Arboricultural Impact Assessment
For
Proposed development at
60-64 Showground Road Gosford NSW

Prepared for
CHP Fund

By
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Diploma Horticulture (Arboriculture) AQF5

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Contents

1. Brief

1.1. I am requested by Harrison Robinson from CHP Fund to identify and assess all trees at or near 60-64 Showground Road Gosford 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 existing single storey residential apartment structures and for the construction of an integrated medical office building and specialist disability accommodation.

3.2.

The proposed development is located within the residential suburb of Gosford in the Central Coast 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 (60-64 Showground Road Gosford) consists of single storey, residential, units.

Trees at the site are located mainly on the periphery of the subject property, and in neighbouring properties, 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 July 2022 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 raining 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 Harrison Robinson from CHP Fund,

- Design drawings (25 sheets), by Elevation Architecture, dated 27/01/2022
- Site survey by Bissett & Wright dated 19/05/2021

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 1

Is a mature cheese tree which is located on the southern neighbouring property, hard up against the existing colorbond dividing fence.

This tree is situated in soil which is approximately 600mm above soil levels on the subject property and its roots will only to extend from its location in the neighbouring property into the small garden bed which is located along the southern boundary of the subject property.

Roots from this neighbouring tree are likely to be present within the small garden bed on the subject property which contains soil to a distance of about 500mm from the existing fence.

If the development proceeds as planned, it will be necessary to remove this tree due to an unsustainable tree protection zone (TPZ) and structural root zone (SRZ) encroachment from excavation planned to occur at the boundary of the property to install the basement levels.

Due to the location of the tree, directly next to the fence and above levels on the subject property, the only location on the subject property where roots are likely to encroach into the subject property and hence, be affected by proposed works is within the narrow strip of garden bed which runs along the southern boundary of the property.

As the soil levels within this narrow garden bed are approximately the same as on the property where the tree resides, it is likely that fine absorbing roots and possibly structural roots from this tree are located within this garden bed on the subject property and these roots must be considered in relation to the proposed design.

Assuming that structural roots are contained within this garden bed, major excavation works along the boundary of the subject property to install the proposed basement level ramp will represent a major and unsustainable SRZ encroachment and will likely affect the structural integrity the tree, predisposing it to failure towards the south if structural roots are removed from the northern side and from within the small garden bed.

There are three options to manage this tree;

1 - Obtain written consent from the owner of the tree to remove it due to unsustainable damage it will suffer as a result of the proposed design proceeding as planned, based on the assumption that structural roots will be damaged and the tree destabilised.

Submit the written acceptance and willingness from the tree owner, that the tree needs to be removed in order to facilitate the proposed development in its current form.

2 – Under the supervision of an AQF5 consulting arborist, conduct a physical examination and sensitive exploratory excavation within the narrow garden bed on the subject property to determine the extent and nature of root encroachment into the subject property from this tree and make appropriate design modifications if necessary to retain the tree, or make a determination, based on the roots found as to the most appropriate course of action.

3 – Adjust the design to accommodate the tree. Due to the limited space that roots from this tree will occupy on the subject property, it would be necessary to ensure that the existing soil where the roots are likely to be present within the subject property (within the narrow garden bed) is not disturbed and to modify the design to retain the narrow strip of soil within the garden bed to ensure that roots are not disturbed. This will enable retention of the tree.

8.2. All remaining trees on the subject property

The remaining trees which have been recorded at the subject property are generally low value and insignificant trees.

Several are exempt from protection due to their species and some are exempt due to their close proximity to existing structures.

It will be necessary to removal all trees on the subject property, without exception if the development proceeds as planned due to direct conflict with extensive excavation required to install the proposed basement parking levels to the boundaries of the subject property and all proposed features to be built above that.

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 may 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

- Central Coast Council Gosford DCP 6.6 Preservation of Trees or Vegetation
- https://maps.six.nsw.gov.au/
- 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.

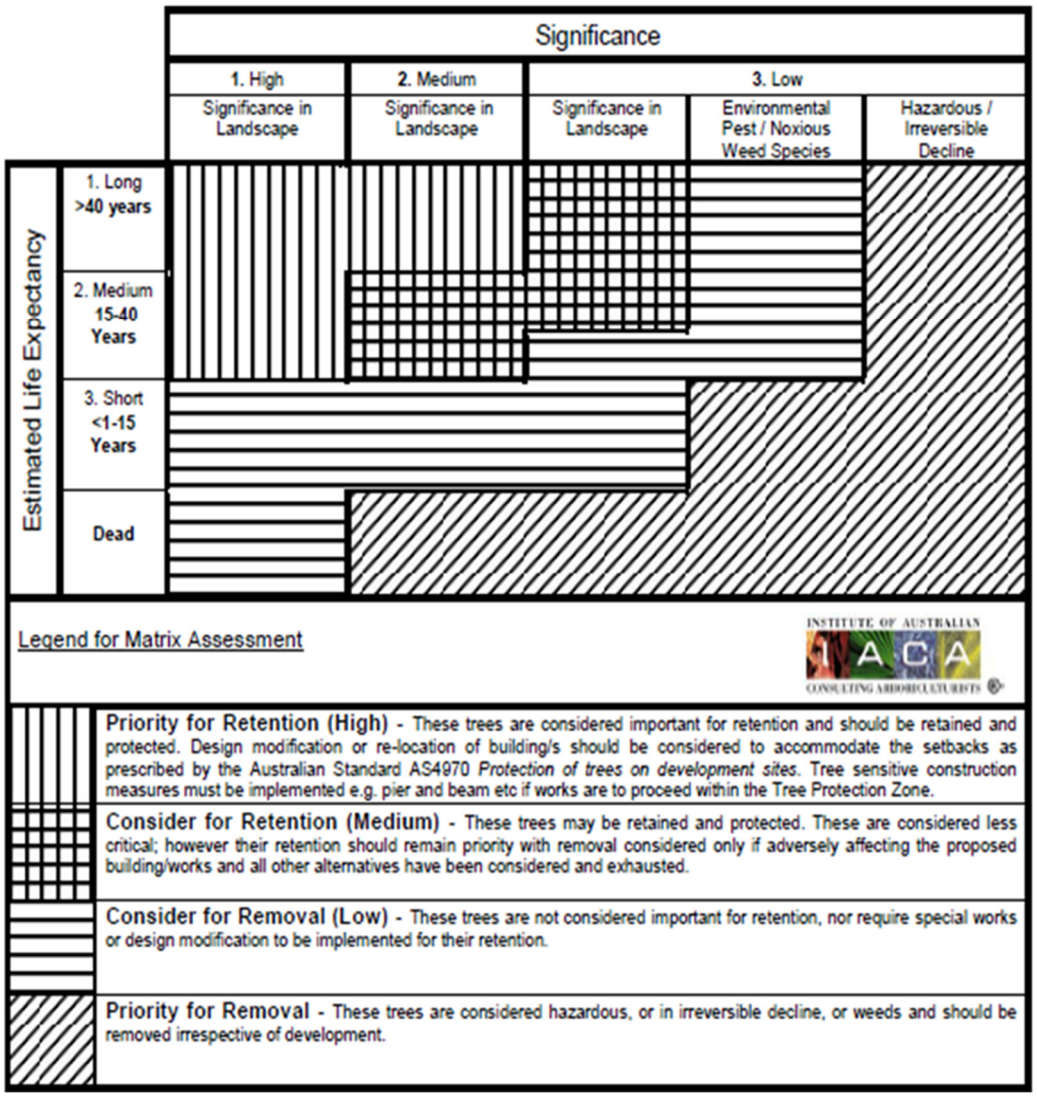
Hazardous/Irreversible Decline

- 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

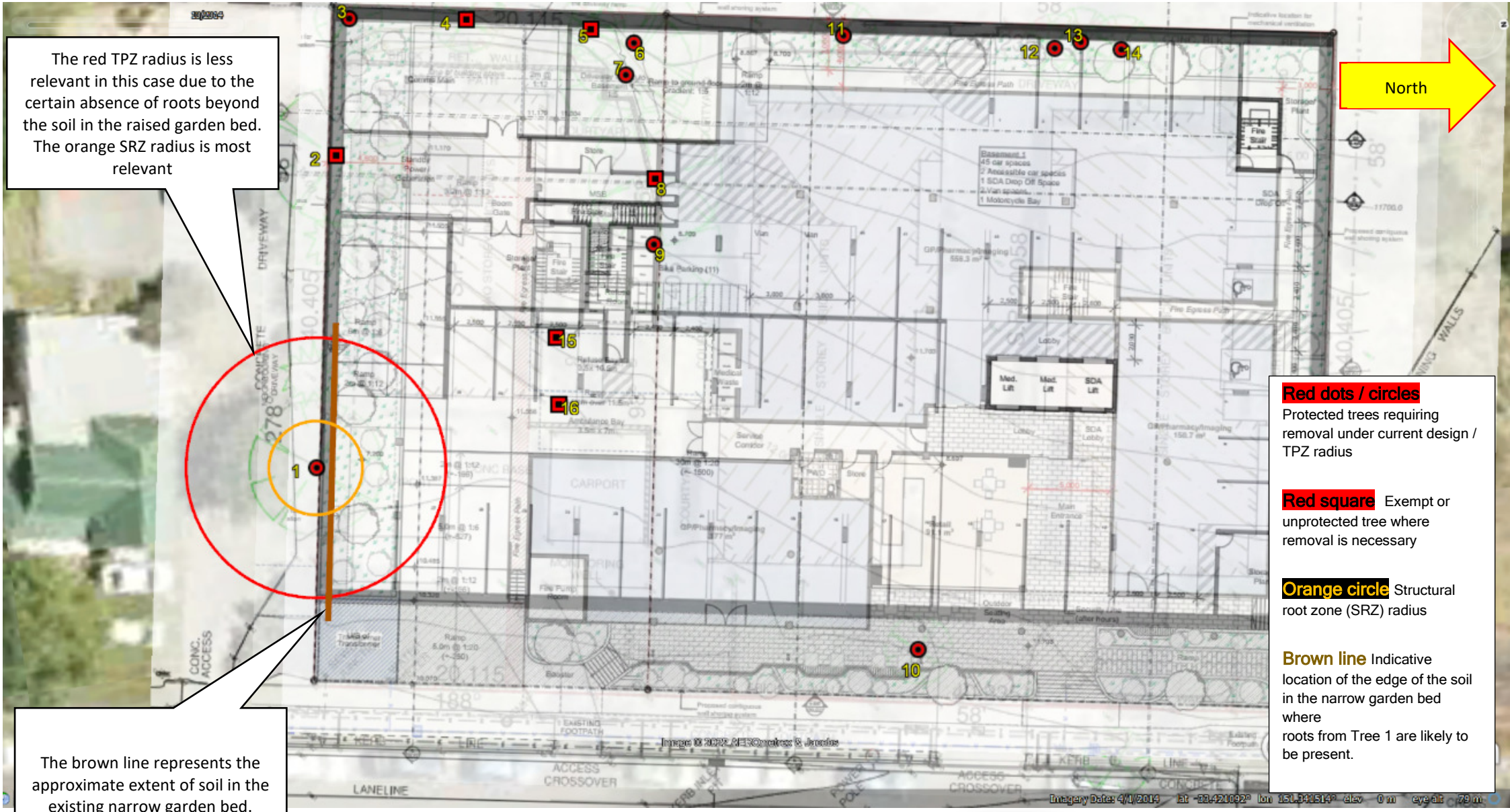
Significantly affected trees requiring removal or trees proposed for removal in red text

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	*Glochidion ferdinandi (Cheese tree)*	65cm _7.8m_2.8m	10x10	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. Situated in soil approximately 600mm above levels on subject property.
2	*Melaleuca stypheliodes (prickly-leaved paperbark)*	40cm_4.8m_2.4m	12x10	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Situated in soil with a retaining wall that is approximately 1m high.
3	*Leptospermum petersonii (lemon-scented tea tree)*	35cm_4.2m_2.3m	5x6	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 in raised soil behind a retaining wall.
4	*Callistemon sp*	10cm_2.0m_2.0m	5x4	Mature	Less than 5 years	Low	Low	Poor(< 30% live foliage)	"Z4 Dead, dying, diseased or declining"	
5	*Ligustrum sp (privet)*	10 10 10cm_2m_2m	8x8	Mature	Medium 15-40 years	Low	Low	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 species
6	*Glochidion ferdinandi (Cheese tree)*	30 30cm_4.8m_2.4m	14x10	Mature	Medium 15-40 years	Medium	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Co dominant leaders from,1m

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	*Syncarpia glomulifera (turpentine)*	45cm _5.4m_2.5m	12x10	Young mature (mature but still young)	Long >40 years	Medium	High	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	Co dominant leaders from,2m
8	*Schefflera actinophylla (umbrella tree)*	10 20 10 10cm_3m_2m	6x5	Mature	Medium 15-40 years	Low	Low	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 species
9	*Jacaranda mimosifolia (Jacaranda)*	40cm_4.8m_2.4m	10x8	Mature	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	
10	*Callistemon viminalis (Weeping bottlebrush)*	30 30 15 15 10 10cm_6m_2.6m	6x6	Mature	Medium 15-40 years	Medium	Medium	Average(50-80% live foliage)	A1 No significant defects and could be retained with minimal remedial care	
11	*Dypsis lutescens (golden cane palm)*	Multiple leaders from base_2m_2m	6x5	Mature	Medium 15-40 years	Low	Low	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	
12	*Archontophoenix alexandrae (Alexander palm)*	15cm_5m_2m	6x4	Young mature (mature but still young)	Long >40 years	Low	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	
13	*Washingtonia sp*	40cm_5m_2m	6x4	Young mature (mature but still young)	Long >40 years	Low	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	

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	*Washingtonia sp*	40cm_5m_2m	6x5	Young mature (mature but still young)	Long >40 years	Low	Medium	Good(80-100% live foliage)	A1 No significant defects and could be retained with minimal remedial care	
15	*Syagrus romanzoffiana (Cocos palm)*	25cm_7m_2m	12x6	Mature	Medium 15-40 years	Low	Low	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"	Not shown on provided survey. Exempt species and proximity to approved structures
16	*Ligustrum sp (privet)*	20cm_2.4m_2m	10x10	Mature	Medium 15-40 years	Low	Low	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"	Not shown on provided survey. Exempt species and proximity to approved structures

Appendix 4 Images (Google Earth image with plans and tree locations overlaid)



Michael Shaw Consulting Arborist

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