

PLANS AND DOCUMENTS

referred to in the ULDA

APPROVAL dated 27 / 1 / 11

**TREE PRESERVATION AND
PROTECTION SPECIFICATION**

FOR

PERRY PARK REDEVELOPMENT
cnr Abbotsford & Edmondstone Rds
Bowen Hills

Prepared for: **YMCA of Brisbane**
c/- CDI Architects

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Part 1 GENERAL

1.01 Description

- a. General Requirements: Preservation and protection of seven (7) existing trees specifically indicated to remain on the development.
- b. Where noted special requirements should be carefully incorporated with general requirements for the specific tree.
- c. Definitions:
 - (i) Arboricultural Consultant: An individual with competence in the science of Arboriculture, with specialist skills in the practices of planning and management of trees, usually in urban environments, primarily for amenity and utility purposes. This person will have a minimum qualification of Australian Qualification Framework (AQF) Level 5 Diploma in Arboriculture or an equivalent overseas arboriculture qualification, plus five years of relevant experience since qualification. The individual will preferably also hold an International Society of Arboriculture (ISA) certification, i.e. ISA Certified Arborist.
 - (ii) Project Arborist: AQF5 Arboriculture plus a minimum of five years experience of staff and project supervision at that level.
 - (iii) Arborist: AQF3 Arboriculture including a minimum of three years of trade skill development since qualification.
 - (iv) Contractor: Anyone whose work on site may affect trees specified to be protected and/or remain on site.
 - (v) For further definitions please refer to **Appendix One**.

PART 2 PROJECT CONDITIONS

- a. Retain the Arboricultural Consultant for the duration of the planning, construction and post construction phases.
- b. Immediately prior to the commencement of any works on site, including removal of any vegetation, the Arboricultural Consultant, the Project Arborist and Brisbane City Council Representative will meet on site to assess and document the current state of health of all trees agreed to be retained.
- c. Protect and preserve all trees indicated to remain on and adjacent to the site.
- d. Take all necessary steps to comply with 'AS-4970: Protection of Trees on Development Sites'.
- e. Meet the Brisbane City Council requirements for retention and protection of trees under preservation orders on development sites.
- f. Provide semi-permanent protective fencing with signage, minimum 1.8m in height, in accordance with AS-4970 to protect and preserve trees which are to remain. Erect the fence prior to commencement of clearing (other than within the TPZs) and demolition work and remove only after all work potentially

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- injurious to trees is complete and with approval of or at the reasonable direction of the Project Arborist and the Brisbane City Council Representative.
- g. The Arboricultural Consultant or their delegate will be available for all enquiries and consultations in accordance with this specification during all usual business hours and will respond promptly and reasonably, failing which the Project Arborist will take responsibility for all decisions and actions required under this specification.
 - h. Protect all trees from debris stock piling, material storage, vehicle parking and machinery movement and other building activities within the drip line or fenced protection zone.
 - i. Protect the root systems of all trees from:
 - (i) Dumping of refuse.
 - (ii) Chemically injurious materials or liquids.
 - (iii) Noxious materials in solution caused by run-off and spillage during mixing and placement of construction materials and stored materials, e.g. concrete wastes and paint.
 - (iv) Continual puddling of water.
 - (v) Excavation of all types inclusive of service installation, soil compaction or placement of fill or impermeable surfaces.
 - j. Restrict vehicular and foot traffic to prevent compaction of soil within the root zone.
 - k. All contractors will attend a Tree Preservation Induction and then sign and comply with the requirements of a CERTIFICATE OF RECOGNITION AND ACCEPTANCE OF THE TREE PRESERVATION AND PROTECTION SPECIFICATION for Perry Park before they commence any work on site.
 - l. This document shall form part of the project conditions of approval and shall be included in all tender documents and contracts.

Part 3 PRODUCTS

3.01 Materials

- a. As indicated and required elsewhere in this specification section and as may be recommended by the Arboricultural Consultant or the Project Arborist with approval by the Brisbane City Council Representative.

Part 4 PRE-CONSTRUCTION TREE CARE:

4.01 Pruning:

All trees remaining within the project limits shall be pruned in accordance with Standards Australia “AS-4373: Pruning of Amenity Trees” and US “ANSI-A300: Tree Care Operations-Pruning”, with selective limb removal, as reasonably directed and approved by the Arboricultural Consultant, where required for hazard minimization and improvement of tree health and structure.

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4.02 Mulching:

Tree protection zones are to be mulched with 100mm of composted wood chip, i.e. 'forest blend mulch', so as to aid in moisture retention, to buffer the soil surface from temperature extremes, to add organic matter and reduce soil compaction. Mulch shall be spread by hand, or by low ground pressure machinery e.g. mini-loaders or rubber tracked loaders of less than 2 tonne G.V.M. Wheeled skid steer loaders shall not be used.

Mulch used shall be that produced by disc or drum type wood chippers and shall be of a coarse, chunky texture with average particle size in excess of 20mm diameter. Organic product produced by tub or horizontal type vegetation grinders or that with excessive fines or contaminants shall not be utilized or accepted. The mulch product proposed for use shall be checked and approved by the Arboricultural Consultant before delivery to site.

In unfenced, mulched areas with high levels of pedestrian traffic, slatted timber or steel mesh walkways shall be placed over the mulch so as to further reduce compaction and subsequent root damage.

4.03 Tree Protection Fencing:

Protective chain link mesh fences, minimum 1.8m in height, shall be erected on steel posts with concrete in-ground footings, with a minimum 400mm depth, on or outside the specified protection radius around all trees to be retained. Maximum post spacing shall be 4m.

The area enclosed by the fence shall be termed the **Tree Protection Zone**, i.e. the **TPZ**. The specified TPZ is a minimum radius and is measured from the centre of the tree. Where possible the TPZ shall be expanded to include and protect additional root zone area.

Holes for the TPZ fence posts needed to be secured in-ground shall be dug by hand; machine boring of holes is not permitted. Where roots in excess of 30mm diameter are encountered the post location/hole shall be relocated. Roots in excess of 30mm diameter shall not be severed.

The TPZ fence, if located on temporary block footings, i.e. only if post holes cannot be dug, shall be securely anchored so as to prevent accidental or 'convenient' relocation.

The chain link mesh shall be secured to the gauge wires using galvanized wire of same gauge as gauge wires and chain link.

The recommended minimum TPZ shall be marked as a clearly defined bold black line on all project plans including those for project approval and construction. The line shall be keyed 'Tree Protection Zone – Keep Out'. The enclosed TPZ area on the plans shall also be lightly shaded or stippled to further clearly indicate the protected area.

No spoil, debris, liquid or solid contaminants, building materials, machinery, vehicles, site buildings or 'smoko' areas are to be placed or established inside the TPZ at any time.

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Under no circumstances is the protection fence to be moved without prior consultation and permission from the Arboricultural Consultant and the Brisbane City Council Representative.

An accurate, marked up diagram shall be incorporated into the application. An application shall be lodged for each separate TPZ access.

Should the need arise to further access the TPZ, the Project Arborist must prepare an "Application to Access TPZ" and submit it to the Arboricultural Consultant for approval 48 hours prior to access or changes taking place. The Application to Access TPZ must address the reason for required access and provide a methodology statement detailing processes for prevention of soil compaction (load-sharing surfaces), canopy protection, stem/trunk protection and re-establishment of the TPZ and fence where appropriate.

Clear diagrams in both plan and cross-section detailing the proposed methods and systems shall be supplied as part of the application.

Under no circumstances shall excavation encroach on the specified minimum TPZ without prior consultation with the Arboricultural Consultant and the Brisbane City Council Representative.

4.04 Signage:

Signage generally conforming to that detailed in AS-4970 shall be attached to the TPZ fences at maximum spacings of 8m and at a height of 1.5m above ground level. The sign shall be a minimum of 600mm x 600mm in dimension, bearing the following phrase in red letters on white background at least 80mm in height.

"TREE PROTECTION ZONE –NO ACCESS"

In letters not less than 30mm in height on the above sign should be the name of the supervising Project Arborist or Arboricultural Company, contact phone numbers and instructions detailing procedures if the fence is breached or damaged in any way. The use of monetary penalties for breaches of tree protection conditions should also be noted.

4.05 Irrigation:

The mulched TPZ shall be monitored and irrigated so as to maintain soil moisture to a minimum 400mm in depth. Significant fluctuations in soil moisture should not occur except under the effects of natural precipitation. Soil moisture levels in each TPZ shall be monitored by use of electronic moisture meters and/or tensiometers.

Natural precipitation shall be monitored by use of a commercial rain gauge sited in an open area and unaffected by surrounding vegetation and structures.

It should be noted that excessive soil desiccation or irrigation might result in root death and subsequent tree stress and possible tree decline.

The applicant shall provide dedicated water take off points to each TPZ expressly for the purposes of tree irrigation. If, as a result of water restrictions, reticulated water cannot be used recycled water shall be utilised. Brackish or river water shall not be utilised for the purposes of tree irrigation.

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4.06 Fertilization and Root Stimulants:

If nutrient deficiencies are or become evident and following confirmation by soil and foliage analysis, a fertilizer of balanced formula with an organic nitrogen source, phosphorus, potassium, and necessary trace elements will be applied by high pressure soil injection at a rate as specified by the Project Arborist and approved by the Arboricultural Consultant. An organic root production stimulant, i.e. 'Seasol'® or 'Kelpak'® and soil microflora activator, e.g. 'Symbex'® or 'Revitalize'® shall also be applied by soil drench or soil injection. Alternatively, a commercial *Trichoderma* inoculant or 'compost tea' may be applied with fertilization.

4.07 Soil Aeration:

Where required soil within the tree preservation zone is to be aerated using "Grow-Gun" technology to reduce compaction and improve soil oxygen levels and moisture percolation. Radial trenching and soil replacement treatment shall be performed using 'Air Spade' or 'Air Knife' systems.

4.08 Fill Removal:

Where fill has been placed over natural grades the fill shall be carefully removed so as to expose natural grades or the point in the profile where fibrous root growth is evident in the fill material. Fill shall be removed to the edge of the TPZ radius as a minimum requirement. Mulch shall be applied to the exposed area immediately after fill removal.

Minor depths of fill material shall be removed by use of an Air Spade' or 'Air Knife' whilst deeper profiles shall be removed using rubber tracked excavators of less than 5t G.V.M. where the machine is situated on the fill and lifts and pulls the fill toward the machine. Wheeled or tracked skid steer loaders or the like shall not be used on the exposed root zone.

4.09 Root Pruning:

Where excavation is required immediately adjacent to the TPZ the line of excavation shall be pre-cut using a high-pressure water cutter/water-blaster. The water jet cleanly cuts roots without the tearing and shredding of roots commonly associated with conventional excavation by excavators and backhoes. The initial water cut should be located along the proposed face of excavation. Subsequent excavation is then performed to the outside of the water cut. For machine specifications refer to Appendix One. Note: High pressure water cutters should not be confused with water assisted vacuum excavation.

4.09 Structural Support:

Structural support, e.g. cable installation, may be required on specific trees as identified by the Arboricultural Consultant and or the Project Arborist. The hardware shall be installed in accordance with International Society of Arboriculture recommendations.

4.10 Removal of Weed Species:

All unwanted tree and woody weed species located inside the required TPZ shall be felled and chipped before TPZ fence erection and after approval by Arboricultural

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Consultant. Vegetation located outside the required TPZ shall be removed after TPZ fence erection. The resulting “forest blend mulch” shall be stockpiled and composted on site for later use in mulching operations (see 4.02). Trees and woody weeds shall be removed by hand. Heavy machinery, i.e. skid steer loaders or larger, shall not be utilised inside the line of TPZ. Herbaceous weeds shall be controlled for the duration of the project by application of glyphosate based herbicides, e.g. Roundup®.

4.11 Approved Tree Care Provider:

All pre-construction tree care will be performed by fully trained arborists acceptable to the Arboricultural Consultant. All tree care will be performed under the direct supervision of the Project Arborist, and the Arboricultural Consultant. All works shall conform to US ANSI Z133.1: Tree Care Operations: “Safety Requirements”, relevant Queensland WH&S requirements and industry best practice.

All pre-construction tree care shall be completed before commencement of any excavation or general site works. Demolition works in the vicinity of trees to be protected shall be conducted in the presence of the Arboricultural Consultant.

4.12 Inspection:

The retained trees and protection works shall be inspected, as a minimum, fortnightly by the Arboricultural Consultant for the duration of the project. Reports shall be submitted to the Project Arborist and Brisbane City Council. All non-conformances shall be noted, rectification works recommended and inspected on completion.

Part 5 EXECUTION

5.01 Specifically:

All retention and protective works, e.g. pruning, fencing, mulching etc. shall occur as per the following tree protection methodology before any other works commence on site.

Tree 1

Tree Species:	<i>Ficus virens</i>
Common Name:	White fig
Height:	10.5m
Canopy Diameter:	21m
DBH:	1500mm
Location:	West end of northern boundary between entry gate and Tree 2.
Minimum Radius Tree Protection Zone (TPZ) required:	8m from tree.
Tree Vigor:	Very good, as is evidenced by good leaf size and leaf colour.
Tree Vitality:	Very good, as is evidenced by good shoot extension. Canopy density is slightly reduced.
Structure:	Tree form is broadly decurrent, as is typical of the species. The tree structure is based on a short, solid and massive trunk which branches to form multiple primary scaffold branches, which in turn branch at regular intervals to form the primary and tertiary branches which form the canopy structure. Branches are solid and progressively tapered with some branch unions being slightly ‘v-crotched’ in form. No significant bark inclusions or structural branch union weaknesses were noted. Aerial roots

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are being produced around some branch crotches. No evidence of previous structural failure was noted.

The lower trunk and root crown appears solid and is well buttressed. The accumulation of debris around the base of the tree, i.e. grass clippings and other organic detritus, has resulted in the production of some secondary surface roots which are partially grafted to the primary buttress structure of the tree. Significant scuff damage on exposed buttresses and roots resulting from mechanical activity, i.e. during fill placement and car parking is evident.

No symptoms indicating internal weakness and requiring further investigation with a decay detection and wood density testing drill were noted.

Fungal Pathogens: No significant fungal pathogens noted.

Insect Pests: No significant pests noted.

Action Required:

1. Install protective fence around TPZ as per 2.0 (e) and 4.03 before construction works commence.
2. Prune in accordance with 'AS-4373' to remove deadwood, and redundant growth as per 4.01. Also remove branches, if required, as approved by Brisbane City Council Representative and the Arboricultural Consultant.
3. Remove fill as per 4.08.
4. Mulch as per 4.02 and fertilize as per 4.06.
5. Irrigate as per 4.05.

Special Requirements:

The plans supplied indicate that the proposed structure will be sited on the edge of the required TPZ on the south-west face of the tree at a radius of approximately 8m and to south at a radius of approximately 10m. On completion of the structure a new boundary fence shall be constructed approximately 1m from the face of wall.

For this tree the following additional methodology shall apply:

1. Tree 2 shall be incorporated into the TPZ for Trees 2 and 3.
2. Where the wall of the structure is located adjacent to or passes through a TPZ, the TPZ fence may be relocated such that it is offset from the proposed structure by no more than 2m. The exposed, unfenced TPZ area will be treated and protected as per fenced TPZ by use of compaction and contamination protection, the use of load bearing and/or load sharing surfaces and any other process as deemed necessary by the Arboricultural Consultant, Project Arborist and/or Brisbane City Council Representative. Soil moisture levels shall be monitored and adjusted as per fenced TPZ areas. See Section 4 and the diagram at Appendix Two.

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3. The TPZ fence shall be extended 2m to the west to compensate for the intrusion on the TPZ on the south-west face.
4. The area between the TPZ fence and the face of building shall be mulched to a depth of 150mm and a wood or perforated metal walkway surface be placed over the mulch layer.
5. No machinery shall use this pathway for access.
6. The builder shall supply a concise methodology detailing processes to be used in the construction of this section of the development before any construction occurs in the vicinity of the Tree 1 TPZ fence.
7. All services, inclusive of water, gas, electricity, telecommunications, sewer and storm water, shall be directed around the TPZ. Under no circumstances shall excavation for the above be permitted inside the nominated TPZ.

Tree 2

Tree Species:	<i>Ficus microcarpa</i> var. 'Hillii'.
Common Name:	Small leaf fig
Height:	11.5m
Canopy Diameter:	15m
DBH:	690mm
Location:	North boundary between Trees 1 and 3.
Minimum Radius Tree Protection Zone (TPZ) required:	8m from tree.
Tree Vigor:	Tree vigour is good, as is evidenced by good leaf size and leaf colour.
Tree Vitality:	Very good, as is evidenced by good shoot extension. Canopy density is slightly reduced.
Structure:	Tree form is generally decurrent, as is typical of the species. The structure of the tree is based on co-dominant leaders from ground level with an obvious bark inclusion to a height of approximately 500mm above ground level.

The wounds are present to a height of approximately 1.6m on the larger trunk and 2m on the smaller northern trunk of the tree. The wounds appear to be in excess of 20 years old and exhibit heavy production of wound and reaction wood.

The trunks above the wounds are solid, well formed, with progressive taper and branch regularly and evenly to produce the secondary and tertiary branch structure. Branches are generally well tapered and well attached with open, sound branch unions.

The root crown is well buttressed on the north, south and east faces. Buttressing on the west face is absent due to the wounding and damage caused by the fire. Probing of the root crown revealed the root crown to be solid below ground level.

As with Tree 1, significant scuff damage on exposed buttresses and roots, a result of mechanical activity and car parking, is evident.

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Fungal Pathogens: Some evidence of fungal decay in wounds initiated in previous years is evident on the west face of the lower co-dominant trunks. The height and orientation of the wounding suggests that the wounds are most probably the result of a fire having been ignited to the west of the tree, with the resulting wounds being a result of radiated heat killing the bark, cambium and outer sapwood. Probing revealed the wounds to be well compartmentalized and no active decay is noted at the time of inspection. No active fungal pathogen was noted.

Insect Pests: No significant pests noted.

Action Required:

1. Install protective fence around TPZ as per 2.0 (e) and 4.03 before construction works commence.
2. Prune in accordance with 'AS-4373' to remove deadwood, and redundant growth as per 4.01. Also remove branches, if required, as approved by Brisbane City Council Representative and the Arboricultural Consultant.
3. Remove fill as per 4.08.
4. Mulch as per 4.02 and fertilize as per 4.06.
5. Irrigate as per 4.05.

Special Requirements:

The plans supplied indicate that the proposed structure is to be constructed adjacent the nominated TPZ on the south face of the tree at a radius of approximately 10m. On completion of the structure a new boundary fence shall be constructed approximately 1m from the face of wall.

For this tree the following additional methodology shall apply:

1. Tree 2 shall be incorporated into the TPZ for Trees 1 and 3.
2. Where the wall of the structure is located adjacent to or passes through a TPZ, the TPZ fence may be relocated such that it is offset from the proposed structure by no more than 2m. The exposed TPZ area will be treated and protected as per fenced TPZ by use of compaction and contamination protection, the use of load bearing and/or load sharing surfaces and any other process as deemed necessary by the Arboricultural Consultant, Project Arborist and/or Brisbane City Council Representative. Soil moisture levels shall be monitored and adjusted as per fenced TPZ areas. See Section 4 and the diagram at Appendix Two.
3. The builder shall supply a concise methodology detailing processes to be used in the construction of this section of the development before any construction occurs in the vicinity of the Tree 3 TPZ fence.

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Tree 3

Tree Species:	<i>Ficus virens</i>
Common Name:	White fig
Height:	12m
Canopy Diameter:	22m
DBH:	1680mm
Location:	North boundary between Trees 2 and 4.
Minimum Radius Tree Protection Zone (TPZ) required:	8m from tree.
Tree Vigor:	Tree vigour is good, as is evidenced by good leaf size and leaf colour.
Tree Vitality:	Very good, as is evidenced by good shoot extension. Canopy density is slightly reduced.
Structure:	Tree form is strongly decurrent, as is typical of the species. The tree structure is based on (3) primary and (3) secondary leaders initiating from ground level. The trunks are solid, well formed and of progressive taper. Branching is even and regular to form primary and tertiary canopy branch structure. Branch unions are open and well formed with no structural weakness or defect noted. Branch loss wounds in the canopy, i.e. those resulting from loss of deadwood, appear solid with minimal or no decay and well compartmentalized. Good wound occlusion is evident. The lower trunk and root crown appears solid and exhibits well formed and evenly spaced buttresses and roots. Significant scuff damage on exposed buttresses and roots, a result of mechanical activity and car parking, is evident. No symptoms indicating internal weakness and requiring further investigation with a decay detection and wood density testing drill were noted. There is significant fill placed to the south of the root crown. Fill placement commences approximately mid-way between Trees 2 & 3. Fill depth in the vicinity of Tree 3 appears to be approximately 100-150mm. The fill has not been compacted, other than by car parking, however, it contains high levels of clay and thus permeability is most probably reduced. No decline in tree health was noted.
Fungal Pathogens:	No significant fungal pathogens noted.
Insect Pests:	No significant pests noted.
Action Required:	

1. Install protective fence around TPZ as per 2.0 (e) and 4.03 before construction works commence.
2. Prune in accordance with 'AS-4373' to remove deadwood, and redundant growth as per 4.01. Also remove branches, if required, as approved by Brisbane City Council Representative and the Arboricultural Consultant.

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3. Remove fill as per 4.08.
4. Precut driveway excavation using high pressure water jet as per 4.09.
5. Mulch as per 4.02 and fertilize as per 4.06.
6. Irrigate as per 4.05.

Special Requirements:

The plans supplied indicate that the proposed structure is to be constructed adjacent the nominated TPZ on the south face of the tree at a radius of approximately 10m. In addition excavation for entry to ground level car parking and driveway crossover shall occur at a radius of approximately 8.75m to the east of the tree. On completion of the structure a new boundary fence shall be constructed approximately 1m from the face of wall.

For this tree the following additional methodology shall apply:

1. Tree 3 shall be incorporated into the TPZ for Trees 1 and 2.
2. The TPZ fence shall be located 500mm behind the face of excavation for the driveway/crossover structure.
3. The builder shall supply a concise methodology detailing processes to be used in the construction of this section of the development before any construction occurs in the vicinity of the Tree 3 TPZ fence.

Tree 4

Tree Species:	<i>Ficus virens</i>
Common Name:	White fig
Height:	13m
Canopy Diameter:	18m
DBH:	1590mm
Location:	North boundary between Trees 3 and 5.
Minimum Radius Tree Protection Zone (TPZ) required:	8m from tree.
Tree Vigor:	Excellent, as is evidenced by very good leaf size and good leaf colour.
Tree Vitality:	Excellent, as is evidenced by very good shoot extension and wound occlusion.
Structure:	Tree form is strongly decurrent, as is typical of the species. The tree structure is based on (4) leaders initiated from ground level. The leaders are solid, well formed and progressively tapered. Branching is even and regular to form primary and tertiary canopy branch structure. Branch unions are open and well formed with no structural weakness or defect noted. Branch loss wounds throughout canopy, i.e. those resulting from loss of deadwood, appear solid with minimal or no decay and are well compartmentalized. Good wound occlusion is evident. The lower trunk and root crown appears solid and exhibits well formed and evenly spaced buttresses and roots. Significant

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scuff damage on exposed buttresses and roots, a result of mechanical activity and car parking, is evident.

No symptoms indicating internal weakness and requiring further investigation with a decay detection and wood density testing drill were noted.

There is significant fill placed to the south of the root crown. The embankment, at this point, appears to have initially been about 800mm in height with soil levels having subsequently been raised by the placement of fill on one or more occasions. The placement of fill may have initiated the formation of a dimorphic root system, i.e. a root system which occurs in two distinct layers in the soil profiles, with the second layer having been initiated by fill placement. The most recent application of fill to the south side of the root mass on Tree 4 appears to be approximately 200-250mm in depth. The fill is uncompacted, however, it contains high levels of clay and thus permeability is most probably reduced.

Fungal Pathogens: No significant fungal pathogens noted.

Insect Pests: No significant pests noted.

Action Required:

1. Install protective fence around TPZ as per 2.0 (e) and 4.03 before construction works commence.
2. Prune in accordance with 'AS-4373' to remove deadwood, and redundant growth as per 4.01. Also remove branches, if required, as approved by Brisbane City Council Representative and the Arboricultural Consultant.
3. Remove fill as per 4.08.
4. Precut driveway excavation using high pressure water jet as per 4.09.
5. Mulch as per 4.02 and fertilize as per 4.06.
6. Irrigate as per 4.05.

Special Requirements:

The plans supplied indicate that the proposed structure is to be constructed adjacent the nominated TPZ on the south face of the tree at a radius of approximately 10m. In addition excavation for entry to ground level car parking and driveway crossover shall occur at a radius of approximately 5.6m to the east of the tree. On completion of the structure a new boundary fence shall be constructed approximately 1m from the face of wall. For this tree the following additional methodology shall apply:

1. Tree 4 shall be incorporated into the TPZ for Trees 4 to 7.
2. The TPZ fence shall be located 500mm behind the face of excavation for the driveway/crossover structure.

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3. The builder shall supply a concise methodology detailing processes to be used in the construction of this section of the development before any construction occurs in the vicinity of the Tree 5 TPZ fence.

Tree 5

Tree Species: *Ficus virens*
Common Name: White fig
Height: 12.5m
Canopy Diameter: 24m
DBH: 1610mm
Location: North boundary between Trees 4 and 6.
Minimum Radius Tree Protection Zone (TPZ) required: 8m from tree.

Tree Vigor: Excellent, as is evidenced by very good leaf size and good leaf colour.

Tree Vitality: Excellent, as is evidenced by very good shoot extension and wound occlusion.

Structure: The tree is based on (5) leaders initiating from or slightly above ground level. The leaders are solid, well formed and progressively tapered. Branching is even and regular to form primary and tertiary canopy branch structure. Branch unions are open and well formed with no structural weakness or defect noted. Branch loss wounds throughout canopy, i.e. those resulting from loss of deadwood, appear solid with minimal or no decay and are well compartmentalized. Good wound occlusion is evident. The lower trunk and root crown appears solid and exhibits well formed and evenly spaced buttresses and roots. Significant scuff damage on exposed buttresses and roots, a result of mechanical activity and car parking, is evident. There is significant fill placed to the south and sides of the root crown.

No symptoms indicating internal weakness and requiring further investigation with a decay detection and wood density testing drill were noted.

Fill depth in and around the root crown of Tree 5 appears to be approximately 300-350mm on the south face and to the edges of the root crown. Placement of the fill appears to be having no detrimental effects on the tree at this time.

Fungal Pathogens: No significant fungal pathogens noted.

Insect Pests: No significant pests noted.

Action Required:

1. Install protective fence around TPZ as per 2.0 (e) and 4.03 before construction works commence.
2. Prune in accordance with 'AS-4373' to remove deadwood, and redundant growth as per 4.01. Also remove branches, if required, as approved by Brisbane

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City Council Representative and the Arboricultural Consultant.

3. Remove fill as per 4.08.
4. Mulch as per 4.02 and fertilize as per 4.06.
5. Irrigate as per 4.05.

Special Requirements:

The plans supplied indicate that the proposed structure is to be constructed adjacent the nominated TPZ on the south face of the tree at a radius of approximately 10m. On completion of the structure a new boundary fence shall be constructed approximately 1m from the face of wall. For this tree the following additional methodology shall apply:

1. Tree 5 shall be incorporated into the TPZ for Trees 4 to 7.
2. Where the wall of the structure is located adjacent to or passes through a TPZ, the TPZ fence may be relocated such that it is offset from the proposed structure by no more than 2m. The exposed TPZ area will be treated and protected as per fenced TPZ by use of compaction and contamination protection, the use of load bearing and/or load sharing surfaces and any other process as deemed necessary by the Arboricultural Consultant, Project Arborist and/or Brisbane City Council Representative. Soil moisture levels shall be monitored and adjusted as per fenced TPZ areas. See Section 4 and the diagram at Appendix Two.
3. The builder shall supply a concise methodology detailing processes to be used in the construction of this section of the development before any construction occurs in the vicinity of the Tree 5 TPZ fence.

Tree 6

Tree Species:	<i>Ficus virens</i>
Common Name:	White fig
Height:	13.5m
Canopy Diameter:	21m
DBH:	2100mm
Location:	North boundary between Trees 5 and 7.
Minimum Radius Tree Protection Zone (TPZ) required:	8m from tree.
Tree Vigor:	Excellent, as is evidenced by very good leaf size and good leaf colour.
Tree Vitality:	Excellent, as is evidenced by very good shoot extension and wound occlusion.
Structure:	Tree form is strongly decurrent, as is typical of the species. The tree structure is based on the presence of multiple leaders initiating from or slightly above ground level. The leaders are solid, well formed and progressively tapered. Branching is even and regular to form primary and tertiary canopy branch structure. Branch unions are open and well formed with no structural weakness or defect noted. Branch loss wounds throughout canopy, i.e. those resulting from loss of deadwood, appear solid with minimal or no decay, well compartmentalized

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and with good wound closure evident. The lower trunk and root crown appears solid and exhibits well formed and evenly spaced buttresses and roots. Significant scuff damage on exposed buttresses and roots, a result of mechanical activity and car parking, is evident.

No symptoms indicating internal weakness and requiring further investigation with a decay detection and wood density testing drill were noted.

The root crown is heavily buttressed, particularly on the north and eastern faces, with much of the exposed root and buttressing on the south and west faces having been buried by the placement of fill on several different occasions. The fill depth on the south face of the tree is estimated at approximately 350-400mm. The placement of fill appears to be having no detrimental effects on the health of the tree.

Fungal Pathogens: No significant fungal pathogens noted.
Insect Pests: No significant pests noted.

Action Required:

1. Install protective fence around TPZ as per 2.0 (e) and 4.03 before construction works commence.
2. Prune in accordance with 'AS-4373' to remove deadwood, and redundant growth as per 4.01. Also remove branches, if required, as approved by Brisbane City Council Representative and the Arboricultural Consultant.
3. Remove fill as per 4.08.
4. Mulch as per 4.02 and fertilize as per 4.06.
5. Irrigate as per 4.05.

Special Requirements:

The plans supplied indicate that the proposed structure is to be constructed adjacent the nominated TPZ on the west and south face of the tree. On completion of the structure a new boundary fence shall be constructed approximately 1m from the face of wall. For this tree the following additional methodology shall apply:

1. Tree 6 shall be incorporated into the TPZ for Trees 4 to 7.
2. Where the wall of the structure is located adjacent to or passes through a TPZ, the TPZ fence may be relocated such that it is offset from the proposed structure by no more than 2m. The exposed TPZ area will be treated and protected as per fenced TPZ by use of compaction and contamination protection, the use of load bearing and/or load sharing surfaces and any other process as deemed necessary by the Arboricultural Consultant, Project Arborist and/or Brisbane City Council Representative. Soil moisture levels shall be monitored and adjusted as per fenced TPZ areas. See Section 4 and the diagram at Appendix Two.

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3. The builder shall supply a concise methodology detailing processes to be used in the construction of this section of the development before any construction occurs in the vicinity of the Tree 6 TPZ fence.

Tree 7

Tree Species: *Ficus obliua*
Common Name: Small leaf fig
Height: 12m
Canopy Diameter: 11m
DBH: 650mm
Location: North boundary to east of Tree 6.
Minimum Radius Tree Protection Zone (TPZ) required: 8m from tree.
Tree Vigor: Very good, as is evidenced by good leaf size and leaf colour.
Tree Vitality: Very good, as is evidenced by good shoot extension. Canopy density is slightly reduced.

Structure: The tree form is strongly decurrent, as is typical of the species. The tree structure is based on a single trunk to approximately 1.5m in height. The trunk is solid and well formed. The trunk bifurcates at approximately 1.5m to form the primary crotch. The crotch is of a 'v' with a minor bark inclusion present. Branching of the primary leaders is even and regular to form secondary and tertiary canopy branch structure. Branch unions are open and well formed with no structural weakness or defect noted. Branch loss wounds throughout canopy, i.e. those resulting from loss of deadwood, appear solid with minimal or no decay and are well compartmentalized. Good wound occlusion is evident.

No symptoms indicating internal weakness and requiring further investigation with a decay detection and wood density testing drill were noted.

The lower trunk and root crown has been buried with significant fill placed over the root crown. Fill depth on the south face of the tree is approximately 400-600mm in some areas and may be deeper to the sides of the root crown. The placement of fill may be having a detrimental effect on the health of the tree, i.e. reduced moisture percolation and CO₂ accumulation in the soil profile may be initiating stress and resultant decline.

Fungal Pathogens: No significant fungal pathogens noted.
Insect Pests: No significant pests noted.

Action Required:

1. Install protective fence around TPZ as per 2.0 (e) and 4.03 before construction works commence.
2. Prune in accordance with 'AS-4373' to remove deadwood, and redundant growth as per 4.01. Also remove branches, if required, as approved by Brisbane

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City Council Representative and the Arboricultural Consultant.

3. Remove fill as per 4.08.
4. Mulch as per 4.02 and fertilize as per 4.06.
5. Irrigate as per 4.05.

Special Requirements:

The plans supplied indicate that the proposed structure is to be constructed adjacent the nominated TPZ on the south face of the tree. On completion of the structure a new boundary fence shall be constructed approximately 1m from the face of wall. For this tree the following additional methodology shall apply:

1. Tree 7 shall be incorporated into the TPZ for Trees 4 to 7.
2. The builder shall supply a concise methodology detailing processes to be used in the construction of this section of the development before any construction occurs in the vicinity of the Tree 7 TPZ fence.

5.02 General:

- a. Protect the root systems of all trees to remain from damage due to phytotoxic materials in run off; also from spillage during mixing and placement of construction materials and drainage from stored materials.
- b. Protect all trees from flooding, erosion, excessive wetting or desiccation resulting from dewatering and other operations.
- c. Protect all trees against cutting, breaking, bruising or and skinning of roots and branches, skinning and bruising of bark.
- d. Do not allow fires under and or adjacent to trees in or adjacent to the development.
- e. Removal of branches from trees, which are to remain, if required for construction, tree root pruning and tree relocation work is to be performed by a qualified Arborist under the direction of the Arboricultural Consultant and approval by the Brisbane City Council Representative.
- f. Where directed by the Arboricultural Consultant, extend the pruning operations to restore the natural shape of the tree.
- g. Cut branches and roots with sharp pruning tools. Do not break, chop and mutilate roots. No roots in excess of 30mm diameter shall be cut.
- h. Water trees which are to remain as necessary to maintain their health during the course of the project. Maintain a water schedule and document inspections and rates of irrigation application.
- i. Pruning and other therapeutic work necessary, including soil amelioration, will conform to Standards Australia AS-4373: Pruning of Amenity Trees and to International Society of Arboriculture (ISA) recommendations under the direction of the Arboricultural Consultant and approval by the Brisbane City Council Representative Arborist..

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5.03 Excavation around Trees:

- a. Excavation for service trench installation is not permitted inside the TPZ.
- b. Excavation within the TPZ of trees to remain is not permitted unless on approved plans and only where indicated and acceptable to the Brisbane City Council Representative, i.e. for isolated pier or post footings only.
- c. Excavate around tree roots within the TPZ of the trees to remain only under the direction of the Arboricultural Consultant and approval from the Brisbane City Council Representative.
- d. When trenching is required within the TPZ of the trees, mechanical horizontal boring at depths below 800mm shall be utilized. Do not cut main lateral roots. Cut smaller roots of less than 30mm in diameter and acceptable to the Arboricultural Consultant and Brisbane City Council Representative, and only if they interfere with installation of new work and only with sharp pruning tools or by use of a high pressure water jet.
- e. Where excavation for new construction is required within the TPZ of trees, hand excavate to minimize damage to the root system. Use an 'Air spade' to expose roots.
- f. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots cleanly approximately 150mm from structures along line of excavation.
- g. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover, pack with damp peat moss, composted mulch or 4 layers of wet, untreated hessian and temporarily support and protect from damage until permanently relocated and covered with backfill. Water puddle backfill to eliminate voids and air pockets.

5.04 Grading and Filling Around Trees:

- a. Maintain existing grade within the TPZ of trees unless otherwise indicated or acceptable to the Arboricultural Consultant and Brisbane City Council Representative.
- b. Lowering grades: Grades/levels shall not be lowered without prior design and notification and permitted only as acceptable to the Arboricultural Consultant and Brisbane City Council Representative.
- c. Raising Grades: Grades/levels shall not be raised without prior design and notification and permitted only as acceptable to the Arboricultural Consultant and Brisbane City Council Representative.

5.05 Service and Hardscape Installations within Tree Protection Zones:

- a. All services, e.g. electrical conduits, water piping, gas piping, 'phone lines and sewer piping etc., shall enter the structure from outside the TPZ or be suspended from the underside of the suspended floors and not cut into the root zones or native soil of the trees to be retained.
- b. Electrical fixtures, e.g. pathway lighting, and irrigation pipes, valves and fittings, usually installed by trenching shall be installed with care to avoid cutting roots. DO NOT install adjacent to tree butt or root crown. Digging

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must be of minimal depth with no soil removed from site. Roots greater than 20mm in diameter exposed during excavation must be cut squarely and cleanly at the edge of the excavation with a sharp saw and not torn or hacked off. Roots in excess of 30mm in diameter shall not be cut under any circumstances.

- c. Walkways on ground shall be installed at or above grade. Do not excavate into grade where large roots and areas of high root density exist. Backfill with loose soil along pathway edges where necessary to achieve a natural appearance.
- d. Walkways which surround the trunk or cover a significant portion of the TPZ shall be constructed as raised timber deck structures on post footings. Post holes shall be hand dug or by excavated by 'Air Spade' and sited to avoid structural and transport roots.
- e. Under no circumstances shall paving, concrete slabs or compacted finishes be utilized to cover the TPZ

Landscape Installation within Tree Protection Zones:

- a. All landscape plans must be reviewed and approved for tree retention suitability by the Arboricultural Consultant and Brisbane City Council Representative prior to installation and acceptance.
- b. Landscaping within the tree protection zones should be minimal. Holes dug for planting will result in cutting roots of the retained trees.
- c. Where possible downsize landscape plant material to avoid digging large holes. Space planted material away from active roots of native trees. If tree roots 30mm in diameter or larger are encountered in digging, move the hole slightly to avoid cutting roots.
- d. If roots 20mm in diameter and larger are exposed during excavation and must be cut, do so by cutting squarely and cleanly at the edge of the excavation with a sharp saw. Roots larger than 30mm in diameter shall not be cut without prior inspection and approval by the Arboricultural Consultant.

Repair and Removal of Trees:

- a. **If tree or root damage occurs notify the Arboricultural Consultant immediately**
- b. Engage a qualified Arborist, acceptable to the Brisbane City Council Representative, to perform tree repair work. Repair trees damaged by construction operations in a manner acceptable to the Arboricultural Consultant and Brisbane City Council Representative. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.
- c. Pruning wounds shall not exceed 150mm in diameter without prior consultation with the Arboricultural Consultant.
- d. Remove dead and damaged trees, which are determined by the Arboricultural Consultant to be incapable of restoration to normal growth pattern.

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Part 6 TREE BONDS, DAMAGE, PENALTIES AND COMPENSATION:

6.01 Tree Protection Bonds:

- a. Prior to Council being required to issue any approval for Operation Works – Compliance Assessment or commencement of any site works, the property owner shall place with Brisbane City Council (RCC) monetary tree protection bonds in the form of bank guarantees or cash.
- b. The tree protection bond shall be \$25,000.00 (twenty-five thousand dollars) per tree for trees less than 500mm DBH, trees in excess of 500mm DBH bonded at \$50,000.00 (fifty thousand dollars) per tree and those trees in excess of 1000mm DBH bonded at \$75,000.00 (seventy five thousand dollars) per tree.
- c. If the conditions of this Tree Preservation and Protection Specification Report have been complied with to the reasonable satisfaction of the Brisbane City Council Representative, the tree protection bond shall be returned 12 months from the date of commencement of use.

6.02 Partial Injury to Tree:

- a. A penalty will be payable to Brisbane City Council where there is a partial injury to a tree to remain incurred during and by the project construction.
- b. Any wound or infliction to a preserved tree constitutes a partial injury violation.
- c. Partial injuries may include, but are not limited to:
 - (i) Bruised bark or cambium;
 - (ii) Cutting off branches or removing parts of trees;
 - (iii) Breaking branches;
 - (iv) Cutting of roots or filling over roots;
 - (v) Soil compaction within tree preservation areas;
 - (vi) Toxic run off entering tree preservation areas.
- d. Partial injury to a tree will be determined as a percentage of the total tree by the Brisbane City Council Representative and Arboricultural Consultant.

Example:

The percentage of broken limbs compared to the total crown prior to injury.

The percentage of damaged roots compared to the root system prior to injury.

The percentage of damaged bark compared to the circumference of the tree.

- e. Penalties will be assessed by determining the value of the tree before injury and calculating the percentage injury to the tree. The fine will equal the dollar value of the associated reduction in overall tree value.

Examples:

A tree valued at \$50,000 sustains damage where 20% of limbs are broken. The penalty is 20% of \$50,000 or \$10,000.

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A tree valued at \$25,000 has 30% of its preserved roots damaged by a concrete spill and 10% of its trunk damaged by a wound. The penalty is 40% (30% roots plus 10% trunk) of \$25,000 or \$10,000.

- f. In addition to the loss in value, the penalty will include the cost to the owner to have the damage appraised by the Arboricultural Consultant, plus the cost to repair the damage to the tree.

The tree protection bond may be retained by Brisbane City Council to offset the penalty amount. Where the penalty amount exceeds the tree protection bond, the remainder of the penalty amount must be paid to Brisbane City Council. Where the tree protection bond has been returned to the property owner, the full penalty amount must be paid to Brisbane City Council.

6.03 Fatal Injury or Destruction of Tree:

- a. Any wound or injury as determined by the Arboricultural Consultant and Brisbane City Council Representative, which results in the immediate or eventual death of a tree, constitutes a fatal injury. This includes, but is not limited to, death or injury resulting from poor design, poor communications between builders and subcontractors, disregard of this document and ignorance.
- b. Typically, when partial injury equals or exceeds 50%, the resulting injury is fatal. This may vary according to species, condition, or site factors and remains at the judgment of the Arboricultural Consultant and Brisbane City Council Representative.
- c. A fatal injury will result in a penalty payable to Brisbane City Council equaling the full value of the tree before injury, as determined by the previously mentioned Modified Burnley Method for Tree Valuation.
- d. Examples of average values calculated using the method and relative to the site are as follows. Actual values for specific trees will vary according to size, species, condition, and location.
- | | |
|-----------------|-----------|
| 450mm diameter | \$50,000 |
| 750mm diameter | \$100,000 |
| 1000mm diameter | \$200,000 |
- e. In addition to the value of the tree, the penalty will include the cost to remove and haul the damaged tree and stump.
- f. The tree protection bond may be retained by Brisbane City Council to offset the penalty amount. Where the penalty amount exceeds the tree protection bond, the remainder of the penalty amount must be paid to Brisbane City Council. Where the tree protection bond has been returned to the property owner, the full penalty amount must be paid to Brisbane City Council.

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Part 7 POST-CONSTRUCTION TREE CARE:

7.01 Inspections

All trees shall be monitored for a period of 12 months after project practical completion

7.02 Pruning and Structural Support:

- a. All trees remaining within the project limits shall be pruned in accordance with Standards Australia AS-4373: Pruning of Amenity Trees, with selective limb removal, as directed and approved by the Arboricultural Consultant and Brisbane City Council Representative, where required for clearance.
- b. Structural support (cabling) may be required on specific trees as identified by the Project Arborist. This will be done in accordance with International Society of Arboriculture recommendations.

7.03 Mulching:

- a. Tree preservation areas are to be uniformly mulched with 100mm to 125mm of forest blend mulch so as to aid in soil moisture retention, to buffer the soil surface from temperature extremes, to add organic matter and to reduce soil compaction. Mulch is to be spread by hand or by low ground pressure machinery.

7.04 Fertilization and Root Stimulants:

All trees retained are to be fertilized using the high pressure soil injection method in accordance with International Society of Arboriculture recommendations.

A balanced formula with a 100% organic nitrogen source, phosphorus, potassium, and necessary trace elements will be applied based on a rate formula as specified by the Arboricultural Consultant and approved by the Brisbane City Council Representative.

An organic root production stimulant, e.g. 'Seasol'® or 'Kelpak'®, and a soil microflora activator, e.g. 'Symbex'® or 'Revitalize'®, is to be incorporated into the liquid tank mix and applied with fertilization. Alternatively, a commercial *Trichoderma* inoculants or 'compost tea' may be applied with fertilization.

7.05 Soil Aeration:

Where required (see 4.01) soil within the tree protection zone is to be aerated using "Grow-Gun" technology to reduce compaction and improve soil oxygen levels and moisture percolation.

7.06 Approved Tree Care Provider:

All post-construction remedial tree care will be provided by a qualified tree care firm acceptable to the Arboricultural Consultant and Brisbane City Council Representative. All tree care will be done under the direct supervision of the Arboricultural Consultant.

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Part 8 WHEN TO CALL THE ARBORICULTURAL CONSULTANT

8.01 Call the Arboricultural Consultant:

- a. Pre-construction meetings.
- b. Site clearing works, both vegetation and structural.
- c. Tree Protection fence installation.
- d. Field marking of building locations, hard surface locations and limits.
- e. Review of pruning requirements for clearance.
- f. Review of final landscape and hardscape plan.
- g. Question or problems concerning underground utilities.
- h. If any damage to trees or root system occurs.
- i. Any time there is any question regarding tree issues.
- j. Any time it is required in these specifications.
- k. Any time there is a request to go within the tree protection zone.
- l. Application to remove tree protection fences.
- m. Final inspection and report to stakeholders.

Part 9 DOCUMENT LIMITATIONS AND COPYRIGHT RELEASE

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APPENDIX ONE – DEFINITIONS

Air Spade

A.K.A. 'Air Knife' a device used for the removal/excavation of soil from around tree roots with out damaging either non-woody or woody roots. The 'Air Spade' may also be used for soil decompaction by the process of soil replacement.

Brisbane City Council Representative

An individual with competence in the science of Arboriculture, with specialist skills in the practices of planning and management of trees, usually in urban environments, primarily for amenity and utility purposes. This person will have a minimum qualification of Australian Qualification Framework (AQF) Level 5 Diploma in Arboriculture or an equivalent overseas arboriculture qualification, plus five years of relevant experience since qualification. The consultant will preferably also hold an ISA certification.

Arboricultural Consultant

AQF5 Arboriculture plus a minimum of five years experience of staff and project supervision at that level.

Arborist

AQF3 Arboriculture including a minimum of three years of trade skill development since qualification.

ISA Certified Arborist

An arborist who has undertaken and passed the International Society of Arboriculture Certified Arborist exam and who is able to provide evidence of current certification, certification number and certification currency.

Compaction

Soil that by movement of machinery, vehicles or pedestrians as has compressing thus reducing pore size and in turn limiting rates of water percolation and gaseous exchange. Root and tree decline results.

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Contractor

Anyone whose work on site may affect trees specified to be protected and/or remain on site.

Development Site

Entire area encompassed by construction works.

Forest Blend Mulch

The mulch product produced by processing leaf and branch material in a disc or drum type wood chipper. Material produced using tub or horizontal grinders is not forest blend mulch. The mulch shall contain minimal 'fines'.

Grow Gun

A device used for the injection of compressed air and ameliorants into the soil profile. The Grow Gun is used for decompacting and aerating compacts soils around trees.

High Pressure Soil Injection

Injection of water and amendments, i.e. fertilisers, into the soil at pressures of approximately 1400kpa (200psi). High pressure soil injection ensures the complete treatment of the soil profile.

High pressure soil injectio of soil amendments shall conform to:

Anon. 2000. **ANSI A300(Part 2)-2000. Tree, Shrub and Other Woody Plant Maintenance – Standard Practices (Fertilisation)**. American National Standards Institute. New York.

High Pressure Water Jet

A machine comprised of engine, piston-type pump hydraulic hose and nozzle assembly which pumps water at sufficient pressure to cut rapidly through soil and roots. Operating capacity is approximately 55L/min and 41.3Mpa (6000psi).

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Irrigation and Soil Moisture

The application of supplementary water, ie, irrigation, should raise soil water content to a point at or about field capacity, i.e. the point where excess water drains under the effects of gravity from soil macropores.

Wet soil is that above field capacity; moist soil is that which has drained to a point immediately below field capacity.

Pruning

Cutting away unwanted or damaged parts of a plant. All pruning must be performed by arborists using tools specially designed for tree pruning and in accordance with 'The Theories of Natural Target Pruning' and Standards Australia 'AS-4373: Pruning of Amenity Trees'.

Phytotoxic and phytotoxins

Any material, chemical or substance which kills plant cells. In this instance substances which are only toxic at high concentrations are included, eg fertilisers.

Structural Support

Installation of support cabling and bracing shall conform to:

Anon. 2000. ANSI A300(Part 3)-2000. **Tree, Shrub and Other Woody Plant Maintenance – Standard Practices (Support Systems a. Cabling, Bracing and Guying)**. American National Standards Institute. New York.

Tree Protection Zone (TPZ)

Defined area, usually enclosed by fencing with which certain activities are prohibited or restricted to prevent or minimise potential injury to designated trees especially during construction or development. Tree Protections Zones shall conform to AS-4970: Protection of Trees on Development Sites.

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APPENDIX TWO – TPZ FENCE ALIGNMENT MODIFICATION

