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In Collaboration with



Arboricultural Impact Assessment For Proposed development at 50 Carawa Road Cromer NSW Meticon Job number 716255

Prepared for
Mrs & Mr Skalic

By
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Diploma Horticulture (Arboriculture) AQF5

30 September 2021

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1. Brief

- 1.1. I am requested by Metricon, on behalf of Mrs & Mr Skalic (property owners) to identify and assess all trees at or near 50 Carawa Road Cromer 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 demolition of an existing residential structure and the construction of a replacement residential structure and associated landscaping.

The proposed development is located within the residential suburb of Cromer 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 (50 Carawa Road Cromer) is a residential property.

Potentially affected trees at the site are all located within the eastern neighbouring property 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 21 September 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 Julian Brady from Site Design Studios,

- Job number 716255 Design drawings Rev "G" (14 sheets), by Metricon, dated 16/07/2021
- Site survey by Intrax, dated 27/08/2019

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 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.

No access was available to these trees so the measurements are estimates based on what was visually available from vantage points within the subject property.

8. Trees potentially affected by the proposed development

Discussion

8.1. Tree 3

Is a mature camellia which is located on the eastern neighbouring property, near the shared boundary fence.

Based on the current design, tree removal is necessary due to an unsustainable 19% tree protection zone (TPZ) encroachment as a result of the proposed excavation at the property boundary, and removal of this tree this will be subject to both the owner's consent and ultimately Council's consent being provided, as part of DA determination process.

If this tree is to be retained, redesign will be necessary to achieve 10% or less, total encroachment to this tree's TPZ area.

The encroachment can be reduced or eliminated by reducing the amount of soil disturbance and level changes proposed to occur within the calculated TPZ.

8.2. Tree 4

Is a mature pittosporum which is located on the eastern neighbouring property, near the shared boundary fence.

Based on the current design, tree removal is necessary due to an unsustainable 39% tree protection zone (TPZ) encroachment as a result of the proposed excavation at the property boundary, and removal of this tree this will be subject to both the owner's consent and ultimately Council's consent being provided, as part of DA determination process.

If this tree is to be retained, redesign will be necessary to achieve 10% or less, total encroachment to this tree's TPZ area.

The encroachment can be reduced or eliminated by reducing the amount of soil disturbance and level changes proposed to occur within the calculated TPZ.

8.3. Tree 4A

Is a mature camellia which is located on the eastern neighbouring property, near the shared boundary fence.

This tree was not shown on the survey and its position has been estimated based on observations and measurements taken on site.

This tree will experience a sustainable 9.5% tree protection zone (TPZ) encroachment from proposed soil level changes (excavation) associated with installation of the proposed structure.

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

The existing dividing fence will adequately serve as a TPZ fence and no other protection is necessary.

8.4. Tree 5

Is a mature orange jessamine which is located on the eastern neighbouring property, near the shared boundary fence.

Based on the current design, tree removal is necessary due to an unsustainable 19.5% tree protection zone (TPZ) encroachment as a result of the proposed excavation and installation of a retaining wall at the property boundary, and removal of this tree this will be subject to both the owner's consent and ultimately Council's consent being provided, as part of DA determination process.

If this tree is to be retained, redesign will be necessary to achieve 10% or less, total encroachment to this tree's TPZ area.

The encroachment can be reduced or eliminated by reducing the amount of soil disturbance and level changes proposed to occur within the calculated TPZ.

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.

Sitedesign Studios contact details

For all matters regarding trees please contact;

Julian Brady (Registered Landscape Architect)

Telephone 0417685846

Email julian@sdstudios.com.au

Note: Julian manages Landscape Design & Arboriculture Services for all Metricon Projects. Please contact Julian for any questions regarding this report.

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.

		Significance				
		1. High Significance in Landscape	2. Medium Significance in Landscape	3. Low Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					
Legend for Matrix Assessment						
		Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.				
		Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.				
		Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.				
		Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.				



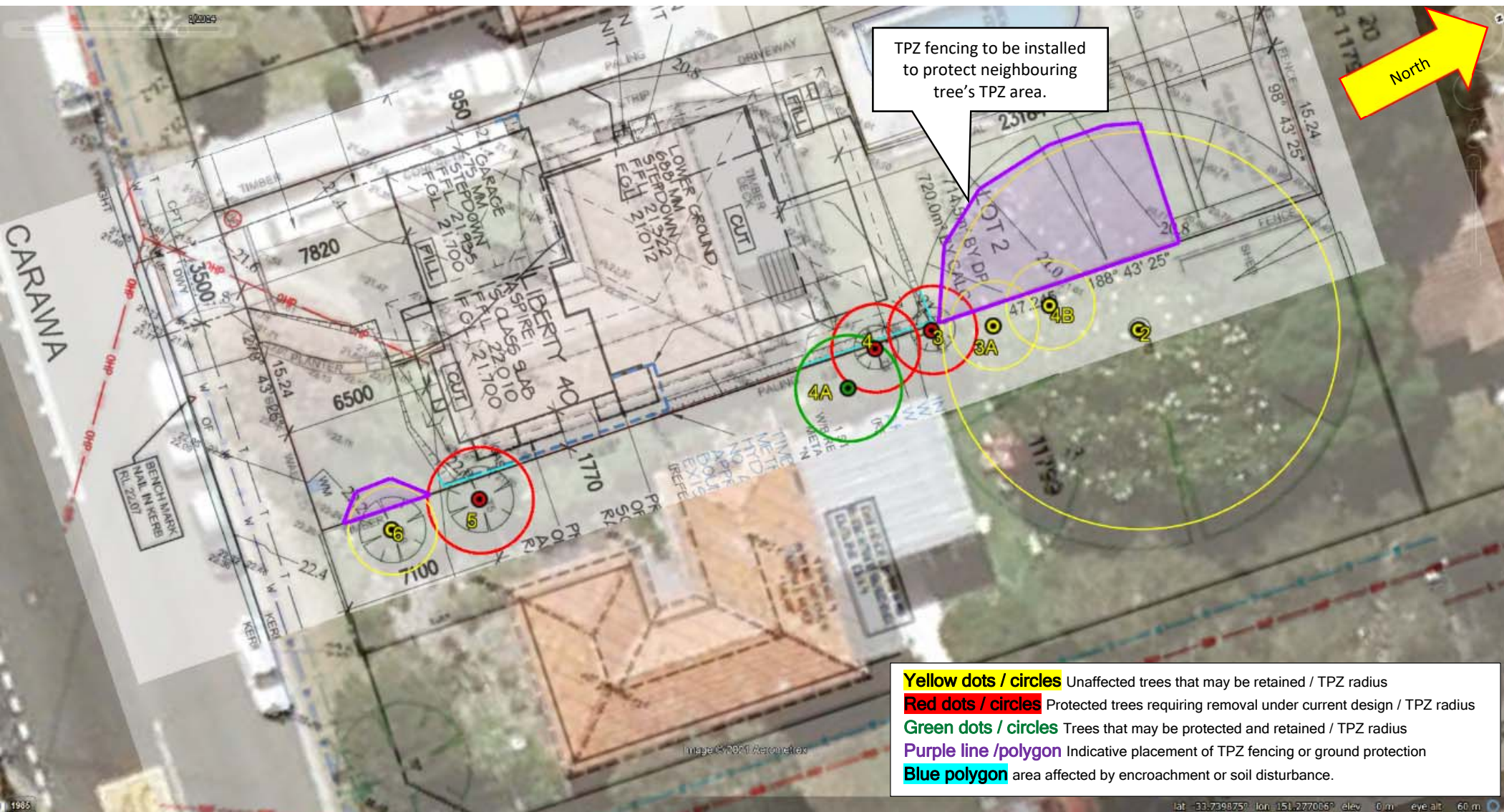
Appendix 3 Tree survey data table

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
2	<i>Magnolia grandiflora</i> (bull bay magnolia)	75cm_9.0m_3.0m	14x14	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Neighbouring tree
3	<i>Camellia japonica</i> (Japanese camellia)	10cm_2.0m_2.0m	4x2	Mature	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Neighbouring tree
3A	<i>Ficus benjamina</i> (weeping fig)	Multiple leaders from below, 1m, estimated diameter at base, 15cm_2m_2m	4x2	Young	Long >40 years	Low	Medium	Good(80-100% live foliage)	"Z1 Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc"	Not recorded on provided survey. Neighbouring tree. Young specimen of very vigorous species. potential for infrastructure conflict as tree grows.
4	<i>Pittosporum undulatum</i> (sweet pittosporum)	15cm_2.0m_2.0m	6x3	Mature	Short 5-15 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Neighbouring tree
4A	<i>Camellia japonica</i> (Japanese camellia)	20cm_2.4m_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	Not recorded on provided survey. Neighbouring tree

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
4B	<i>Pittosporum undulatum</i> (sweet pittosporum)	10cm_2.0m_2.0m	3x1.5	Semi mature (not quite 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"	Not recorded on provided survey. Neighbouring tree
5	<i>Murraya paniculata</i> (Orange jessamine)	10 10 10 10cm_2.4m_2m	5x3	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Neighbouring tree
6	<i>Magnolia sp</i>	Multiple leaders from base,estimated diameter at base,10cm_2m_2m	4x3	Mature	Short 5-15 years	Low	Low	Average(50-80% live foliage),Deciduous (reduced foliage)	"Z1 Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc"	Neighbouring tree

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



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