Arboricultural Impact Assessment
For
Proposed development at
120 Prince Alfred Parade, Newport NSW

Prepared for
Ella & Luke Miles

By
Michael Shaw
Diploma Horticulture (Arboriculture) AQF5

11 February 2022

Contents

1. Brief

1.1. I am requested by Corben Architects on behalf of Ella & Luke Miles (property owners) to identify and assess all trees at or near 120 Prince Alfred Parade, Newport that will be potentially affected by the proposed development, and to provide an arboricultural impact assessment which discusses relevant aspects of the proposed development's impact on existing trees.

2. Scope

2.1. This report focuses on trees within and close to the subject site that may be affected by the proposed development.

All trees were assessed visually from ground level in accordance with Mattheck and Breloer's Visual Tree Assessment methodology.

No excavation or invasive testing was conducted as a part of the visual tree assessment.

3. The proposed development

3.1. The proposed development is for the subdivision of the existing land, demolition of an existing residential structure and the construction of two residential structures and associated landscaping and infrastructure on the subdivided land.

The proposed development is located within the residential suburb of Newport in the Northern Beaches local government area.

Several existing trees at or near the site will be affected if the proposed development occurs as planned.

4. Site description

4.1. The subject site (120 Prince Alfred Parade, Newport) is a residential waterfront property.

Trees at the site are located mainly on the periphery of the subject property, in neighbouring properties, and on the adjacent Council reserve (Florence Park) and consist of a mixture of native and non-native, planted and self-sown mature and immature trees.

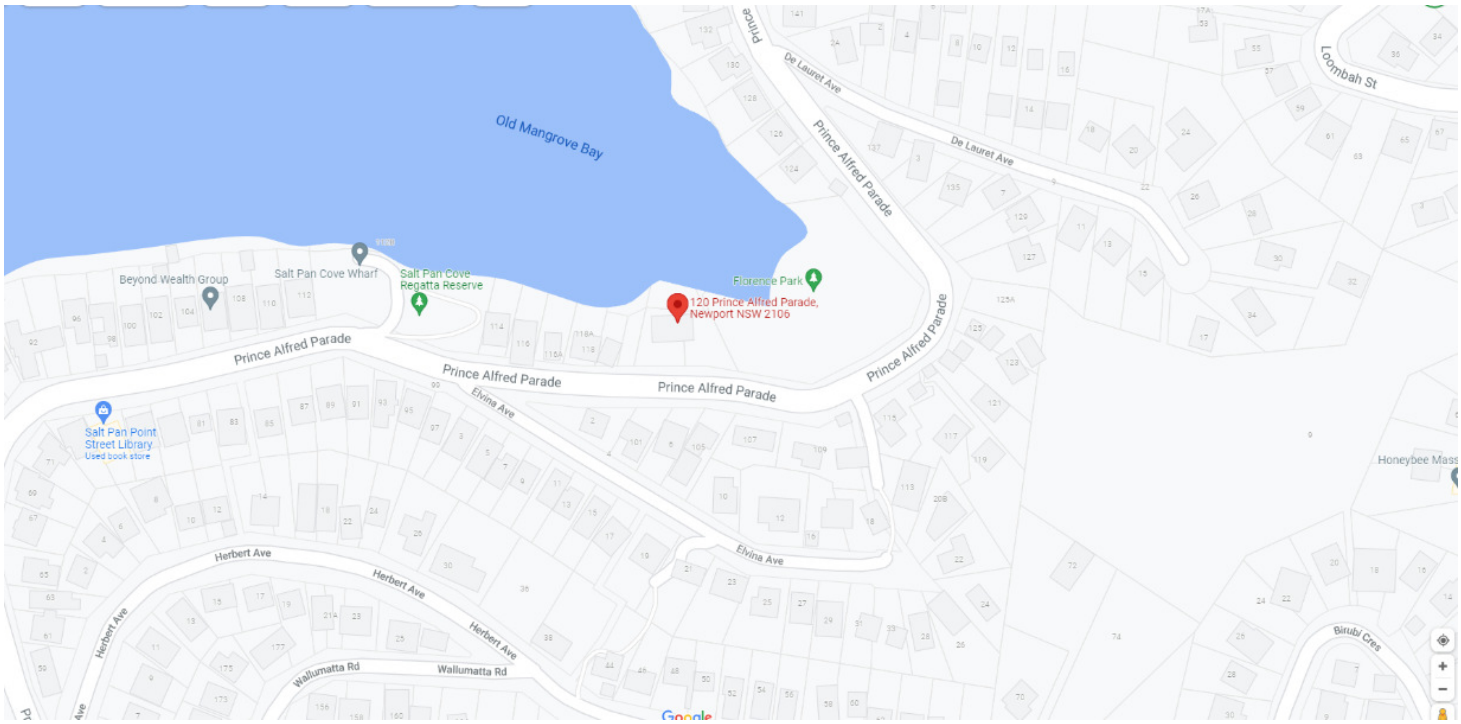
5. Site visit details

5.1. One site visit was made by the author on 06 October 2021 for the purposes of data collection and tree assessment for this document.

During this visit, tree location and other data was collected and assessments undertaken for the subject trees in relation to the proposed development.

The weather at the time of the site visit was fine and the effect of wind was negligible.

Site location (Google maps)



6. Main documents utilised

The following documents were provided for the author's information by Jaie Midei from Corben Architects,

- Design drawings Rev B (16 sheets), by Corben Architects, dated 04/02/2022
- Site survey by DP Surveying, dated 21/10/2021
- Driveway plan by Taylor Consulting 04/02/2022
- Driveway Sections by Taylor Consulting 04/02/2022

At the time of writing, hydraulic, drainage or other underground infrastructure design plans have not been provided and have therefore not been accurately considered in this assessment.

The effect that these design aspects will have on existing trees must be accurately considered and quantified when designs have been developed.

Other documents and information may have been provided, however the main ones used to assist the author with this assessment are listed above.

These documents were provided to the author in electronic format via email.

7. Methodology

7.1. All tree assessments were carried out utilising the following methods

- Visual Tree Assessment Method (VTA) (Mattheck and Breloer,)
- Tree AZ (Barrell)
- Significance and retention value were assessed using STARS (IACA 2010)
- No aerial inspections, root excavations or soil sampling were conducted as part of this assessment
- Tree identification was based on visual inspection of features available at the time of inspection. A complete taxonomical process of identification was not conducted; therefore, the identification of trees in this document represents the probable identity of the species.

7.2. Measurements and observations were taken using

- Positioning and data recording conducted using a Trimble Nomad 5 GPS PDA device.
- Binoculars and naked eye
- DBH (Diameter at Breast Height) was measured with a diameter tape or estimated at approx. 1.4 metres above existing levels
- Tree height and canopy spread was estimated or measured using a laser range finder and an inclinometer and/or based on surveyor's estimates

7.3. Data collection and encroachment calculation

All assessed and recorded trees have been identified with a number which corresponds with the number on the tree survey data table at Appendix 3 and its location at the subject site may be viewed on the aerial image at Appendix 4 Images.

The author attempted to locate the trees as accurately as possible by using Google Earth in conjunction with plan drawings and provided professional survey images, which were overlaid using the tools available in the Google Earth application. These images were placed manually, as accurately as possible and cross referenced with the location point data collected by the author and displayed on the Google Earth interface screen.

Measurements to the nearest TPZ/SRZ disturbance was measured using tools available in the Google Earth application and encroachment percentages were calculated using the "Proofdocs" TPZ Incursion Calculator which is available online.

Some existing trees which may be affected were not shown on the provided survey therefore, where considered relevant, these trees were placed manually as accurately as possible in the google earth application based on measurements, compass bearings and observations taken during the site visit.

Accuracy of location and calculations relating to these trees cannot be guaranteed.

8. Trees potentially affected by the proposed development

Discussion

8.1. Tree 1

Is a mature Hills weeping fig which is located within the fenced area near the south eastern corner boundary of the subject property.

Although it is within a fenced area which encloses the subject property, the survey indicates that this tree is located outside the subject property boundary and is within the reserve to the east of the subject property and is therefore a public tree.

Minimal activity or works are planned to occur within the Tree Protection Zone (TPZ) area of this tree and hence, no adverse effects are expected if works are managed sensitively and in consultation with an AQF5 arborist.

Proposed works within the TPZ area of this tree includes demolition of, and reinstallation of the new driveway which will be installed on existing soil levels, or suspended above existing soil levels.

Some pruning in the form of crown lifting is likely to be required to facilitate clear access for larger vehicles and plant to access the property during the demolition and construction phase of the development.

It will be necessary to gain the consent of council to conduct necessary pruning of this tree and pruning should be specified and conducted before any other works commence.

Minimal soil disturbance in the form of excavation or fill placement will occur within the TPZ area and the tree will therefore not be adversely affected if works are managed appropriately.

This tree may be protected and retained if protected by a tree protection zone (TPZ) which complies with Section 4 of AS4970-2009.

A physically fenced tree protection zone (TPZ) is to be established where practicable and certified before any works commence and shall remain in place until completion of the project.

Ground protection to protect the soil within the TPZ may be utilised as an alternative to erecting a fenced exclusion zone if the practicalities of the development process necessitates it.

The dimensions of the TPZ shall be to the dimensions specified at Appendix 3; Tree Survey Data Table and placement shall be as indicated at Appendix 4 Images.

Any works or activity proposed to occur within the TPZ other than works evident on the plans are to be conducted sensitively and in consultation with, or under direct supervision by an AQF5 consulting arborist.

No activity as specified at Section 10 of the report is to occur within the TPZ without written approval by an AQF5 arborist.

8.2. Tree 3

Is a mature Hills weeping fig which is located within the fenced area near the south eastern corner boundary of the subject property.

Although it is within a fenced area which encloses the subject property, the survey indicates that this tree is located outside the subject property boundary and is within the reserve to the east of the subject property and is therefore a public tree.

Minimal activity or works are planned to occur within the Tree Protection Zone (TPZ) area of this tree and hence, no adverse effects are expected if works are managed sensitively and in consultation with an AQF5 arborist.

Proposed works within the TPZ area of this tree includes demolition of, and reinstallation of the new driveway which will be installed on existing soil levels, or suspended above existing soil levels.

Minimal soil disturbance in form of excavation or fill placement will occur within the TPZ area and the tree will therefore not be adversely affected if works are managed appropriately.

Canopy pruning to provide clearance for proposed upper levels.

Pruning of the north western section of the canopy will be necessary to accommodate upper sections of the proposed new structure and branches to be removed to accommodate and provide adequate clearance from proposed structures should be specified and pruning conducted before other works commence on site.

Installation of pier supports for the suspended driveway

Activity within the TPZ shall be kept to the absolute minimum necessary to install the piers and excavation of the pier holes is to be conducted manually, under supervision by or in consultation with an AQF5 consulting arborist.

The location of each pier hole within the TPZ is to be marked on site and excavated by hand using a hand auger or similar to a depth of 600mm below existing levels.

If roots of up to 50mm in diameter are found within the hole, they are to be cut cleanly with a clean, sharp hand saw by the supervising arborist and the hole continued to the required depth.

Roots over about 50mm found within the hole may necessitate relocation of the hole to somewhere nearby until a hole can be excavated to the required depth without encountering any roots over about 50mm.

If excavation beyond 600mm in depth is necessary, it may be conducted with heavier plant or machinery, as long as appropriate ground protection is installed which will effectively spread the weight of the required plant on the soil within the TPZ.

This tree may be protected and retained if protected by a tree protection zone (TPZ) which complies with Section 4 of AS4970-2009.

A physically fenced tree protection zone (TPZ) is to be established where practicable and certified before any works commence and shall remain in place until completion of the project.

Ground protection to protect the soil within the TPZ may be utilised as an alternative to erecting a fenced exclusion zone if the practicalities of the development process necessitates it.

The dimensions of the TPZ shall be to the dimensions specified at Appendix 3; Tree Survey Data Table and placement shall be as indicated at Appendix 4 Images.

Any works or activity proposed to occur within the TPZ other than works evident on the plans are to be conducted sensitively and in consultation with, or under direct supervision by an AQF5 consulting arborist.

No activity as specified at Section 10 of the report is to occur within the TPZ without written approval by an AQF5 arborist.

8.3. **Tree 5**

Is a mature Hills weeping fig which is located within the fenced area near the south eastern boundary of the subject property.

Although it is within a fenced area which encloses the subject property, the survey indicates that this tree is located outside the subject property boundary and is within the reserve to the east of the subject property and is therefore a public tree.

This tree will experience a tree protection zone (TPZ) encroachment of 13.5% from soil disturbance and level changes necessary to install the nearest section of the proposed residential structure.

This is slightly over the 10% encroachment limit specified as acceptable in AS4970 however, figs are anecdotally well recognised as a very robust and vigorous species which can tolerate comparatively more disturbance than many other tree species and this characteristic, combined with the good health and vigour of this individual, and ensuring appropriate management of works proposed within the TPZ occurs, indicates that this tree may be retained with minimal adverse effects likely to be experienced.

The proposed new driveway section within the TPZ area will be predominantly suspended above existing levels on individually sited pier supports and if this aspect of works is conducted sensitively, in consultation with an AQF5 arborist, adverse effects are unlikely to be experienced by the tree.

Canopy pruning to provide clearance for proposed upper levels.

Significant pruning of the north western section of the canopy will be necessary to accommodate upper sections of the proposed new structure and branches to be removed to accommodate and provide adequate clearance from proposed structures should be specified and pruning conducted before other works commence on site.

Installation of pier supports for the suspended driveway

Activity within the TPZ shall be kept to the absolute minimum necessary to install the piers and excavation of the pier holes is to be conducted manually, under supervision by or in consultation with an AQF5 consulting arborist.

The location of each pier hole within the TPZ is to be marked on site and excavated by hand using a hand auger or similar to a depth of 600mm below existing levels.

If roots of up to 50mm in diameter are found within the hole, they are to be cut cleanly with a clean, sharp hand saw by the supervising arborist and the hole continued to the required depth.

Roots over about 50mm found within the hole may necessitate relocation of the hole to somewhere nearby until a hole can be excavated to the required depth without encountering any roots over about 50mm.

If excavation beyond 600mm in depth is necessary, it may be conducted with heavier plant or machinery, as long as appropriate ground protection is installed which will effectively spread the weight of the required plant on the soil within the TPZ.

This tree may be protected and retained if protected by a tree protection zone (TPZ) which complies with Section 4 of AS4970-2009.

A physically fenced tree protection zone (TPZ) is to be established where practicable before any works commence and shall remain in place until completion of the project.

The dimensions of the TPZ shall be to the dimensions specified at Appendix 3; Tree Survey Data Table and placement shall be as indicated at Appendix 4 Images.

Ground protection to protect the soil within the TPZ may be utilised as an alternative to erecting a fenced exclusion zone if the practicalities of the development process necessitates it.

Any works or activity proposed to occur within the TPZ are to be conducted sensitively and in consultation with, or under direct supervision by an AQF5 consulting arborist.

No activity as specified at Section 10 of the report (with the exception of works shown on the plans) is to occur within the TPZ without written approval by an AQF5 arborist.

8.4. Trees 2, 4, 6 and 7

Are various tree species as detailed at Appendix 3 *Tree survey and data table*, which are all located on the reserve to the east of the subject property boundary.

These trees are unlikely to be affected by any aspect of proposed works on the subject property due to their location in soil approximately 500mm below levels on subject property.

Therefore, roots from these trees are unlikely to extend beyond the low brick retaining wall which separates soil levels in reserve and the subject property.

8.5. **Trees 13,14,15,16,17,18 and 19**

Are various tree species as detailed at Appendix 3 *Tree survey and data table*, which are all located directly within, or too close to proposed works to be retained.

It will be necessary to remove all of these trees if the development proceeds as planned due to direct conflict with, or major and unsustainable encroachment by aspects of the proposed development.

8.6. **Tree 20**

Is a semi mature cabbage palm which is located among a mass of unprotected lilly pillies (less than 5m in height) which currently form a screen planting at the Alfred Road frontage of the property.

At the time of the site visit, this palm was less than 5 metres in height and thus exempt from protection.

This young palm is likely to be disturbed and adversely affected by the practicalities of the demolition and construction process nearby.

It will be necessary to remove or relocate this palm if the development proceeds as planned.

All other recorded trees not specifically mentioned here will be unaffected by the proposed development if appropriately protected.

9. General Tree Protection Instructions

All other trees not listed specifically here will not be affected by the proposed development if protected in accordance with AS4970-2009.

Basic tree protection measures have been recommended in this document however, more comprehensive and detailed tree protection specifications may be mandated by the consenting authority in the form of a tree protection management plan which is to be provided by an AQF5 arborist in cooperation with the project manager.

All tree protection measures must be installed before any phase of development related activity occurs (including demolition).

Tree protection measures must be assessed and certified in writing by an AQF5 consulting arborist with a sufficient time allowance to make physical adjustments to protection measures in order to ensure efficacy of tree protection before any works commence.

Any soil disturbance in the form of trenching or fill placement or tunnelling for the installation of infrastructure including but not limited to pipes for communications, electrical, drainage, water or sewer must be considered in relation to retained trees and advice shall be sought from an AQF5 consulting arborist if any infrastructure as described above is proposed to be installed within the TPZ radius for any tree to be retained.

Ground protection to protect the soil within the TPZ may be utilised as an alternative to erecting a fenced exclusion zone if the practicalities of the development process necessitates it.

If ground protection is used as an alternative to protective fencing, the ground surface within the TPZ is to be protected in accordance with Section 4.5.3 of AS4970 and a thick (200-300mm) layer of wood chip mulch is to be placed on the ground within the TPZ and load spreading plates, rumble boards or heavy timber planking is to be placed on top of the mulch and strapped together to prevent movement so as to spread the load and to prevent compaction of the soil.

The level of soil protection and materials to be used within the TPZ will vary depending on the plant proposed to be utilised and specific protection measures will need to be discussed and agreed upon in writing by the project manager and an AQF5 qualified arborist before works commence.

10. Tree protection zone information

- TPZ- (Tree protection zone) the tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

- SRZ- (Structural root zone) The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree.

- Any trees recorded within the scope of this assessment that are to be retained shall be protected by a physical TPZ exclusion zone to the radius from the trunk calculated in accordance with section 4 of AS 4970-2009 Protection of Trees on Development Sites (Provided at Appendix 3) Tree survey data table) and in consultation with the project arborist.

- It is strongly recommended that a copy of this standard is obtained by the project manager as a reference before any work commences on site.

- Tree protection zones shall be established in accordance with Section 4 of AS 4970-2009 before commencement of any other demolition or construction work. This will include trunk, branch and ground protection if considered necessary by the project arborist and also placement of appropriate and compliant TPZ signage to the physical TPZ fence.

- The TPZ shall remain until the completion of all demolition and construction related activity.

- Any pruning and tree works recommended are to be conducted by a certificate 3 (minimum) qualified and experienced arborist and work is to be conducted according to AS4373: Pruning of Amenity Trees.

- Consent to prune trees may be required from the tree owners and Council.

- Establishment and erection of tree protection zone and signage should be inspected and certified by the project arborist to ensure compliance with the standard.

- Unless approved by the project arborist beforehand, no activity as detailed in section 4.2 of AS 4970-2009 Protection of Trees on Development Sites and Section 10 of this document is to occur within the TPZ.

10.1. Activities prohibited within the Tree Protection Zone

- Modification of existing soil levels
- Excavations and trenching
- Cultivation of the soil
- Mechanical removal of vegetation
- Soil disturbance
- Movement of natural rock
- Storage of materials, plant or equipment
- Erection of site sheds
- Affixing of signage or hoarding to the trees
- Preparation of building materials
- Disposal of waste materials and chemicals
- Lighting fires
- Refuelling
- Movement of pedestrian or vehicular traffic
- Temporary or permanent location of services, or the works required for their installation
- Any other activities that may cause damage to the tree.

References

- Northern Beaches Council DCP Section E1 Preservation of Trees or Bushland Vegetation
- Standards Australia (2009) “AS4970: Protection of trees on development sites”
- Standards Australia (2007) “AS4373: Pruning of Amenity Trees”
- http://www.treetec.net.au/TPZ_SRZ_DBH_calculator.php
- http://www.proofdocs.com/arborist_report_template/tpz_incursion_calculator/
- Mattheck, C.,Breloer, H (1994) The Body Language of Trees- A handbook for failure analysis . HMSO, London.

Qualifications and experience (Michael Shaw)

Practising AQF level 5 consulting arborist from 2009 - present

AQF level 5 Diploma of Horticulture (Arboriculture)

Licensed QTRA practitioner (quantitative tree risk assessment)

Licensed VALID Tree Risk assessment practitioner April 2021

ISA Tree risk assessment qualification (TRAQ) October 2013

Senior Tree Risk Assessment Officer (Central Coast Council) Sep 2015- Dec 2017

Part time contractor as a Tree Management Officer at Lane Cove, Strathfield and Hornsby Councils between 2013-2015

Tree Assessment and Vegetation Management Officer Port Stephens Council from September 2009 – Dec 2011

ISA conference Canberra 2017

VTA (visual tree assessment) workshop March 2011 and March 2013

ISA 87th annual Conference delegate, Parramatta NSW July 2011.

Matheny & Clark “Arboriculture” Seminar. Melbourne November 2009

Specialising in arboriculture and tree assessment from Feb 2008

Certificate 3 Horticulture (Parks and gardens)

Working in horticultural industry from April 2004

Appendix 1 Tree AZ

Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species

Z1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure

Z4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e. poor anchorage, increased exposure, etc

Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people

Z7	Excessive, severe and intolerable inconvenience to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. dominance, debris, interference, etc
Z8	Excessive, severe and intolerable damage to property to the extent that a locally recognised court or tribunal would be likely to authorise removal, i.e. severe structural damage to surfacing and buildings, etc

Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population

Z9	Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorisation hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

A

Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category A1 trees that are already large and exceptional or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorisation hierarchy and should be given the most weight in any selection process.

Appendix 2 Landscape significance and tree retention determination

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

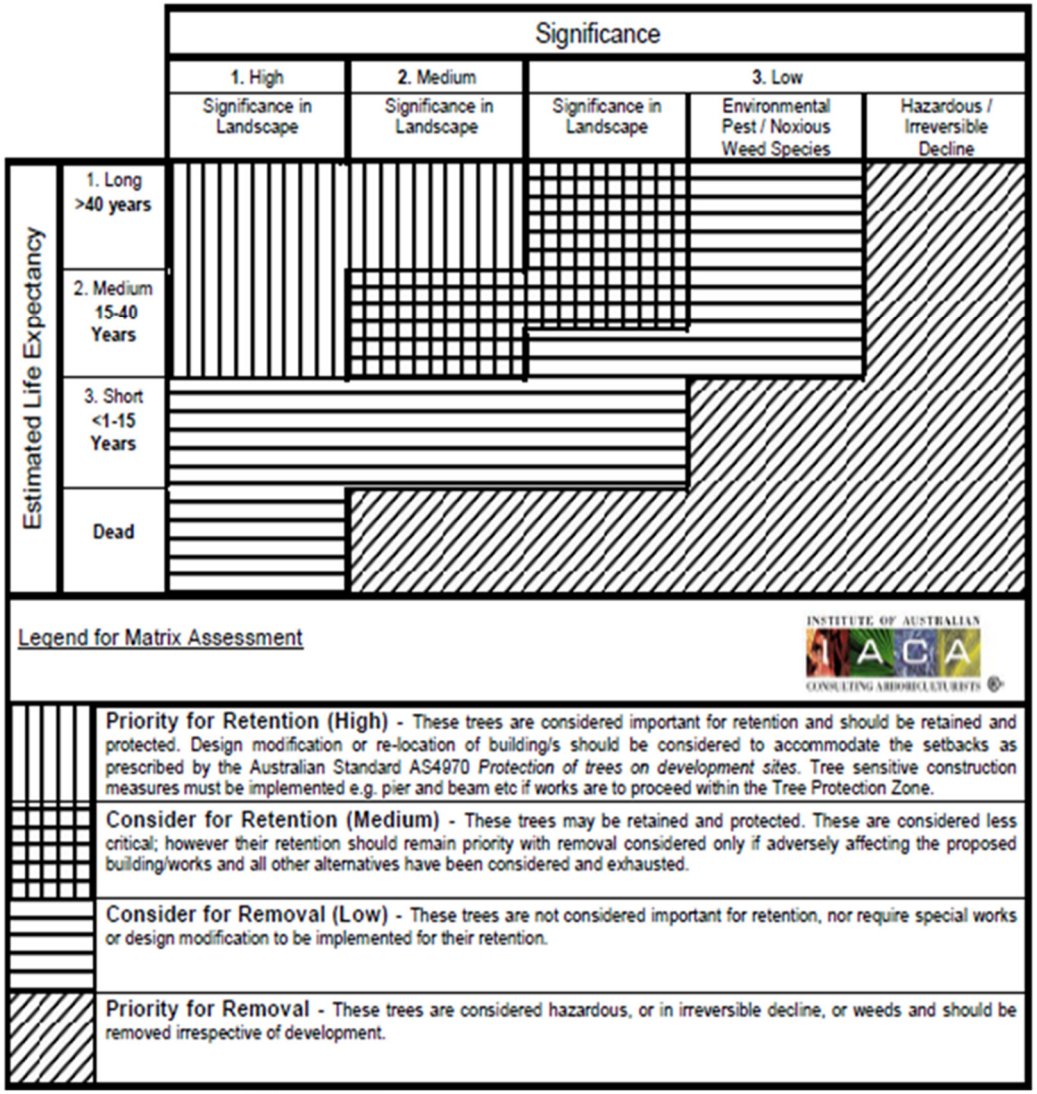
Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

Table 1.0 Tree Retention Value - Priority Matrix.



Appendix 3 Tree survey data table

Significantly affected trees requiring removal or trees proposed for removal in red text

Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
1	*Ficus microcarpa var. hillii (Hills weeping fig)*	35 40 1m 90cm_15m_3.9m	28x25	Mature	Medium 15-40 years	High	High	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Within fenced area but outside property boundary on public reserve.
2	*Jacaranda mimosifolia (Jacaranda)*	30cm_3.6m_2.1m	12x8	Mature	Short 5-15 years	Low	Low	Fair(30-50% live foliage)	"Z10 Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc"	Suppressed growth (significant). Suppressed by nearby dominant canopy. Major phototrophic assymetry towards east due to suppression by dominant ficus canopies. Within fenced area but outside property boundary on public reserve.
3	*Ficus microcarpa var. hillii (Hills weeping fig)*	45 45 90 90 80 1m_15m_4m	25x25	Mature	Medium 15-40 years	High	High	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Within fenced area but outside property boundary on public reserve.

Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
4	*Araucaria heterophylla (Norfolk Island pine)*	85cm _10.2m_3.2m	30x15	Mature	Medium 15-40 years	High	High	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Within fenced area but outside property boundary on public reserve. Unlikely to be affected by any aspect of the preliminary design due to location in soil approximately 500mm below levels on subject property. Therefore, roots from this tree are unlikely to extend beyond the low brick retaining wall which separates soil levels in reserve and the subject property.
5	*Ficus microcarpa var. hillii (Hills weeping fig)*	1m 1m_15m_4m	25x25	Mature	Medium 15-40 years	High	High	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Within fenced area but outside property boundary on public reserve. Significantly overhangs existing structure by at least 10m from a height of 6m.

Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
6	*Ficus microcarpa var. hillii (Hills weeping fig)*	100cm _12.0m_3.4m	22x20	Mature	Short 5-15 years	Medium	Low	Poor(< 30% live foliage)	"Z4 Dead, dying, diseased or declining"	Located on public reserve. Very sparse canopy. Located in soil approx 500mm below paved levels on subject property. Unlikely to be affected by any aspect of the preliminary design due to location in soil approximately 500mm below levels on subject property. Therefore, roots from this tree are unlikely to extend beyond the low brick retaining wall which separates soil levels in reserve and the subject property.

Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
7	*Ficus microcarpa var. hillii (Hills weeping fig)*	150cm _15.0m_4.0m	20x20	Mature	Short 5-15 years	Medium	Low	Poor(< 30% live foliage)	"Z4 Dead, dying, diseased or declining"	Located on public reserve. Very sparse canopy. Located in soil approx 500mm below paved levels on subject property. Unlikely to be affected by any aspect of the preliminary design due to location in soil approximately 500mm below levels on subject property. Therefore, roots from this tree are unlikely to extend beyond the low brick retaining wall which separates soil levels in reserve and the subject property.
8	*Avicennia marina (grey mangrove)*	15cm_2.0m_2.0m	6x4	Mature	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Located on tidal flats adjacent to subject property. Not affected by design if appropriately protected.
9	*Casuarina glauca (Swamp she oak)*	25cm_3.0m_2.0m	10x6	Mature	Long >40 years	Low	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Not affected by design if appropriately protected.

Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
10	*Agonis flexuosa (Willow myrtle)*	100cm _12.0m_3.4m	8x8	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Not affected by design if appropriately protected.
11	*Cupressus sp (Cypress)*	20 15cm_3m_2m	6x4	Mature	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Two trunks from base. Not affected by design if appropriately protected.
12	*Cupressus sp (Cypress)*	20 15cm_3m_2m	6x4	Mature	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Two trunks from base. Not affected by design if appropriately protected.
13	*Cupressus sp (Cypress)*	40 25cm_5.6m_2.5m	10x6	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Within, or too close to proposed construction footprint. Removal necessary if the design proceeds as planned.

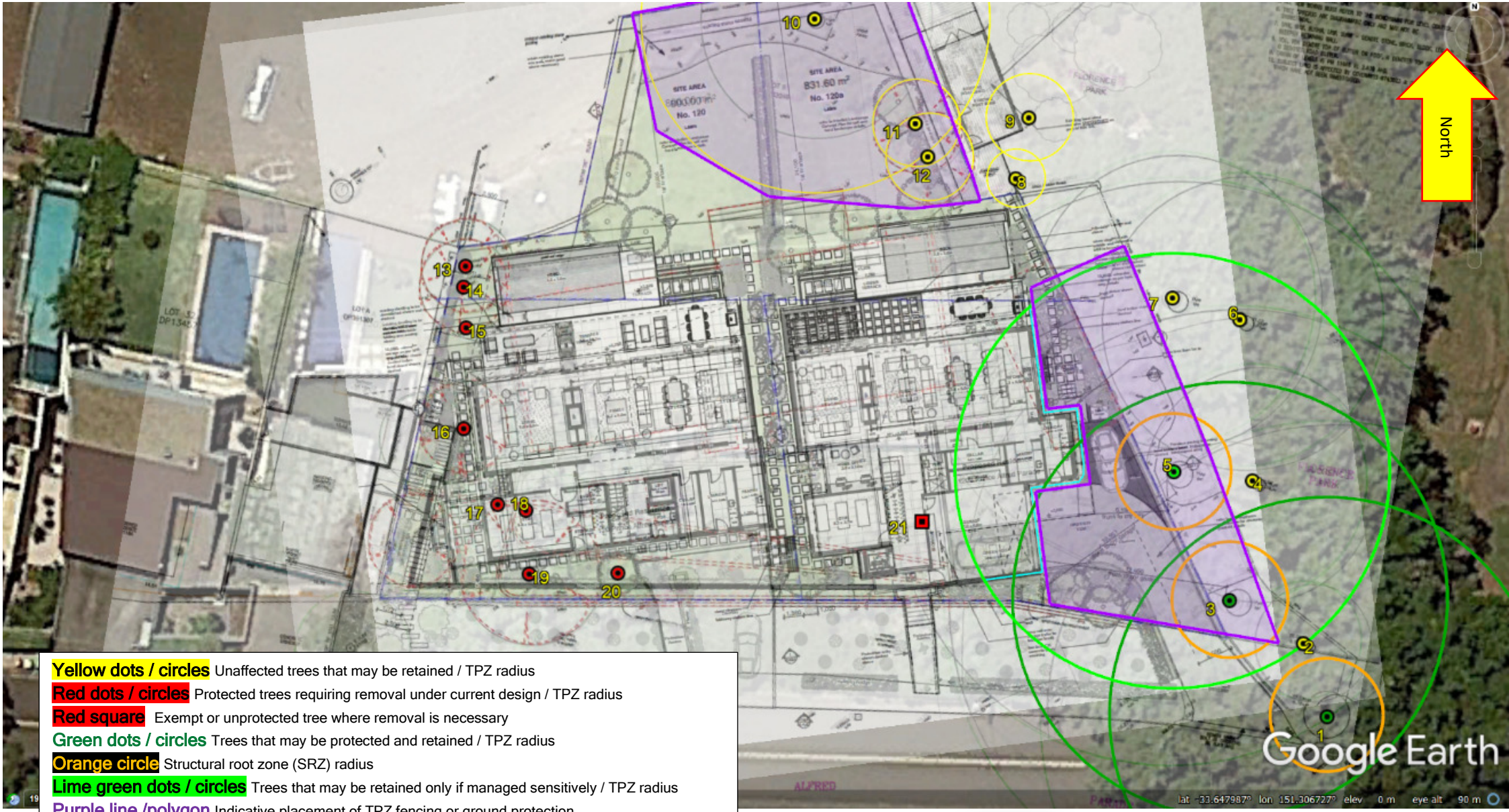
Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
14	*Cupressus sp (Cypress)*	40cm_4.8m_2.4m	9x5	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Within, or too close to proposed construction footprint. Removal necessary if the design proceeds as planned.
15	*Murraya paniculata (Orange jessamine)*	Multiple leaders from base,estimated diameter at base,20cm_2.4m_2m	5x5	Mature	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	"Z1 Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc"	Located in retained garden bed in soil approximately 400mm above paved levels near existing house. Within, or too close to proposed construction footprint. Removal necessary if the design proceeds as planned.
16	*Schinus molle (peppercorn tree)*	30cm_3.6m_2.1m	8x6	Mature	Medium 15-40 years	Low	Low	Fair(30-50% live foliage)	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	Located in soil approx 1m above ground levels at existing house. Within, or too close to proposed construction footprint. Removal necessary if the design proceeds as planned.
17	*Dead stump*									

Michael Shaw Consulting Arborist

Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
18	*Ficus coronata (sandpaper fig)*	25cm_3.0m_2.0m	8x6	Young mature (mature but still young)	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Located in retaining walled garden bed approx 1.5m above lower soil levels. Within, or too close to proposed construction footprint. Removal necessary if the design proceeds as planned.
19	*Ficus sp*	85cm _10.2m_3.2m	14x12	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	DBH measured below junction at 1m. Located on second level terrace retained soil approx 4m above lower ground levels. Within, or too close to proposed construction footprint. Removal necessary if the design proceeds as planned.
20	*Livistona australis (Cabbage tree palm)*	20cm_4m_2m	4.5x3	Young mature (mature but still young)	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	A contiguous mass of mainly lilly pillies exist on this level and have not been individually assessed as they have all been lopped to approximately 4m and are hence, under 5m in height and exempt from protection.

Tree ID	Botanical and common name	DBH cm / TPZ m / SRZ m	Height x radial canopy spread m	Age	Estimated life expectancy	Landscape significance (STARS)	Retention value (STARS)	Vigour and health (% of live canopy)	Tree AZ	Features/Comments
21	*Phoenix roebelenii (Pygmy date palm)*	20cm_5m_2m	4x4	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	"Z3 Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc"	Exempt from protection. Within, or too close to proposed construction footprint. Removal necessary if the design proceeds as planned.

Appendix 4 Images (Tree protection plan / Google Earth image with plans and tree locations overlaid)



Yellow dots / circles Unaffected trees that may be retained / TPZ radius
Red dots / circles Protected trees requiring removal under current design / TPZ radius
Red square Exempt or unprotected tree where removal is necessary
Green dots / circles Trees that may be protected and retained / TPZ radius
Orange circle Structural root zone (SRZ) radius
Lime green dots / circles Trees that may be retained only if managed sensitively / TPZ radius
Purple line /polygon Indicative placement of TPZ fencing or ground protection
Blue polygon area affected by encroachment or soil disturbance.

Michael Shaw Consulting Arborist

This page intentionally left blank