immediately wrapped in hessian material or boxed and secured with sufficient strapping to maintain the integrity of the rootball.

7.0 Lifting, Handling & Transportation

Lifting requirements should be determined by the Transplanting Contractor prior to the commencement of the tree transplanting operation. It is the responsibility of the Transplanting Contractor to check access requirements for tree lifting and transportation equipment and machinery including load bearing capacity of surface materials and overhead clearances.

The trees should be appropriately protected, handled and transported in such a manner so as to avoid damage.

8.0 Temporary Storage

If temporary storage prior to replanting is required, the trees should be maintained in a healthy condition for the duration of the temporary storage period. Irrigation should be provided to the rootball to maintain adequate soil moisture levels. The trees should be monitored weekly by the Transplanting Contractor whilst in temporary storage.

9.0 Preparation

Prior to replanting, boxing and strapping materials should be removed from the rootball.

10.0 Excavation

The finished landscape levels of the planting area should be established. Plantings pits should be excavated to no greater than the depth of the rootballs and a minimum of 1.5 times the width of the rootballs. Where possible, tree pits should be linked to increase available soil volumes and promote tree health over the long term. The use of structural soils or structural soil cells should be utilised within the tree pits to support the pavement surface above.

11.0 Positioning

The trees should be positioned in their new location in identical orientation and vertical alignment.

12.0 Stabilising

Where deemed necessary by the Transplanting Contractor, a system of above or below ground guying should be installed to provide adequate support to maintain tree stability during the establishment phase. Where guys pose a hazard to the public, appropriate protection should be installed.

13.0 Backfilling

The planting pit should be backfilled with a Type B soil mix to a depth of 300mm below the top of the rootball, in layers no greater than 100mm. Each layer should be lightly consolidated before the next layer is added to prevent excessive settlement after planting. Ensure all voids around and under rootball are filled and that no large air pockets are retained.

Type B soil mix

- 40% screened topsoil
- 60% coarse sand

The planting pit should be backfilled with a Type A soil mix to level with the top of the rootballs (maximum depth 300mm), in layers not greater than 100mm. Each layer should be lightly consolidated before the next layer is added to prevent excessive settlement after planting. Ensure all voids around and under rootballs are filled and that no large air pockets are retained.

The soil mix should not be placed over the top of the rootball. The top of the rootball and tree stem should be level with the top of the backfill.

Type A soil mix

- 30% screened topsoil
- 60% coarse sand
- 10% organic matter

Coarse sand shall mean washed, coarse river sand 0.25 to 2.0mm diameter, free from weeds, debris or other deleterious material. Imported topsoil shall mean commercially available premium grade sandy loam conforming to AS4419: Soils for Landscaping and Garden Use. Organic matter shall mean commercially available aged and composted green waste or cow manure, free from debris or other deleterious material.

14.0 Irrigation

An automatic dripline irrigation system should be installed around the base of each tree to maintain adequate soil moisture levels for the duration of the tree establishment period. Where an automatic drip line irrigation system cannot be installed, hand watering should be undertaken at regular intervals. The volume and frequency of water required to maintain adequate soil moisture levels should be determined by the Transplanting Contractor

15.0 Inspections

Upon the completion of the transplanting works, fortnightly inspections by the Transplanting Contractor should be undertaken during the tree establishment period. The length of the tree establishment period will vary depending upon the response to transplanting of the trees and the growing environment. The inspections should determine the requirements for post-transplant maintenance works such as:

- Irrigation requirements
- Pruning requirements
- Fungicide application
- Wetting agent application
- Fertilizer application
- Mulch application
- Pest and disease management
- Removal of tree stabilization infrastructure (where required).
- Tree health and structural condition assessment