



ARBORIST REPORT

260 MacArthur Avenue, Hamilton

7th March 2025

Report No. **J36890-V3**





For the Attention of	Wade Fraser – Silverstone Developments
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Introduction

Wade Fraser of Silverstone Developments has requested an inspection and report on trees as directed at our site meeting located at 260 MacArthur Avenue, Hamilton.

A Level 5 Arborist Report has been compiled from a visual inspection conducted from the ground only, with no soil or tissue sampling undertaken. A description of the condition of the trees at the time of inspection has been included in the report. Recommendations have been included to ensure work is conducted to the relevant Australian Standards.

All tree work should be carried out in accordance with Australian and International Pruning Standards AS4373-2007 and the Australian Standard, Protection of Trees on Development Sites AS 4970-2009.

Arbor Operations QLD Pty Ltd is a member of the Queensland Arboricultural Association (QAA), International Society of Arboriculture (ISA), Arboriculture Australia, The Urban Development Institute of Australia (UDIA) Enviro Development Professionals and Members of Landscape Queensland.



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Site Map – Indicative only



Tree Analysis: T1 – *Jacaranda mimosifolia*

Tree No.	1	Age	Semi-Mature
Inspection Date	23/09/2024	Size	572.1mm x 12m (Spread 14m)
Common Name	Jacaranda	Location	MacArthur Ave boundary South side
Botanical Name	<i>Jacaranda mimosifolia</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	6.87m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.67m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and poor form with a broad structure. It was formerly a twin stem tree however the western most stem has been previously removed stimulating the development of epicormic shoots. Canopy shape is asymmetrical with a bias to the North West. Crown density, leaf colour and size, and tip growth extension are fair to good.

Health & Safety

Epicormic shoots are present on the northeastern most side of the subject. These are weakly attached and prone to failure.

Environmental Considerations

The species is a non-native and is not listed as threatened or endangered under the nature conservation act and its regulations. The species is classified as an environmental weed.

Infrastructure Considerations

It is proposed to construct a carpark located to the east of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Jacaranda mimosifolia*



Photo 2: Epicormic shoots to NW





Tree Analysis: T2 – *Melaleuca bracteata*

Tree No.	2	Age	Semi-Mature
Inspection Date	23/09/2024	Size	457.63mm x 12m (Spread 14m)
Common Name	Revolution Green	Location	MacArthur Ave boundary South side
Botanical Name	<i>Melaleuca bracteata</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	5.49m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.47m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a twin structure. Canopy shape is asymmetrical with a bias to the North East. Crown density, leaf colour and size, and tip growth extension are fair to good. It is a co-dominant tree with minor deadwood.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Melaleuca bracteata*



Photo 2: Crown





Tree Analysis: T3 – *Melaleuca bracteata*

Tree No.	3	Age	Semi-Mature
Inspection Date	23/09/2024	Size	300mm x 10m (Spread 7m)
Common Name	Revolution Green	Location	MacArthur Ave boundary South side
Botanical Name	<i>Melaleuca bracteata</i>	Useful Life Expectancy	1-4 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	3.6m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a suppressed, twin-stem structure. Canopy shape is asymmetrical with a bias to the North West. Crown density, leaf colour and size, and tip growth extension are fair to good. Minor deadwood is noted.

Health & Safety

Excavation has occurred within the TPZ at the edge of the SRZ to the South.

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Melaleuca bracteata*



Photo 2: Leaning stem





Tree Analysis: T4 – *Melaleuca bracteata*

Tree No.	4	Age	Semi-Mature
Inspection Date	23/09/2024	Size	420.74mm x 12m (Spread 14m)
Common Name	Revolution Green	Location	MacArthur Ave boundary South side
Botanical Name	<i>Melaleuca bracteata</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	5.05m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.37m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair form with a broad structure. Canopy shape is symmetrical. Crown density, leaf colour and size, and tip growth extension are fair to good. Minor deadwood is noted.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Melaleuca bracteata*





Tree Analysis: T5 – *Melaleuca bracteata*

Tree No.	5	Age	Semi-Mature
Inspection Date	23/09/2024	Size	460.98mm x 12m (Spread 14m)
Common Name	Revolution Green	Location	MacArthur Ave boundary South side
Botanical Name	<i>Melaleuca bracteata</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	5.53m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.47m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a broad structure. Canopy shape is asymmetrical with a bias to the North East. Crown density, leaf colour and size, and tip growth extension are fair to good. It is a co-dominant tree with minor deadwood is noted.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Melaleuca bracteata*



Photo 2: Co-dominant union





Tree Analysis: T6 – *Harpullia pendula*

Tree No.	6	Age	Semi-Mature
Inspection Date	23/09/2024	Size	200mm x 7m (Spread 4m)
Common Name	Tulipwood	Location	MacArthur Ave boundary South side
Botanical Name	<i>Harpullia pendula</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	2.4m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	1.68m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a squat, multi-stem structure. Canopy shape is symmetrical. Crown density, leaf colour and size, and tip growth extension are fair to good. It is co-dominant tree with minor deadwood noted.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

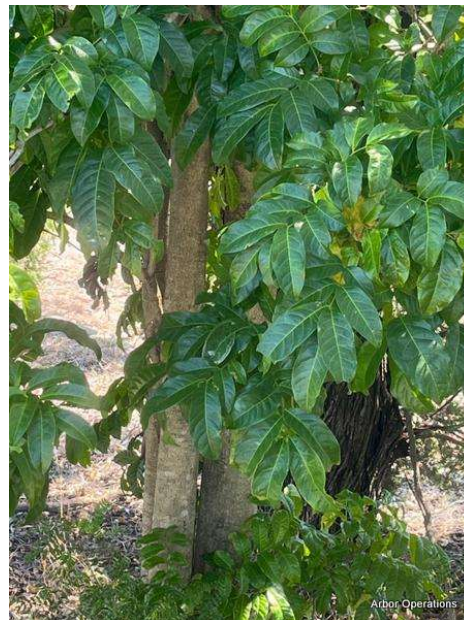
The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Harpullia pendula*



Photo 2: Multi stem





Tree Analysis: T7 – *Melaleuca bracteata*

Tree No.	7	Age	Semi-Mature
Inspection Date	23/09/2024	Size	350mm x 8m (Spread 6m)
Common Name	Revolution Green	Location	MacArthur Ave boundary South side
Botanical Name	<i>Melaleuca bracteata</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	4.2m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.47m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a twin stem structure. Canopy shape is asymmetrical with a bias to the North West. Crown density, leaf colour and size, and tip growth extension are fair to good. It is a co-dominant tree with minor deadwood noted.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

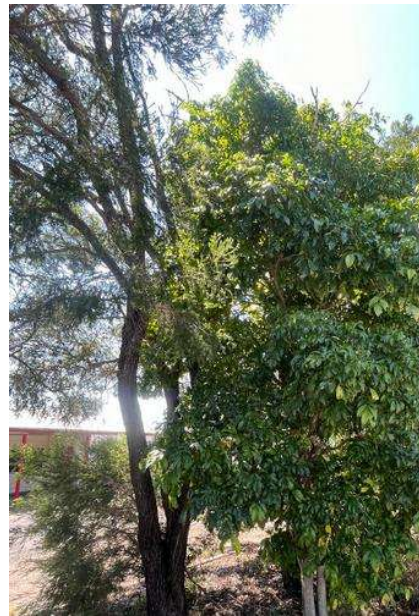
The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Melaleuca bracteata*



Photo 2: Bias to the north west





Tree Analysis: T8 – *Unknown sp.*

Tree No.	8	Age	Semi-Mature
Inspection Date	23/09/2024	Size	200mm x 8m (Spread 0m)
Common Name	Dead	Location	MacArthur Ave boundary South side
Botanical Name	<i>Unknown sp.</i>	Useful Life Expectancy	0 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	3.3m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.47m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

The subject is dead with major deadwood noted within the crown.

Health & Safety

Deadwood represents a fall hazard.

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Unknown sp.*



Photo 2: Dead crown



Photo 3: Understorey pepperina



Photo 4: Understorey pepperina





Tree Analysis: T9 – *Corymbia ptychocarpa*

Tree No.	9	Age	Semi-Mature
Inspection Date	23/09/2024	Size	200mm x 10m (Spread 6m)
Common Name	Swamp Bloodwood	Location	MacArthur Ave boundary South side
Botanical Name	<i>Corymbia ptychocarpa</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	2.4m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	1.68m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a tall structure. Canopy shape is asymmetrical with a bias to the South West. Crown density, leaf colour and size, and tip growth extension are fair.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Corymbia ptychocarpa*



Photo 2: Crown bias South West





Tree Analysis: T10 – *Schotia brachypetala*

Tree No.	10	Age	Semi-Mature
Inspection Date	23/09/2024	Size	800mm x 16m (Spread 14m)
Common Name	Parrot Tree	Location	MacArthur Ave boundary South side
Botanical Name	<i>Schotia brachypetala</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	9.6m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	3.01m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair form with a broad structure. Canopy shape is symmetrical with a bias to the South. Crown density, leaf colour and size, and tip growth extension are fair to good. It is a co-dominant tree with minor deadwood noted.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Schotia brachypetala*



Photo 2: Crown





Tree Analysis: T11 – *Ceasalpinia ferrea*

Tree No.	11	Age	Semi-Mature
Inspection Date	23/09/2024	Size	550mm x 16m (Spread 14m)
Common Name	Leopard Tree	Location	MacArthur Ave boundary South side
Botanical Name	<i>Ceasalpinia ferrea</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	6.6m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.47m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair form with a broad structure typical of the species. Canopy shape is symmetrical with deadwood present. Crown density, leaf colour and size, and tip growth extension are fair to good.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Ceasalpinia ferrea*



Photo 2: View east





Tree Analysis: T12 – *Melia azederach*

Tree No.	12	Age	Semi-Mature
Inspection Date	23/09/2024	Size	500mm x 16m (Spread 9m)
Common Name	White Cedar	Location	MacArthur Ave boundary South side
Botanical Name	<i>Melia azederach</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	6m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.47m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair to poor health and fair form with a broad structure. Canopy shape is asymmetrical with a bias to the North East. Crown density, leaf colour and size, and tip growth extension are fair to good. It is a co-dominant tree with significant decay column present on the main leader. Minor deadwood is noted.

Health & Safety

N/A

Environmental Considerations

The species is a non-native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a driveway to service the carpark at the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

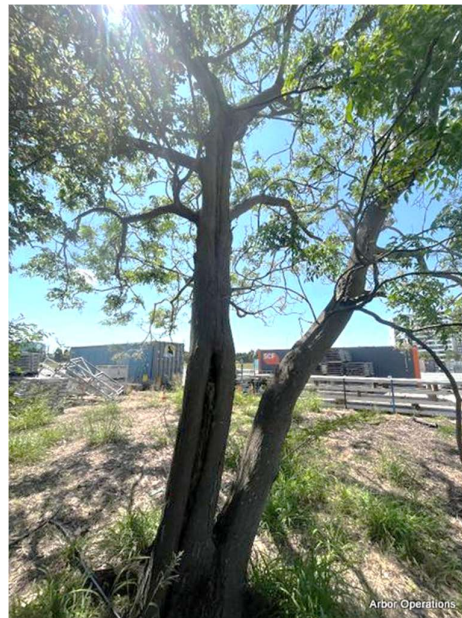
The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



Photo 1: *Melia azederach*



Photo 2: Decay column on central leader





Tree Analysis: T13 – *Corymbia ptychocarpa*

Tree No.	13	Age	Semi-Mature
Inspection Date	23/09/2024	Size	195mm x 8m (Spread 6m)
Common Name	Swamp Bloodwood	Location	MacArthur Ave boundary South side
Botanical Name	<i>Corymbia ptychocarpa</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	2.34m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	1.68m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a tall, spindly structure. Canopy shape is symmetrical. Crown density, leaf colour and size, and tip growth extension are fair.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the poposed design to be constructed.



Photo 1: *Corymbia ptychocarpa*

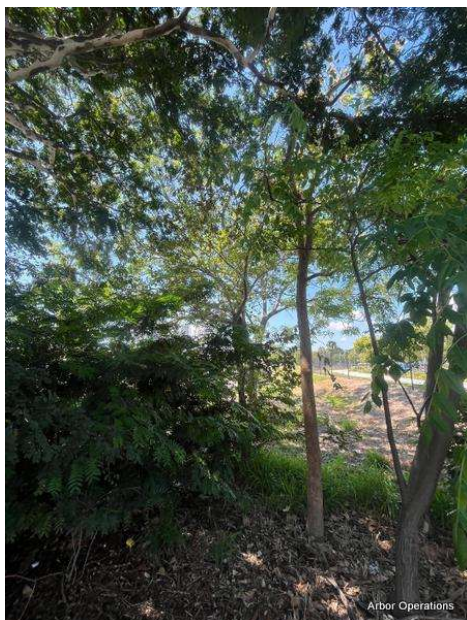


Photo 2: Crown





Tree Analysis: T14 – *Melaleuca linariifolia*

Tree No.	14	Age	Semi-Mature
Inspection Date	23/09/2024	Size	200mm x 6m (Spread 4m)
Common Name	Snow In Summer	Location	MacArthur Ave boundary South side
Botanical Name	<i>Melaleuca linariifolia</i>	Useful Life Expectancy	10-19 years
Quantity	1	Distance to Structure	N/A

Tree Protection Zone (TPZ)	2.4m from the centre of the stem (this is the necessary area of the trees root system to sustain a healthy viable specimen).
Structural Root Zone (SRZ)	2.47m from the centre of the stem (where there can be no excavation or severance of roots).

Health & Form

Fair health and fair to poor form with a squat structure. Canopy shape is asymmetrical with a bias to the South. Crown density, leaf colour and size, and tip growth extension are fair. Minor deadwood is noted.

Health & Safety

N/A

Environmental Considerations

The species is a native and is not listed as threatened or endangered under the nature conservation act and its regulations.

Infrastructure Considerations

It is proposed to construct a carpark located to the north of the subject's location. Given the subjects location, retention is not compatible with the proposed design as indicated in the carpark layout plan on page 33.

Recommendation

Remove tree and grind stump.

Priority

Medium

Rationale

The subjects location is not compatible with the proposed carpark design. Removal allows for the proposed design to be constructed.



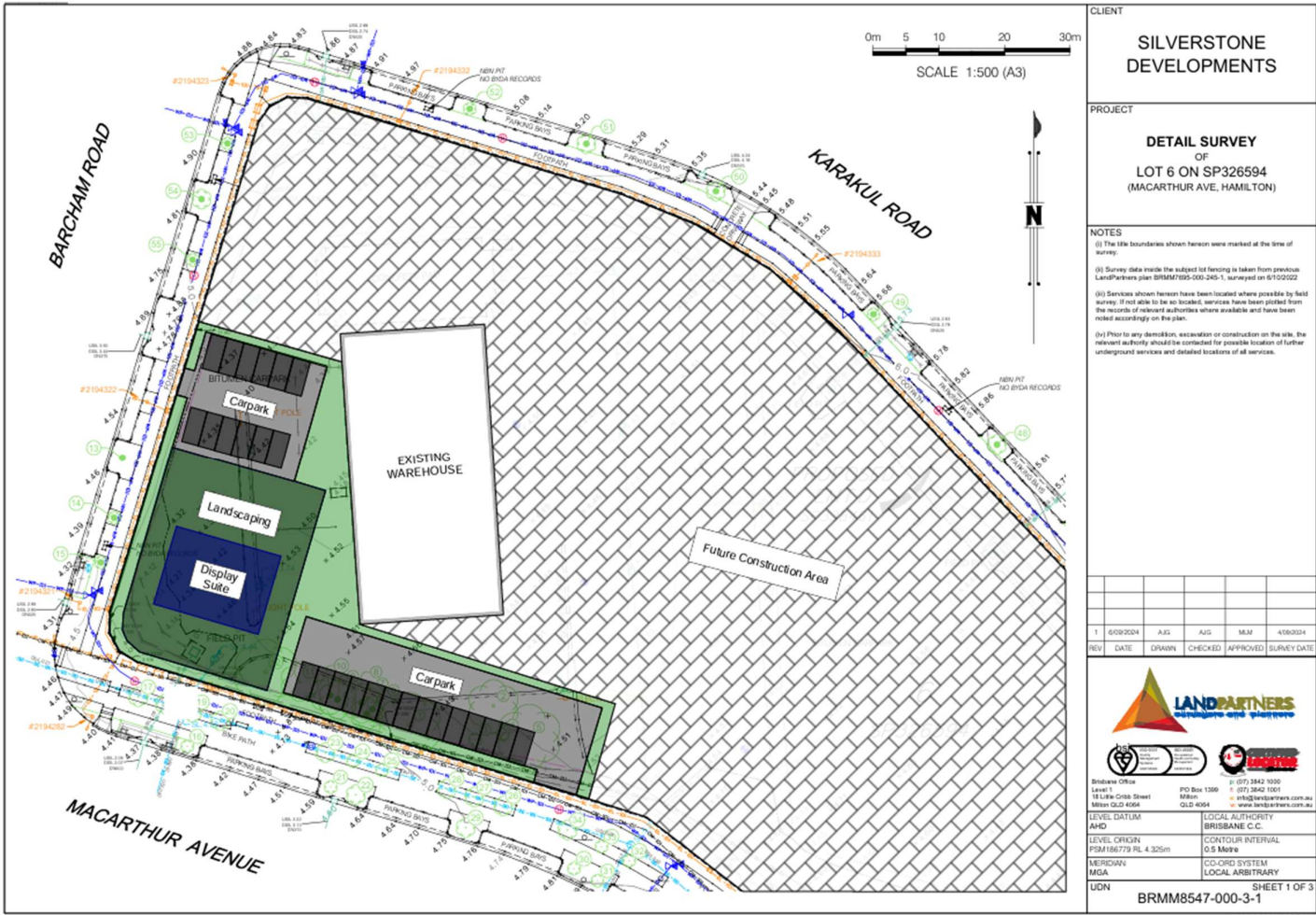
Photo 1: *Melaleuca linariifolia*



Photo 2: Sparse crown with tip dieback



Display Suite Carpark Layout Plan by Land Partners # BRMM8547-000-3-1 sheet 1 of 3



Classification and Tree Description

Age	
Young	Juvenile tree between 1 – 5 years
Early-mature	Tree is still growing (6 years to 15 years)
Semi-mature	Tree is still growing (over 15 years to 25 years, depending on the species)
Mature	Species has reached expected size
Senescent	Over mature (tree has reached its useful life expectancy) and in decline
Dead	Tree is dead

Appearance	
Excellent	Exceptional specimen. Crown full and balanced. Foliage is entire with good colour. Minimal or no pathogen damage.
Good	Crown is full (can be unbalanced). Foliage is entire with good colour. Minimal or no pathogen damage.
Fair	Tree has < 30% deadwood. Canopy may be unbalanced. Foliage with good colour, however may have some discolouration present. Minor pathogen damage present (typical for species in location).
Poor	Tree has >30% deadwood. Foliage may be discoloured or distorted and stress symptoms may be apparent that could lead to decline of tree.
Dead	Tree is dead.

Structure	
Excellent	Excellent branch attachment, no structural defects. Trunk sound. No damage to roots and good root buttressing present.
Good	Good branch attachment and or no minor structural defects. Trunk sound or minor damage. No damage to roots and or good buttressing.
Fair	Some minor structural defects and or minor damage to trunk. Bark may be missing & cavities could be present. Minor damage to roots.
Poor	Major structural defects and or trunk damage and or girdling or damaged roots that are problematic.
D.B.H.	Diameter at Breast Height, measured at between 1.4 and 1.9m above the ground.

Priority Classification	
Imminent Failure	This tree is a health and safety risk and could fail at any time. It is recommended that immediate action be taken to eliminate the associated risk to people and infrastructure. This tree will fail in an extreme weather event such as high winds or thunder storms.
High	This tree is likely to fail within a 6 month period, if exposed to extreme weather events such as high winds or thunder storms.
Medium	This tree may fail within a 6 to 12 month period. If exposed to extreme weather events such as high winds or thunder storms this tree may fail.
Low	This tree is unlikely to fail in the next 12 months. Remedial action may be taken to such as pruning to mitigate the risk to people or infrastructure.



Process Descriptions

Removal	Complete tree removal leaving stump as close as possible to ground level. Process will include chipping of all foliage limbs and timber and re-instatement of work site. Recommendation typically based on tree being assessed as representing a health and safety concern [Dead, dying, structurally unsound, unstable, poor form].
Remove and Grind	Complete tree removal to include grinding of stump to a depth of 75 millimetres unless otherwise specified. Process will include chipping of all foliage limbs and timber and reinstatement of work site. Stump site will be cleaned of all grinding debris and sawdust and backfilled with premium topsoil free from weeds.
General Pruning	Pruning process will include removal of broken, crossing, rubbing, diseased, stressed or dying branches or limbs with poor attachment. Additional work process will include pruning to define leaders, balance the crown, reduce the weight load, or clear the tree from obstructions. In summary, to rectify, as far as is possible, any structural defects and eliminate undesirable growth.
Canopy Lift / Raise	Pruning process will be restricted to raising of the tree's lower canopy to a height specified the defaulted parameters will be to provide 2.5 metres clearance from ground level. From time to time pruning requirements may be altered to accommodate various factors such as view, light penetration, vehicle thoroughfare etc and consulting arborist will advise accordingly.
Remedial Pruning	Pruning process will encompass crown restoration and remedial works where the tree has been previously lopped or otherwise damaged. Not feasible when tree has extensive decay and should only be considered when there is evidence of healthy regrowth. When performed correctly, the process of remedial pruning will take several years to complete.
Hanger Limb	Pruning process will be restricted to the removal of any hangers or dangerous/dead/dying limbs and will typically involve the removal of a single limb. In some instances, removal of an individual limb may be necessary to accommodate an obstruction and the consulting arborist will advise accordingly.
Directional Pruning	Pruning process will be restricted to pruning canopy away from buildings/service wires/property boundary and will typically be performed to avoid future growth in these areas [where necessary clean trunking of undesirable growth]. Where appropriate future growth will be directed away from obstruction selecting new leaders.
Boundary Pruning	Pruning process will involve pruning of tree back to tree owners' boundary. In every situation every effort should be made to obtain the relevant authorisation to perform pruning to Australian Standards and to avoid "lopping" limbs to the immediate boundary. As with directional pruning, optimum results will be achieved when it is feasible to eliminate undesirable growth and direct future growth. If authority to enter and work in neighbouring property is not forthcoming processes will be restricted to access on clients property and work standards will be appropriately comprised. Consulting arborist will duly advise client as appropriate.



General Terms

Australian Pruning Standard AS4373-2007	The Standard for Arborists, Tree workers, Government Departments, Property Owners and Contractors for defining uniform tree pruning procedures and practices, to reduce the risk of hazard development, branch failure, pathogen infection and premature tree death.
Australian Standard Protection of Trees on Development Sites AS 4970-2009	This Standard give guidance to horticulturists, arborists, architects, builders, engineers, land managers, landscape architects, contractors, planners, certifying authorities, building surveyors, those concerned with the care and protection of trees and all others involved in the management of trees and developments.
Deadwood	Removal of all major/significant deadwood and dead branches up to and including 30mm in diameter unless otherwise specified. Or Deadwood is a naturally occurring feature of most tree species and comprises dead or decaying branches within the canopy of a tree. Branches>30mm diameter overhang pedestrian or vehicular areas should be removed. Branches> 50mm diameter in a playground or similar should be removed.
Leader	Primary terminal shoot or trunk which is usually upright. It dominates a portion of the crown by suppressing lateral branches.
Lateral	A secondary or subordinate branch.
Lopping	Tree works to remove more than 50% of the tree canopy and/or structure including pruning which is not to the collar, resulting in exposed stubs. 'Lopping' is poor pruning practice and is contrary to Australian Standard Pruning of Amenity Trees 4373-2007. The unacceptable practice of cutting branches or stems between branch unions or at internodes on young trees. It is accepted that 'lopping' will shorten the length of a tree's life and may lead to the decline and ultimate death of a tree. Topping/heading back/lopping involves cutting back to a stub, bud, or a lateral branch not large enough to assume apical dominance. Severe heading causes branch dieback, decay and epicormic growth from the cut ends, resulting in a potentially dangerous situation once the sprouts become elongated and heavy. Topping or heading back is not recommended pruning practice.
Apical Dominance	Condition where the terminal buds inhibit growth and development of lateral buds on the same stem.
Foliage Removal	The amount of live wood and foliage that can be removed per season depends on the growth rate of the tree. For actively growing medium age trees, up to 20% of the foliage may be removed per season. More severe pruning slows root growth by shifting the root to shoot growth ratio. This adds significant stress to the tree. Heavy pruning also reduces carbohydrate reserves, making the tree less tolerant of insects, diseases, and drought stress. <i>(Ref: Colorado State University Master Gardener Program - Garden Notes #616 – Pruning Mature Shade Trees)</i>
Co-Dominant Stems/Tri-Dominant Stems	Originate from same position of the main stem (trunk) and grow to about the same diameter. Over time stems push on each other and cracks develop below the stems. If cracks form, the stems become a high risk for failure under low to moderate loading. Included Bark develops by being covered by the growing together of adjacent, vertically growing stems or branches, creating a weakened internal joint. Or Stems or trunks of about the same size originating from the same position from the main stem. When the stem bark ridge turns upwards, the union is strong; when the ridge turns inward, the union is weak, a point of failure in storm or windy swather conditions or where increasing weight causes undue stress on the defective union. (Australian Standard Pruning of Amenity Trees 4373-2007)
Epicormic Growth	Epicormic buds lie <u>dormant</u> beneath the bark, their growth <u>suppressed</u> by hormones from active shoots higher up the plant. Under certain conditions they develop into active shoots, such as when damage occurs to higher parts of the plant or light levels are increased following removal of nearby plants. Epicormic buds and shoots occur in many woody species, but are absent from many others, such as most <u>conifers</u> .
Nectria	Fungi most often encountered on decaying wood but some species can also occur as <u>parasites</u> of trees, especially fruit trees (for example <u>apple</u>) and a number of other hardwood trees. Some species are significant pests causing diseases such as apple canker.
Kino	A dark red to brown resin-like substance produced by some species of trees. Kino forms when living cells are injured and infected. <i>(Ref: A New Tree Biology Dictionary – Alex L. Shigo).</i>
Useful Life Expectancy	A guide or measure of tree life expectancy and how long a tree could be expected to be retained safely, and usefully, in normal circumstances [when not subject to abnormal or adverse conditions such as adverse or extreme weather, mechanical interference, property development or impact by machinery etc].



Tree Protection Zone (TPZ)

A TPZ is determined by setbacks calculated for each tree based on its age class, vigour class and crown spread (where necessary) and each tree fenced off to form an enclosure around the tree with the tree at its centre or may utilise an existing structure being retained such as a wall of fence.

The TPZ should be secured by a lockable gate to restrict access and the area identified with signage. The area of the TPZ should be mulched except where turfed and kept free of weeds. Where encroachment is required within the TPZ this should be done only with the approval of the project arborist.

Indicative Tree Protection Zone

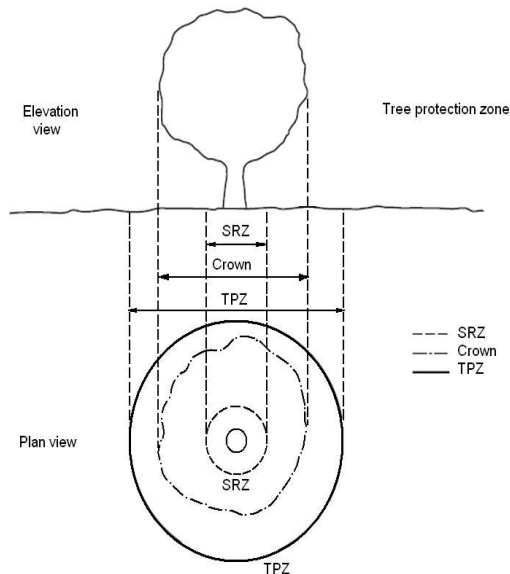


Figure 1: Balanced Canopy

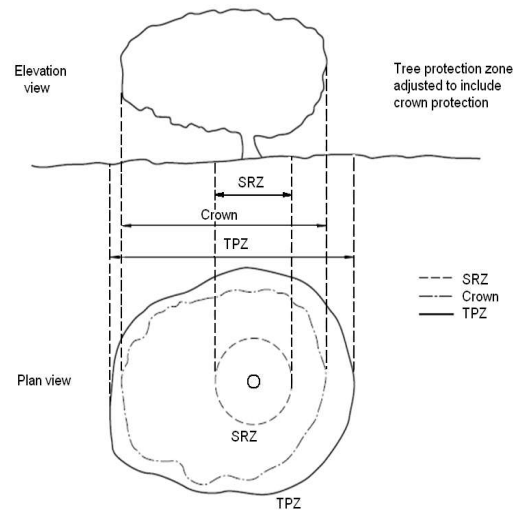
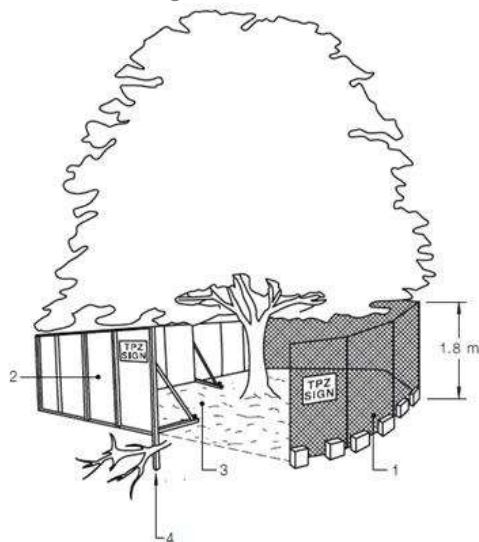


Figure 2: Unbalanced Canopy

Signage

Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from within the development site. The lettering on the sign should comply with AS 1319.

Indicative Protective Fencing



LEGEND:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil from entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Source: Australian Standard Protection of Trees on Development Sites AS 4970-2009



Structural Root Zone (SRZ) (AS 4970-2009)

The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright, so the entire profile (depth) of the root zone is included in the Structural Root Zone (SRZ). The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres.

This zone considers a tree's structural stability only, not the root zone required for a tree's vigour and long-term viability, which will usually be a much larger area.

The SRZ is the critical area required for tree stability and does not consider tree health, which will require a much larger area. While there are many factors that affect the actual size of the SRZ (e.g., tree heights, crown area, soil type, soil moisture, etc.), the area determined using the trunk diameter provides a general guide indicating where structural roots are likely to be located. Only thorough root investigation would show the actual location of these roots. Determine SRZ radius from the trunk diameter (measured immediately above the root buttress) using the following formula or Figure 1.

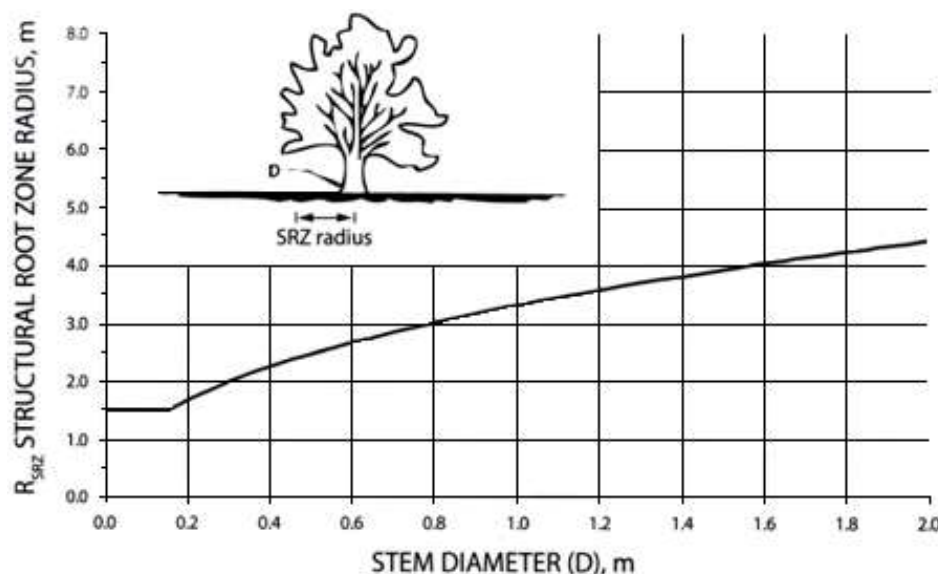
$$SRZ \text{ radius} = (D \times 50)^{0.42} \times 0.64$$

where

D = trunk diameter, in metres, measured above the root buttress

Note: The SRZ for trees with trunk diameters less than 0.15 metres will be 1.5 metres.

Figure 1: Structural Root Zone



The curve can be expressed by the following formula:

$$R_{SRZ} = (D \times 50)^{0.42} \times 0.64$$

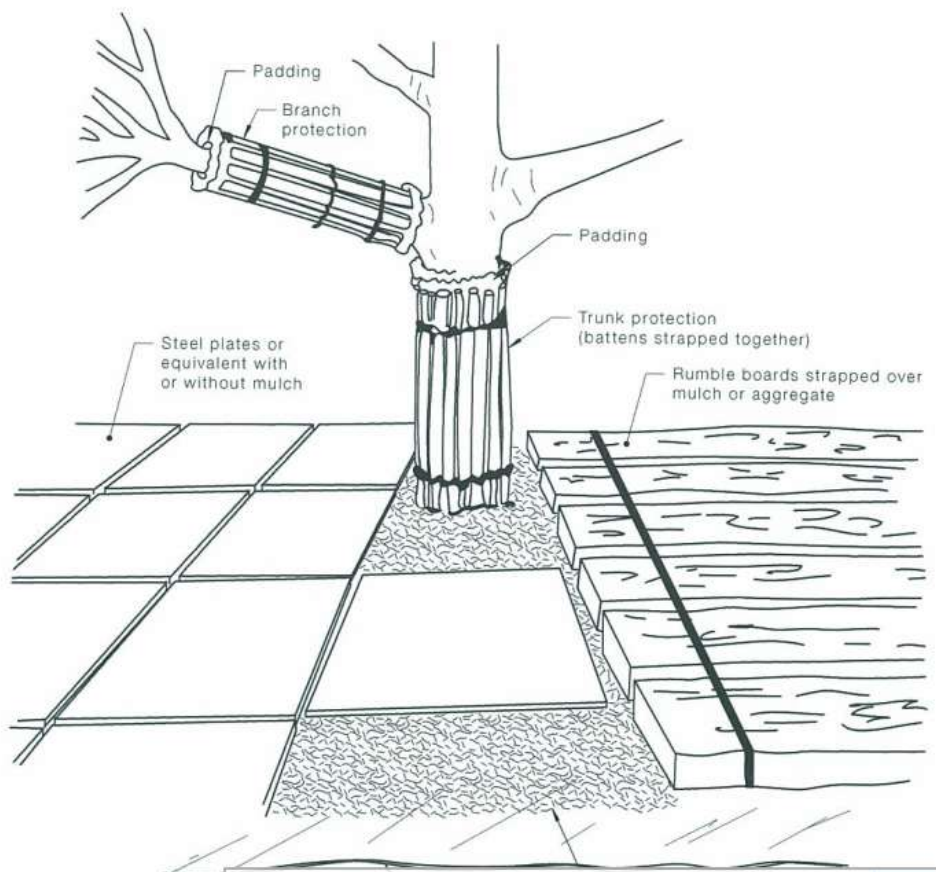
NOTES:

1. R_{SRZ} is the Structural Root Zone radius.
2. D is the stem diameter measured immediately above root buttress.
3. The SRZ for trees less than 0.15 metres diameter shall be 1.5 metres
4. The SRZ formula and graph do not apply to palms, other monocots, cycads, and tree ferns.
5. This does not apply to trees with an asymmetrical root plate.

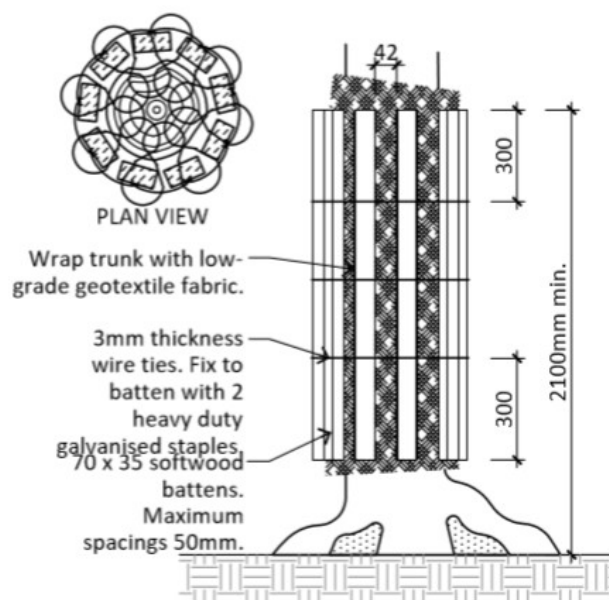
Source: Australian Standard Protection of Trees on Development Sites AS 4970-2009



Stem and Branch Protection



Source: Australian Standard Protection of Trees on Development Sites AS 4970-2009





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- NOTE:
- ❖ Tree identifications are sourced from numerous national and international publications as well as extensive field experience.
 - ❖ Pruning recommendations are in line with Australian Standard AS4373-2007 *Pruning of Amenity Trees*.