ARBORTECH TREE & GARDEN CARE

"Excellence in All Aspects of Tree Management"

AHC30810 Cert Arboriculture AQF Level 3, Practicing Arborist.
AHC50516 Diploma of Arboriculture AQF Level 5, Consulting Arborist.
QTRA Registered Risk Assessor
ABN 503 94093605
Phone: 0408963281 Email: treeclimber30@gmail.com

Prepared by Jason Paxton

Arboricultural Impact Assessment Report
For Development Application Submission.

December 2023

Prepared for; Cameron Mcgeachie.

Site Address, 179 Plateau Road Bilgola Plateau NSW 2107.

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1. Executive Summary.

Cameron Mcgeachie has engaged the services of Arbortech Tree and Garden Care to prepare an Arboricultural Impact & Management Assessment to support a Development Application (DA) for Alterations and Additions, located at 179 Plateau Road Bilgola Plateau NSW.

Five (5) trees are discussed, two (2) trees are located on the subject site and three (3) trees are located on the Southern (S) boundary of the adjacent property to the North (N).

Three (3) trees, **T3, T5** and **T6** must be retained and protected. **T7** is considered an environmental weed species (Exempt) and should be strongly considered for Removal. **T4** is Not Viable for retention and should be replaced in the landscape plan.

The *Northern Beaches Council (NBC)* (from herein *NBC*), *(*previously *Pittwater Council) (*from herein *PC)* is the local government authority. 179 Plateau Road Bilgola Plateau NSW is not within an *NBC* designated *Heritage Conservation Area*. The subject site is zoned E4 Environmental Living. No discussed tree/s are known to be listed on any "*significant tree register*".

I, Jason M Paxton, as a qualified Practicing & Consulting Arborist, have prepared this document based on a "*Visual Tree Assessment" (VTA)* undertaken on Monday 21st November 2022 and subsequent site visits.

Jason M Paxton is the sole author of this document.

The sole consent authority is the *NBC*.

The report discusses the necessity (relative to the proposed design) & specified strategy for management of the Three (3) trees (T3, T5 & T6) which have been identified & discussed.
The aim of this report is:

i. *Provide valid reasons to support the proposed development relative to tree management.*
ii. *Provide an achievable Tree Management Strategy for all discussed to be retained trees.*
iii. *Confirm no trees within adjoining private lands will be affected by the DA submission.*

2. Brief.

The author has visited the site at 179 Plateau Road Bilgola Plateau NSW, to consider trees viable for retention relative to the Development Proposal. This document is known as an Arboricultural Impact Assessment Report (AIA) as part of the DA submission.

3. Method.

The site at 179 Plateau Road Bilgola Plateau NSW was visited to collect data on Monday 21st November 2022 and subsequent site visits.

- Tree diameter was measured using a diameter tape, DBH (diameter at breast height) 1.4m above ground level.
- Tree base diameter was measured using a diameter tape, above the basal flare.
- The height and canopy spread were estimated.
- All tree data contained within this report is based on data obtained at the time of site inspection.
- The Australian Standard AS 4970–2009 *Protection of trees on development sites,* NBC Pittwater *LEP &* Pittwater *DCP "Tree Management Provisions" as outlined within the NBC "Tree Management Provisions" as outlined in their* Pittwater *Council Local Environment Plan, 2011 & the PC Development Control Plan 2011* has been used as the benchmark for the preparation of this report.
- The trees were assessed using a basic Visual Tree Assessment (VTA[1]) The subject trees were inspected visually from ground level only.
- The identification of genus and species is based on features, visible from a ground level during inspection only, and has not been compared to herbarium specimens.
- The aspect was taken off the survey plan.
- TPZ, SRZ calculation and encroachments were calculated using a TPZ, SRZ calculator.
- No root analysis, soil testing, 'Restigraph®' drilling, or aerial canopy inspection was undertaken during the assessment of the trees.

[1] **VTA** – Visual Tree Assessment, as referenced below, is a systematic inspection of a tree for indicators of structural defects that may pose a risk due to failure. The first stage of this assessment is made from ground level and no aerial inspection is undertaken unless there are visual indicators to suggest that this is merited. Details of the visual indicators are contained in *The Body Language of Trees* by Mattheck & Breloer (1994). The use of a Visual Tree Assessment is widely used and standardized approach. Invasive and other diagnostic fault detection procedures will generally only be recommended when visual indicators of potential concern are observed.

[1] **Mattheck, C & Breloer, H** 1994 *Field guide for visual tree assessment (VTA),* Arboriculture Journal 18:1-23

4. Information Provided.

Plan Name	Plan Number	Drawn By	Date	Issue
Site Plan & Analysis	11.01	LP	31/03/2021	C2
Existing Plans	20.01	LP	31/03/2021	C2
Ground Floor Plan	21.01	LP	31/03/2021	C2
Lower Floor Plan	21.02	LP	31/03/2021	C2
Roof Plan	21.03	LP	31/03/2021	C2
Carport & Garage	21.04	LP	31/03/2021	C2
Elevations	30.01	LP	31/03/2021	C2
Carport & Garage Elevations	30.02	LP	31/03/2021	C2
Sections	40.01	LP	31/03/2021	C2
Perspectives	100.01	LP	31/03/2021	C2
Detail & Levels	1726	GR	17/01/2022	A
Stormwater Concept Plan	23019/sw1	A.M.K	10/10/2023	C
Plans by Canopy Design The survey by, Richards & Loftus, Surveying Services. Stormwater Plan by, Docker Smith Pty Ltd.				

Table 1: Information Provided.

5. Observations.

The site is located on the Eastern (E) side of Plateau Road with an open aspect. The site is relatively steep, with an elevation drop from the front to the rear of the property.

Two (2) trees (T3 & T4) are located on the subject site between the existing dwelling and the road reserve, and three (3) trees (T5, T6 & T7) are located on the Southern (S) boundary of the adjacent property to the North (N). The tree numbers have been used as per the previous report.

5.1. Individual Tree Observations.

Tree 3. ***Angophora costata*** (Sydney Red Gum) the tree is Locally Endemic and is located adjacent to the South (S) side, within 10cm of the existing driveway.

The tree is mature and displaying Fair Health and Vitality, and Good Form and Structure. The tree has a single straight trunk. The canopy spread is predominately to the West (W) most likely as a result of the conflicting crown of T4. The canopy density is approximately 70% typical of the species. Deadwood within the crown <15cm.

The tree has a TPZ of 5.52m, and the SRZ is 2.51m.

Tree 4. Angophora costata (Sydney Red Gum), the tree is Locally Endemic and is located approximately 0.6m to the East of the existing retaining wall adjacent to the proposed garage.

The tree is mature displaying Fair Health and Vitality, Fair Form, and Structure. The tree has a single trunk of approximately 3m, then divides into two (2) stems. Previous pruning has been observed. Dieback in the crown to the South (S) and the West (W) is evident. Some small epicormic shoots have been observed. The canopy density is approximately 50% typical of the species.

The tree has a TPZ of 7.44m, and the SRZ is 2.9m.

Tree 5. ***Angophora costata*** (Sydney Red Gum), the tree is Locally Endemic and is located approximately 0.6m to the North (N) of the existing driveway in the adjacent property 177 Plateau Road.

The tree is mature displaying Good Health, Vitality, Form, and Structure. The tree has a single trunk and a narrow crown projecting predominately North (N) to South (S) and is phototropic to the East (E), Deadwood <10cm has been observed. The canopy density is approximately 60% typical of the species.

The tree has a TPZ of 7.44m, and the SRZ is 2.9m.

Tree 6. ***Angophora floribunda*** (Rough Bark Apple), the tree is Locally Endemic and is located approximately 0.9m to the North (N) of the existing driveway in the adjacent property 177 Plateau Road.

The tree is mature displaying Good Health, Vitality, Form, and Structure. The tree has Two (2) stems approximately 1m AGL, and Two (2) stems that have been previously removed. The tree has a small canopy for both of the stems, and a crown density of approximately 90% of typical for the species. Deadwood <12cm to the West (W) has been observed. The crown of the Two (2) stems is phototropic to the East (E) as a result of the conflicting crown of the trees located on the road reserve to the West (W).

The tree has a TPZ of 6.24m using the Two (2) stem calculations for the DBH, and the SRZ is 2.9m.

Tree 7. ***Olea europaea*** (African Olive) the tree is not Locally Endemic and is located approximately 0.9m to the North (N) of the existing driveway in the adjacent property 177 Plateau Road.

The tree is Semi-Mature and considered an invasive weed species in NSW.

The Tree is **EXEMPT** by Species in **NBC**.

5.2 Tree Schedule Table.

#	Identification	Height (m)	Crown (m)	DBH(m) Base Día (m)	TPZ(m) SRZ(m)	Age	Health/ Vigour	Structure/ Form/ Habit	TPS SRZ Incursion %	Tree AZ	Comments
3	***Angophora costata*** (Sydney Red Gum	<16	<9	0.46 0.52	5.52 2.51	M	F, F	G, G, T	None	A2	The tree is **Easily Viable For Retention.** No TPZ or SRZ Incursion. is locally endemic and has Medium landscape significance **Easily Viable for Retention.** Retain, protect & install Tree Trunk Protection (TTP).
4	***Angophora costata*** (Sydney Red Gum)	<16	<13	0.62 0.73	7.44 2.9	M	F, F	F, F, T	**TPZ 3.1%** **SRZ 13.3%**	Z2	The tree is **Not Viable For Retention**, as a consequence of a major TPZ incursion of 3.1% & an SRZ incursion of 13%. Replace the tree in the landscape plan.
5	***Angophora costata*** (Sydney Red Gum)	<16	<14	0.57 0.63	6.84 2.73	M	G, G	G, G, T	None	A2	The tree is located in the adjacent property, is locally endemic and has Medium landscape significance **Easily Viable for Retention.** Retain, protect & install Tree Protection Fencing (TPF).
6	***Angophora floribunda*** (Rough Bark Apple)	<17	<9	2 stems, 0.35, 0.39 = 0.52 0.96	6.24 3.25	M	G, G	G, G, T	None	A2	The tree is located in the adjacent property, is locally endemic and has Medium landscape significance **Easily Viable for Retention.** Retain, protect & install Tree Protection Fencing (TPF).
7	***Olea europaea*** (African Olive)	N/A	N/A	N/A	N/A	N/A	N/A	G, G, T	None	Z7	**The Tree is Exempt by Species, the tree is considered to be an environmental weed species. Remove the tree.**
G=Good F=Fair, P=Poor, D=Dead, M=Mature, SM=Semi Mature, Y=Young, T=Typical of species, NT=Not Typical of species, DBH=Diameter at Breast Height, TPZ=Tree Protection Zone, SRZ=Structural Root Zone											

Table 2: Tree Schedule.

Notes for the application of the table:
Health and Vitality – indicates the trees overall Health and vitality at the time of inspection. Consideration is given to the canopy density, foliage colour and size, twig, and branch die-back, considering seasonal variations, etc., and is expressed as **Good**, **Fair**, **Poor,** or **Dead**.

- **Good** – appears healthy, typical foliage colour and size for the species (if known), good canopy density that requires little or no maintenance.
- **Fair** – appears relatively healthy, may have minor health problems that are generally able to be managed; not likely to cause short-term problems.
- **Poor** – significant health problems, sparse canopy density, poor foliage colour, extensive dieback or epicormic growth and generally will require extensive maintenance or removal.
- **Dead** – no obvious signs of life and generally requires removal, consideration is given to habitat value.

Form and Structure - Is an indication of the trees structural condition at the time of inspection. Consideration is given to significant defects or faults, structural integrity, soil, and root disturbance, and is expressed as **Good**, **Fair** or **Poor**.

- **Good** – Free from any major structural defects; form typical of the species (if known
- **Fair** – Minor or moderate structural defects can usually be managed or tolerated.
- **Poor** – Significant structural defects, extensive decay. Consideration is given to the target value, retention value and cost of remediation or removal.

Habit – Is a visual interpretation of the shape of the overall tree and the crown, (typical for the species without canopy confliction or suppression, or phototropic) i.e., domed, apical crown. This is expressed as **Typical** or **Not Typical.**

6. Discussion.

Tree 3 Has **No New TPZ** or **SRZ** incursion. The tree is **Easily Viable** for retention, install Tree Trunk Protection (TTP).

Tree 4 Is located adjacent to the proposed below ground Rainwater retention tank. For the instillation of the tank, major root severance <20cmfrom the base of the tree on the East (E) side will be required, as a consequence of the root severance to tree will have a unacceptable likelihood of failure. The tree has a minor TPZ incursion of approximately 3.1% or 5.3m² and an SRZ incursion of approximately 13.3 % or 3.6m². The SRZ incursion is **Not Acceptable** under the guidelines set out in AS 4970–2009 *Protection of trees on development sites.*

It must be considered that the tree is displaying Fair Health and shows a significant decline in health and vitality since the last report that was commissioned in February 2017 which included this tree. It is likely that the tree is in an early stage of decline. It is not likely that the tree will ever become a significant specimen of this species.

The Tree **Is Not** Viable for Retention.

Tree 5 is located in the adjacent property to the North (N). It has NO SRZ incursion and No TPZ incursion. The existing concrete driveway will be used as a load-bearing surface for the duration of the construction.

The tree is **Easily Viable** for retention, install Tree Protection Fencing (TPF).

Tree 6 is located on the adjacent property to the North (N). It has NO SRZ incursion and No TPZ incursion. The existing concrete driveway will be used as a load-bearing surface for the duration of the construction.

The tree is **Easily Viable** for retention, install Tree Protection Fencing (TPF).

Tree 7 is **Exempt by Species** in *NBC*, therefore is not considered for retention. The tree is not locally endemic and is regarded as an invasive environmental weed species in NSW.

7. Recommendations.

The Author recommends that **Tree 4** is **Not Viable** for retention due to **major SRZ Incursion** that will impact the health, vitality, and stability of the tree. The impact is considered major. This tree should be replaced in the landscape plan for the proposed construction.

Trees 3, 5 & 6 are to be Retained, Protected and Managed as per the Tree Protection Plan and Guidelines set out in this report.

Tree 7 is classified as an invasive environmental weed in NSW. It is recommended that the client discuss the removal and replacement of the tree with the property owner 177 Plateau Road for permission to replace the tree.

Replacement tree specimens are to be sourced from growers/suppliers whose stock meets the production benchmarks of the *Australian Standard (AS2303.2015 Tree stock for landscape use)* or *NATSPEC* specification for the production of quality container-produced trees.

As with the guidelines of The Australian Standard AS 4970 – 2009 *Protection of trees on development sites,* an offset greater than 10% can be achieved by extending the TPZ (see Appendix 3, Tree Protection Diagram). It is specified that temporary fencing panels or similar in accordance with AS 4687—2007 *Temporary fencing and hoardings*. The tree protection fencing is to be erected in accordance with the specifications in the Tree Protection Plan (Appendix 3), AS 4970 – 2009 *Protection of trees on development sites.*

Within the TPZ an up to 10cm layer of Arborist Mulch or similar should be applied and maintained for the duration of the project over the ground within the Tree Protection Area. This Mulch Product can be sourced from a local Arborist Company. At this time, the Greater Sydney Region has experienced above-average rainfalls, as consequence soil moisture levels are good. If periods of rainfall decrease, the Tree Protection Area should be irrigated weekly or as required to compensate for soil moisture loss. Water is the number one limiting factor for tree growth and health.

It is additionally specified that no building materials of any description be stored, or any construction or other activities conducted within the TPZ without WRITTEN APPROVAL and or SUPERVISION by the suitably qualified (AQF Level 5) appointed site Project Arborist.

Prior to any construction.

1	Engage a suitably qualified project arborist with a minimum AQF 5 Diploma in Arboriculture to oversee and implement the tree protection plan.
2	Construction of tree protection fencing (see tree protection plan).
3	Mulch TPZ with a minimum of 10cm thick arborist mulch or similar.
4	Install the irrigation system within TPZ. And maintain adequate moisture levels.
5	All plans provided should have a copy of the tree protection plan (drawing). There should be a note to check for the tree protection plan. (drawing) on each plan provided.
6	Install Load Bearing/Sharing device as shown on a tree protection plan (if required).
7	Install sediment fencing and contamination absorption control (if required).

Tree removal if Required.

8	No access within TPZ for machinery or persons
9	Temporary access within TPZ only with written authorization from the project arborist before work.
10	A spill kit must be on site.

11	All tree pruning or removal must be carried out by a suitably qualified arborist with a minimum AQF Certificate 3 in Arboriculture.

During demolition.

12	All work must be supervised by the project arborist within 1m of TPZ.
13	No access within TPZ for machinery.
14	No Temporary access within TPZ only with written authorization from the project arborist.
15	A spill kit must be on site.

Critical checkpoints.

All work is to be supervised by the project arborist	
16	After the construction of TPZ fencing. (check for compliance)
17	After the installation of Load-bearing/sharing surfaces. (check for compliance)
18	TPZ fencing is not to be moved for any reason.
19	If temporary access is required into TPZ.
20	Before and during any excavation within the TPZ.
21	Before cutting any roots larger than 2cm in diameter.
22	Inspection and auditing by the project arborist every three months and at critical stages. The monitoring process must be recorded and included in the certification at the time of practical completion of the work. The critical stages will include, excavation, footings, and slabs, the installation of above or below-ground services, erection and removal of scaffolding, ANY work required within the TPZ, and completion of works. As defined in. (AS 4970-2009 Protection of trees on development sites, section 5.4.3 page 21).
Note: Tree Protection Zone (TPZ) is defined in the Glossary of terms	

During construction work.

The project arborist must supervise all work	
23	Before and during any excavation within the TPZ.
24	Any work within the TPZ.
25	Removal or moving of Tree Protection Fencing. (for any reason)

During landscaping work.

26	Check the landscape plan for compliance with Tree Protection Plan
27	All work is to be supervised by the project arborist within the TPZ. As described (AS 4970-2009 Protection of trees on development sites section 5.4.4 page 21).

Practical completion.

28	At the time of practical completion will be when all construction and landscaping works are completed. At this time, all tree protection measures can be removed, and the project arborist will access the tree condition and provide certification. As described in (AS 4970-2009 Protection of trees on development sites, section 5.5.2 page 21).

Post-construction.

29	The completion of any further building or landscaping work post-construction period will not damage or injure trees.

Final certification.

30	The project arborist at this time will access the trees and make any recommendations or requirements for a remedial that may be necessary to comply with (AS 4970-2009 Protection of trees on development sites section 5.5.2 page 21).

8. Conclusion.

Trees # 3, 5 & 6 are **Easily Viable for Retention** if the recommendations outlined in the report are followed. **Tree # 4** is **Not Viable for Retention** and will require replacement for the purpose of the construction. **Tree # 7** is considered to be an invasive weed and should be removed.

If you have any questions relating to this report or the implementation of recommendations, please contact Jason Paxton 0408 963 281.
Regards,

Jason M Paxton (Principal Consultant).

AHC50516 Diploma of Arboriculture AQF Level 5.
AHC30810 Cert Arboriculture AQF Level 3.
Certificate of Tree Surgery.
Statement of Attainment, Arboriculture Techniques.
QTRA Registered Risk Assessor # 6396.
ISA Member # 266008.

Appendix 1: Aerial Image of Site.

Image 1. MapBrowser (nearmap.com)

Appendix 2: Site Survey with trees marked.

Image 2. Survey, Detail & Levels. Richards and Loftus Surveying Services.

Appendix 3: Tree protection Plan. TPZ, SRZ & Tree protection Fencing.

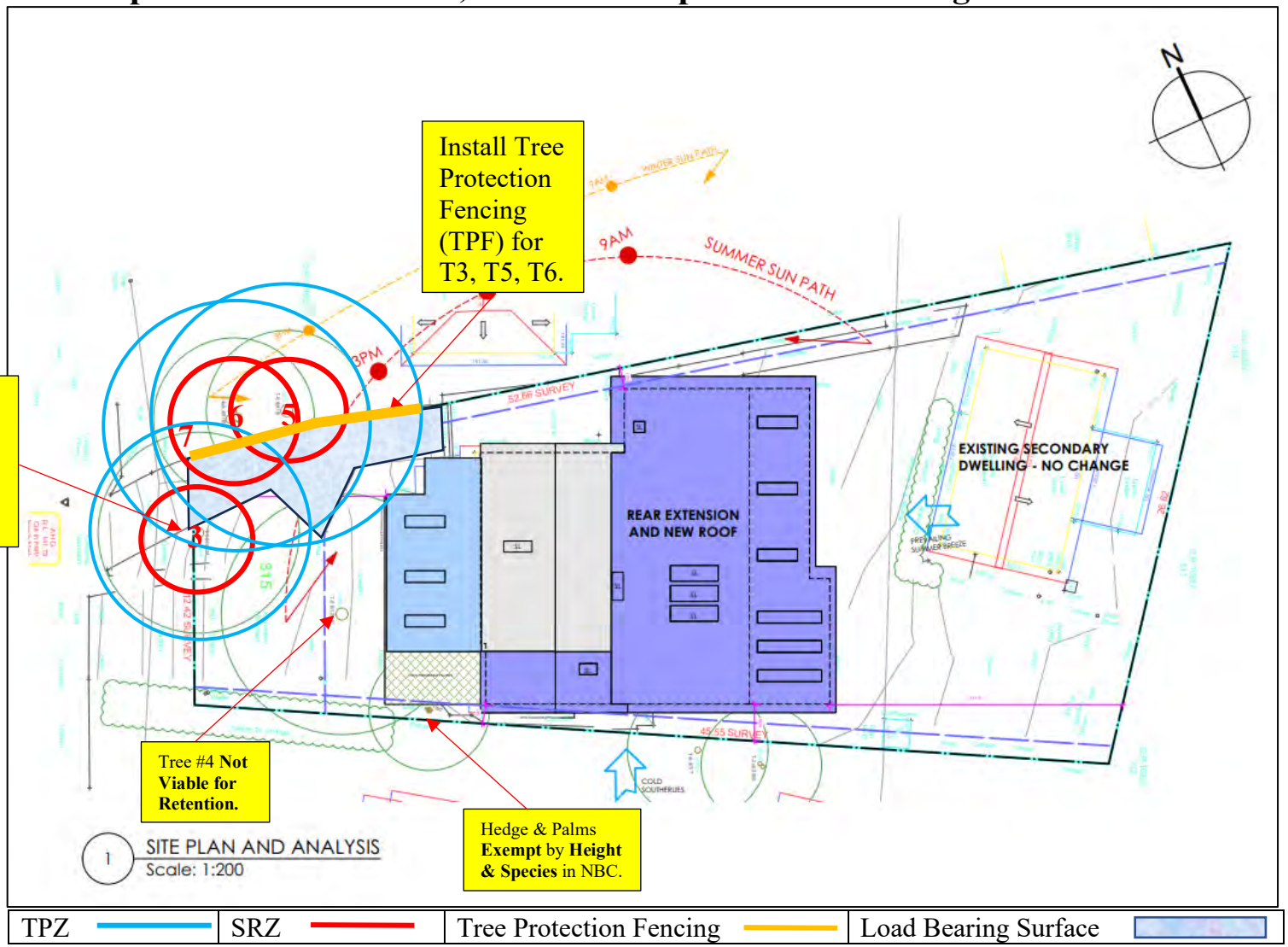


Image 3, Tree Protection Diagram. (extract from site and analysis plan).

Appendix 4: Stormwater Plan.

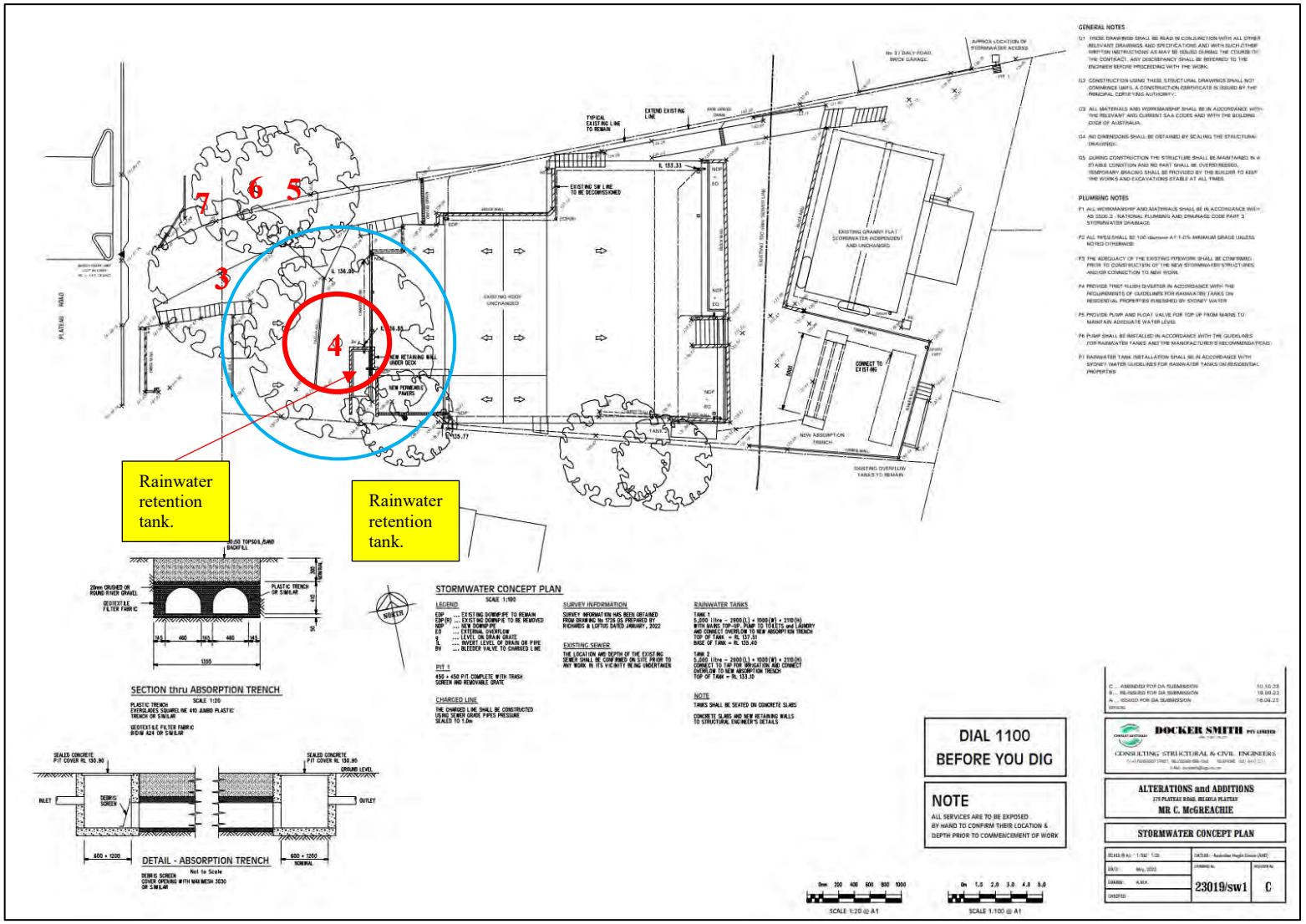


Image 4, Stormwater Concept Plan.

Appendix 5: TPZ & SRZ Incursion Diagrams.

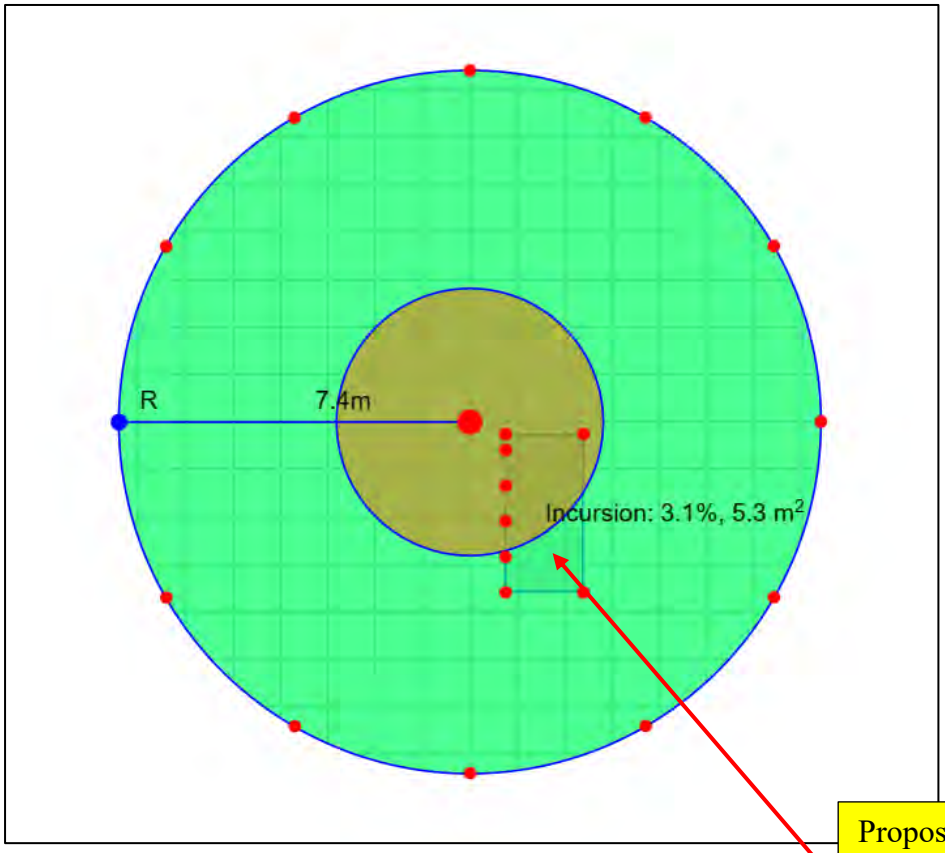


Image 5. Tree 4, TPZ Incursion Diagram.

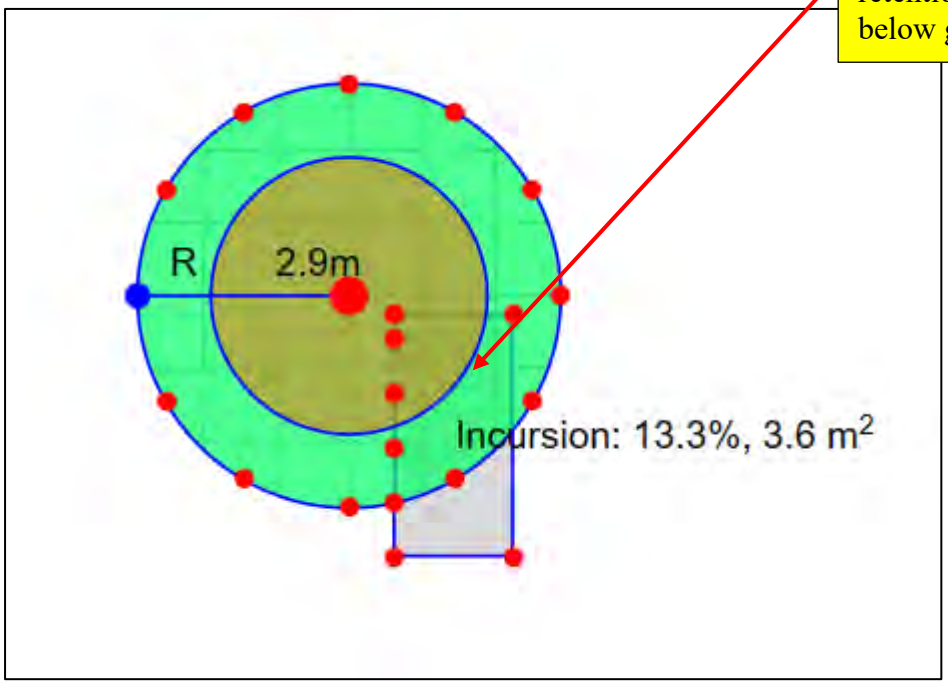


Image 6. Tree 4, SRZ Incursion Diagram.

Appendix 6: Images of Trees.

All images were taken by the Author.

Image 7. Tree 4. Location & overall view.

Image 8. Tree 4. The crown.

Images 9 &10, Tree 4 showing location.

Image 11, Tree 3. Overall view.

Image 11, Tree 3. Crown

Image 13, Tree 3. Location.

Image 14, Trees 3 & 4. Location.

Image 15, Tree 5. showing an overall view.

Image 16, Trees 5. Location.

Image 17, Tree 5. The crown.

Image 18, Tree 6. Location.

Image 19, Tree 6. The crown.

Image 20, Tree 6. Previously removed stems.

Image 21, Tree 7. Location.

Image 22, Overall view of the site .

Appendix 7: Tree Protection.

Tree protection zone.

The Australian Standard® AS 4970 – *2009 Protection of trees on development sites* describes "*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*."

To determine the TPZ for the tree, the diameter at breast height (DBH) is multiplied by 12 (TPZ = DBH x 12), this is expressed as the radius from the center of the trunk measured above the buttress at ground level. A TPZ will not be less than 2m and should not be greater than 15m, except where canopy protection is required.

Structural root zone.

The Australian Standard® AS 4970 – *2009 Protection of trees on development sites* describes" *The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree.*

The SRZ only needs to be calculated when major encroachment into a TPZ is proposed. Many factors affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula or Figure 1. Root investigation may provide more information on the extent of these roots.

SRZ radius = (D × 50)0.42 × 0.64

Where, D = trunk diameter, in m, measured above the root buttress NOTE: The SRZ for trees with trunk diameters less than 0.15 m will be 1.5 m."

Encroachments within the TPZ.

It is possible that construction activities can encroach into the TPZ, however, The Australian Standard® AS 4970 – *2009 Protection of trees on development sites* says "*If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ (see Clause 3.3.5), the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods".*

Image: Good tree protection fencing as per AS 4970 – *2009.* Image Paxton.

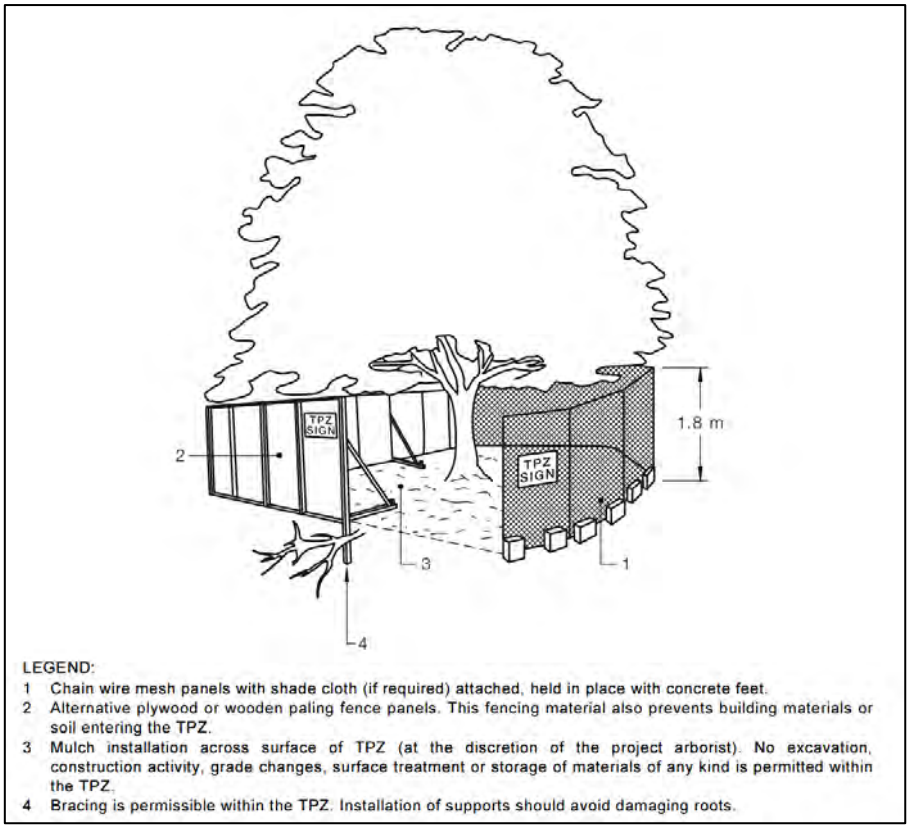
Image: Poor tree protection fencing not complying with AS 4970-2009. Image Paxton.

Image: Good tree protection fencing as per AS 4970 – *2009.* Image Paxton.

Image: Tree protection Sign as per AS 4970 – *2009.* Image Paxton.

Table 1, Activities restricted within the TPZ.

ACTIVITIES RESTRICTED WITHIN THE TPZ	
All machine excavation including trenching	Excavation for silt fencing
Cultivation of the soil	Preparation of chemicals
Storage of any description	Preparation of cement products
Parking of vehicles and plant	Refueling
Dumping of waste	Wash down & clean equipment
Placement or storage of fill	Lighting of fires
Soil level changes	Physical damage to the tree
Temporary or permanent installation of utilities and signs	
Mechanical removal of vegetation	Affixing signage or hoarding to trees
Movement of pedestrian or vehicular traffic	Anything that may harm the trees

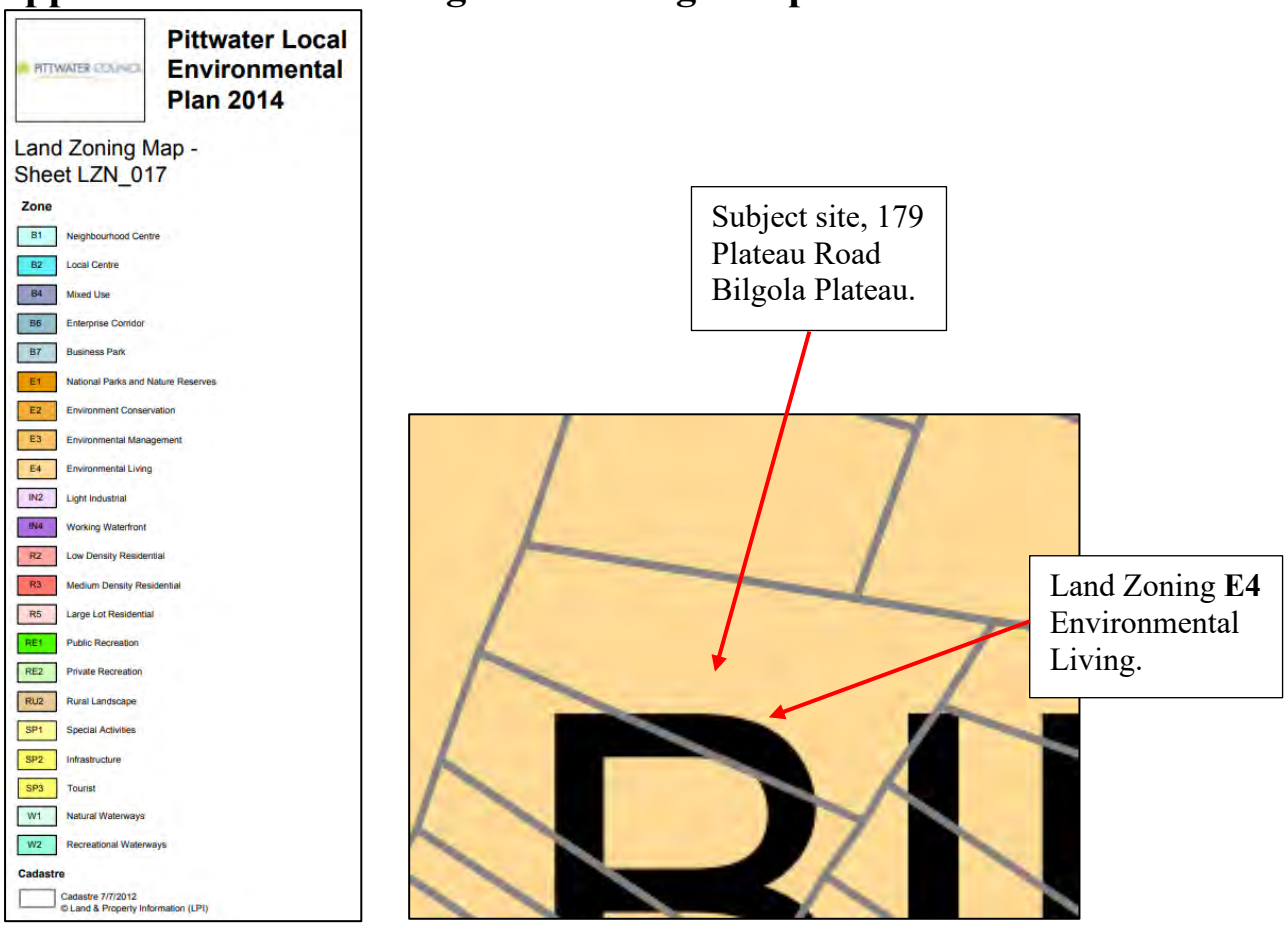


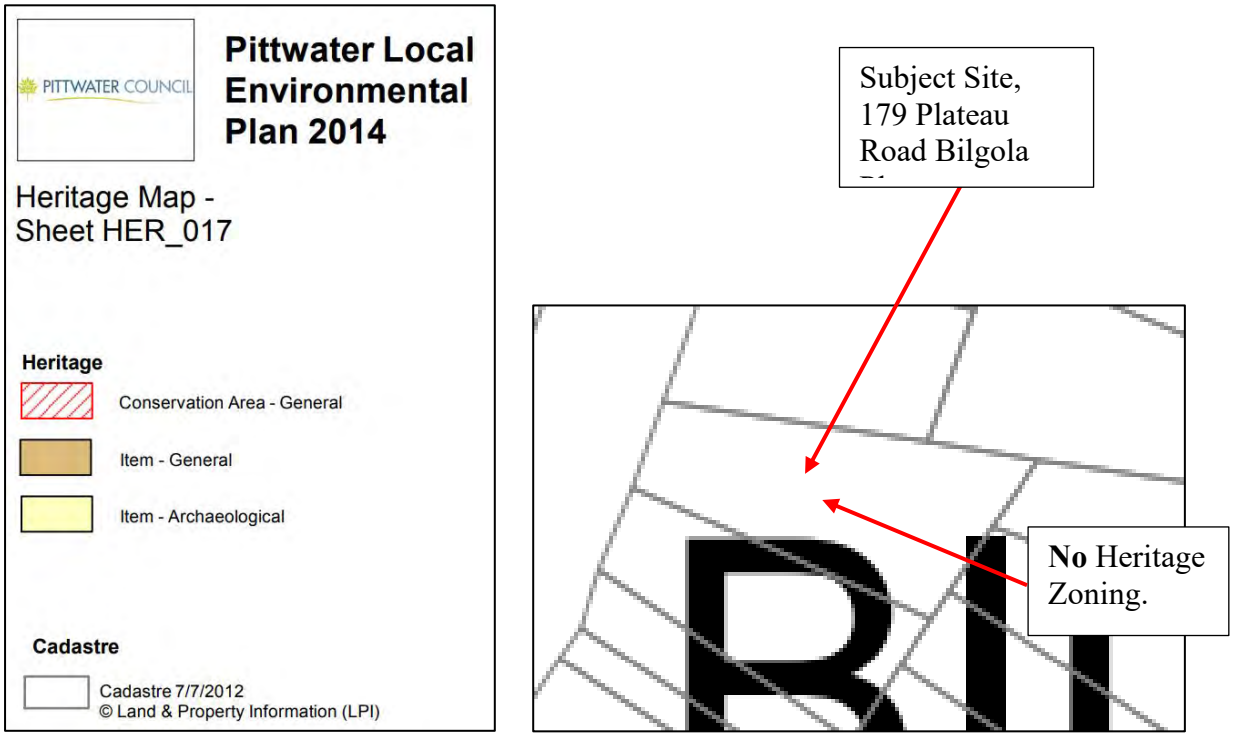
LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion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

Source: AS 4970-2009

Images of Tree Trunk Protection (TTP).

Appendix 8: Land Zoning and Heritage Map.





Images, Northern Beaches Council Website Tools.

Appendix 9: Tree AZ Table for Reports.

TreeAZ Categories (Version 10.04-ANZ)

CAUTION: TreeAZ assessments must be carried out by a competent person qualified and experienced in arboriculture. The following category descriptions are designed to be a brief field reference and are not intended to be self-explanatory. They must be read in conjunction with the most current explanations published at www.TreeAZ.com.

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 recognized court or tribunal would be likely to authorize removal, i.e. dominance, debris, interference, etc
Z8	Excessive, severe and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize 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 categorization 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.

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 categorization hierarchy and should be given the most weight in any selection process.

Appendix 10: Limitations for the use of the Report.

This report is to be utilized in its entirety only. Any written or verbal submission, report, or presentation that includes statements taken from the findings, discussions, conclusions, or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, & directly attached to that submission, report, or presentation.

Appendix 11: Assumptions.

Care has been taken to obtain information from reliable resources. All data has been verified insofar as possible; however, Arbortech Tree and Garden Care, can neither guarantee nor be responsible for the accuracy of information provided by others.
Unless stated otherwise:
Information contained in this report covers only the trees that were examined & reflects the condition of the trees at the time of inspection.
The inspection was limited to a visual examination of the subject trees without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Appendix 12: Glossary of Arboricultural Terms.

Age: **I** *Immature* refers to a well-established but juvenile tree
SM *Semi-mature* refers to a tree at growth stages between immaturity & full size.
M *Mature* refers to a full-sized tree with some capacity for further growth
LM *Late Mature* refers to a full-sized tree with little capacity for growth that is not yet about to enter decline.
OM *Over-mature* refers to a tree about to enter decline or already declining.
LS *Live Stag* refers to a tree in a significant state of decline. This is the last life stage of a tree prior to death.

Hth & Vig Health & Vigour

Health refers to the tree's form & growth habit, as modified by its environment (aspect, suppression by other tree, soils) & the state of the scaffold (ie. trunk & major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health & it is possible for a tree to be healthy but in poor condition/Vigour. **Classes are:** Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

Vigour refers to the tree's growth rate/condition as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion & the degree of dieback. **Classes are:**
Excellent (E), V. Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP)

Useful Life Expectancy (ULE) refers to any individual tree specimen's potential life. expectancy (viability) based on VTA assessment, three groups are described,
Short = Less than Five years

Medium = Five–Fifteen years
Long = more than Fifteen years

Significant diameter roots are defined as those being greater than 0.05m/50mm in diameter.

Diameter at Breast Height (DBH) refers to the tree trunk diameter at breast height (1.4 metres above ground level)

Structural Root Zone (SRZ) refers to a radial offset which relates to tree stability. This zone is presumed to be the main location of the tree's structural support roots. It is calculated using the formula $SRZ\ radius = (D \times 50)^{0.42} \times 0.64$.

Primary Root Zone (PRZ) refers to a radial offset of ten (10) times the trunk DBH measured from the center of the trunk. This zone often contains a significant amount of (but by no means all of a tree's) fine, non-woody roots required for uptake of nutrients, oxygen & water.

Tree Protection Zone (TPZ) is ideally a "No Go Zone" surrounding a tree to aid in its ability to cope with disturbances associated with construction works. **TPZ = DBH x 12**. Tree protection involves minimizing root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death & the possible damage to the structural stability of the tree from root damage.

To limit damage to the tree, protection within a specified distance of the tree's trunk must be maintained throughout the proposed development works. No excavation, stockpiling of building materials, or the use of machinery is permitted within the TPZ.

A TPZ is required for each tree or group of trees within five metres (unless otherwise specified) of building envelopes.

Stem/bark inclusion refers to a genetic fault in the tree's structure. This fault is located at the point where the stems/branches meet. In the case of a branch bark inclusion, this point of attachment is potentially weak due to the bark obstructing healthy tissue from joining together to strengthen the joint.

Decay refers to the breakdown of tissues within the tree. There are numerous types of decay that affect different types of tissues, spread at different rates & have a different effect on both the tree's health & structural integrity.

Point of Attachment refers to the point at which a stem/branch etc. joins.

Deadwood refers to any whole limb that no longer contains living tissues (eg live leaves &/or bark). Some deadwood is common in a number of tree species.

Dieback refers to the death of growth tips/shoots & partial limbs. Dieback is often an indicator of stress & tree health.

One dimensional crown refers to branching habits & leaves that extend/grow in One direction only. There are many causes for this growth habit such as competition & pruning.

Crown Foliage Density of Potential (CFDP) refers to the density of a tree's crown to the expected density of a healthy specimen of the same species. CFDP is measured as a percentage.

Epicormic growth/shoots refer to growth/shoots that are/have sprouted from axillary buds within the bark. Epicormic growth/shoots are a survival mechanism that

often indicates the presence of current or past stress even such as fire, pruning, drought, etc.

Over Head Powerlines (OHP) Overhead electricity wiring.

LVOHP Low Voltage Overhead Powerlines

HVOHP High Voltage Overhead Powerlines

ABC Aerial Bundled Cable

Arborist Mulch, Mulch product produced by Arborists containing wood and leaf chip.

Moribund, In terminal decline, lacking vitality or vigour.

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