



Arboricultural Impact Assessment Report

**34-36 Light Street & 42 Walker Street Casino
NSW –Land & Housing Corporation NSW**

Prepared for: Brewster Murray

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Diploma in Arboriculture - AQF Level 5

Associate Diploma in Horticulture (Arboriculture)

Bachelor of Applied Science - Environmental Resource Management

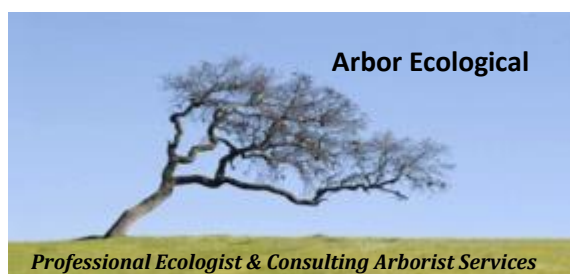


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1. Introduction

1.1. Background

Arbor Ecological was engaged by Brewster Murray to undertake an arboricultural/ tree impact assessment and prepare an associated Arboricultural Impact Assessment Report (AIAR) in relation to three properties at 34-36 Light Street & 42 Walker Street Casino NSW in the Richmond Valley Local Government Area, hereafter referred to as *the site*.

This assessment followed a preliminary arboricultural/ tree impact assessment and report, including Visual Tree Assessments (VTAs)¹ and Tree Retention Value (TRV) scores, to guide development design. Finalised development design plans were subsequently provided identifying trees and shrubs (hereafter referred to as the *subject trees*) plotted in relation to proposed buildings and infrastructure; and subject trees proposed to be retained and removed.

Subject tree impacts from the proposed development centre on potential impacts to health, condition and ongoing vitality associated with development and construction works.

1.2. Aim

This assessment report aims to gather, analyse and present information on the impact of the proposed development to inform recommendations including tree removal, tree retention, tree pruning, and protection of trees to be retained for ongoing tree vitality.

1.3. Objectives

- To identify subject trees on the site with high potential to be substantially impacted by the proposal.
- To assess the impacts of the proposed development on the subject trees based on Visual Tree Assessment findings and finalised design drawings (refer to **Figure 1**) showing the location of the subject trees in relation to the development footprint, and TPZ encroachment details.
- To prepare an arborist report in accordance with the Australian Standard *AS4970 2009 Protection of Trees on Development Sites*² as a primary reference and guide for tree protection and management, and with reference to the Richmond Valley Development Control Plan.
- To provide recommendations regarding tree removal, tree retention, tree pruning, tree protection measures and other vegetation management measures.

¹ **Visual Tree Assessment (VTA)** is a standard method for tree inspection from ground level of overall vitality, health, stability and defect symptoms. Inspection may be undertaken with the aid of binoculars, probes and sounding mallet, and includes inspection of the soil conditions around the tree; root flare and roots (where readily accessible); bark, trunk; scaffold limbs; branches; leaves; and tree form. More detailed tree part inspection may be recommended as a result of VTA (Mattheck, C & Breloer, H 1994, *The body language of trees, a handbook for failure analysis*, TSO Her Majesty's Stationary Office, London, England).

² **Standards Australia 2009**, *AS4970-2009 Protection of trees on development sites*, Standards Australia, Sydney.



1.4. Site Description

The site consists of residential dwellings and associated structures and infrastructure. Subject trees and shrubs are mostly landscape plantings with varying levels of maintenance and care.

The land is mostly gently sloping, and sandy loam soil provides good growing conditions.

Richmond Valley Council does not attribute the site with any mapped *Terrestrial Biodiversity (BIO)* values.

Similarly, the site is not mapped as *Biodiversity Values*, under the NSW Government *Biodiversity Values Map and Threshold Tool*. The *Biodiversity Values (BV) Map*³ identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing including mapped core Koala habitat and Areas of Outstanding Biodiversity Value (AOBV) under the NSW *Biodiversity Conservation Regulation 2017*.

2. Assessment Methods

As part of the preliminary assessment, Visual Tree Assessments were undertaken on 10/01/23 by AQF level 5 arborist, Michael Hallinan and trainee Jordan Rockford. The subject trees were identified to species level where practicable and were numbered in line with tree numbering on the supplied survey plan.

Measurements were made of tree dimensions, i.e. Diameter at Breast Height (DBH)⁴ and Diameter immediately Above the Root Buttress (DARB)⁵ in case of a Tree Protection Zone encroachment. Visual estimates were made tree height and average crown spread.

³ NSW Department of Planning and Environment (DPE) 2022, Biodiversity Values Map and Threshold Tool. Accessed 17/07/22, www.lmbc.nsw.gov.au/

⁴ **Diameter at Breast Height (DBH)** refers to the diameter of the trunk at breast height (1.4m above the ground) measured with diameter tape (Matheny, NP & Clark, JR 1994, *A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas*, 2nd edn., International Society of Arboriculture, Illinois, USA).

⁵ **Diameter Above the Root Buttress (DARB)** is used to calculate the Structural Root Zone (SRZ) of a tree, rounded to the nearest centimetre.



Visual Tree Assessments (VTAs) focused on tree health⁶, condition⁷, structural defects⁸, load⁹ factors and age class¹⁰. Trees displaying low vigour¹¹, weakly formed codominant stems¹², substantial leans¹³, over-extended branches or other structural defects were noted where they were detected.

Binoculars were used to view upper parts of trees; a fibreglass sounding hammer to assess tree hollowness; and a pointed metal probe to lift bark, examine the extent of any suspected points of decay, and to assess soil conditions. Diameter tape was used to measure DBH and DARB.

⁶ **Tree Health** – Categorised as:

Good: A tree with good health exhibits one or more of the following: Crown full and dense; foliage of good colour and with minimal or no insect or disease damage; typical growth indicators slightly abnormal for species, e.g. extension growth, leaf size and crown foliage density; no or minimal crown die-back; good woundwood and/or response growth development. Associated with high tree vigour.

Fair: A tree with fair health exhibits one or more of the following: Has less than 12% dead wood; has minor crown dieback; foliage mostly with good colour and/or minor to moderate insect or disease damage, minor pathogen damage present; typical growth indicators slightly abnormal for species, e.g. extension growth, leaf size and crown foliage density.

Poor – Very Poor: A tree with poor health exhibits one or more of the following: Has greater than 12% dead wood; significant crown dieback present; foliage discoloured or distorted leaves; excessive epicormic growth; poor woundwood and/or response growth development; substantial wood decay affecting health; signs of strain leading to tree decline. Associated with low tree vigour.

Dead: A tree that is still standing but no longer shows signs of being alive.

⁷ **Tree Condition** refers to a tree's structural form or habit and is expressed as:

Good: A tree with good structural form or habit and free from or with only negligible/minor structural defects, e.g. upright or with a slight lean; apparently stable; well tapered stems; full and balanced/symmetrical crown; free from or with only slight signs of pests and structural wood decay; nil or slight crown/branch dieback.

Fair: A tree with moderately good structural form or habit typical of the species and/or minor to moderate structural defects, e.g. slight to moderate lean, over-extended branches or signs of pests and structural wood decay; slight crown/branch dieback or stem cracks; semi-full crown; slightly unbalanced/asymmetrical crown; codominant stems.

Poor: A tree with moderately poor structural form or habit atypical of the species and/or substantial structural defects, e.g. moderate to high lean (uncorrected), crown/branch dieback, stem cracks, wounds, cavities, signs of pests and structural wood decay, epicormic shoot development, over-extended branches or unbalanced/asymmetrical crown; poorly tapered stems; weakly formed codominant stems; deformed stems; roots that are shallow, exposed, twisted or broken.

Very Poor: A tree with substantially poor structural form or habit atypical of the species and/or substantial structural defects and signs of failure of the tree or tree parts, refer to poor condition examples above.

Dead: A tree that is still standing but no longer shows signs of being alive.

⁸ **Structural defects** are physiological weaknesses, faults or features that detract from tree condition or the uniform distribution of mechanical stress. They may be either naturally occurring e.g. from storm damage, pests, pathogens, wind and gravity forces; or from human activities, e.g. poor planting or pruning practices. Structural defects can include leans; unbalanced or poorly formed crowns; wounds; cavities; weakly formed codominant stems; included bark; poor structural branch attachments; over-extended branches; poorly tapered stems; crown or branch dieback; stem cracks; roots that are shallow, exposed, twisted or broken; excessive epicormic shoot development and the effects of pests, diseases and poor pruning practices.

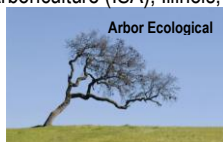
⁹ **Loads** include dynamic load from wind and static load from gravity acting on a tree. These two loads can interact and are affected by factors including wind exposure, crown size relative to trunk diameter; crown density, abundance of interior branches, vines or mistletoe; and recent of planned changes affecting load (Dunster, JA, Smiley, ET, Matheny, N & Lilly, S, 2013, *Tree Risk Assessment Manual*, International Society of Arboriculture, Illinois, USA).

¹⁰ **Age class** categories: (J) Juvenile refers to a young or juvenile, established tree; (SM) Semi-mature refers to a tree between immaturity and full size; (M) Mature refers to a full size tree with capacity for some further growth; (OM) Over-mature refers to a tree in decline; (D) Dead refers to a tree that is still standing but no longer shows signs of being alive.

¹¹ **Vigour** refers to a tree's capacity to resist strain and continue to grow; overall health, condition and resilience on a qualitative scale from high to low (Wilson P, 2021, *A-Z of tree terms: A companion to British arboriculture*, 3rd Ed.).

¹² **Codominant stems** are stems that originate at about the same position on a stem and are approximately the same diameter. The structure is defective in various circumstances because the only way trunk xylem can grow around a branch, and form a strong attachment, is for the trunk to be larger in diameter than the branch attachment. Co-dominant stems typically lack overlapping tissue present in a collar and often have narrow angles between stems and included bark between stems which can lead to failure at the point of attachment. Additionally, the weight and leverage of the co-dominant stems increases with age, intensifying the stress on the attachment (Harris RW, Clark JR & Matheny NP, 1999 *Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines*, Prentice Hall, NJ USA).

¹³ **Lean** refers to the deviation in the vertical angle of the main stem/s categorised in this instance as: Slight: up to 5°; Moderate: 6° to 12°; High: 13° to 20°; and Severe: >21°. Leans can originate from different points along the stem/s and are caused by factors such as competition for light, slope, prevailing winds and genetics. Leans may be static, progressive or corrected. They may be hazardous, particularly when other defects are present (Smiley TE, Matheny N & Lilly S 2011, *Tree Risk Assessment, Best Management Practices*, International Society of Arboriculture (ISA), Illinois, USA; and Dunster et al 2013).



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To guide project design and tree and shrub retention and removal considerations, Tree Retention Value (TRV) scores were assigned to subject trees based on categories (best fit) modified from Morton (2006)¹⁴, refer to **Section 2.1**.

Subject trees with *Very Low* Tree Retention Value scores are recommended to be removed where they were identified as hazardous or environmental weed species. Otherwise, tree and shrub retention, removal, pruning and protection recommendations have been guided by development design.

To detect any significant heritage values for the site, searches were made of the *Richmond Valley Local Environmental Plan 2012 (S. 5.10, Heritage Conservation)*, the *NSW State Heritage Inventory*, and the *Australian Heritage Database*.

Tree impact assessment included preparation of a tree removal, tree retention and tree protection plan drawing with TPZ encroachment details, refer to **Table 1 and Figure 1**. Various recommendations, particularly in relation to tree protection, are outlined below in **Section 4**.

2.1. Tree and Shrub Retention Value Assessment Criteria

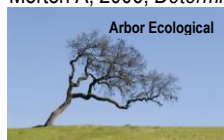
Tree Retention Value (TRV) scores for subject trees and shrubs based on categories modified from Morton (2006) are as follows, refer to **Table 1 and Figure 1**.

For consistency, commonly occurring ornamental shrubs have been assigned Tree Retention Value (TRV) scores in line with the criteria used for trees. It may be argued that ornamental shrubs have lower retention values since they are more easily replaced than established trees, with advanced nursery stock as part of a development landscaping plan.

1. Very High

- Local, State or Commonwealth listed threatened species, rare, uncommon, or having substantial botanical, heritage, or cultural values.
- Known fauna habitat tree, recognised as providing an important habitat resource for threatened species, e.g. food, shelter, or breeding resources.
- Remnant tree or representative of the original vegetation of an area prior to development.
- Very large live crown size for the species.
- Visually prominent in the landscape or having landmark values.
- Very good form and habit typical of the species and makes a significant contribution to the amenity and visual character of an area.
- Vigorous and in good health and condition.
- Structurally stable tree that may require remedial works to reduce hazards and enable the tree to be retained with vitality and safety.

¹⁴ Morton A, 2006, *Determining the retention value of trees on development sites*. Treenet Journal.



2. High

- Likely fauna habitat tree, suspected as providing an important habitat resource for threatened species, e.g. food, shelter, or breeding resources.
- Naturally occurring, indigenous species endemic to an area.
- Large live crown size for the species.
- Good form and habit typical of the species; makes a significant contribution to the amenity and visual character of an area.
- Vigorous and in fair to good health and condition.
- Structurally stable tree with minor defects that may require remedial works to reduce hazards and enable the tree to be retained with vitality and safety.
- Not readily replaced with new tree planting from advanced nursery stock.

3. Moderate

- Generalist fauna habitat tree, providing habitat resources for native fauna.
- Moderately large live crown size for the species.
- Moderate form and habit for the species; may exhibit minor to moderate deviations from typical species form and habit.
- Makes a fair contribution to the visual character and amenity of an area.
- Moderately vigorous and in fair health and condition.
- Structurally stable tree with defects that may require remedial works to reduce hazards and enable the tree to be retained with vitality and safety.

4. Low

- Poor form and habit; not representative of the species or showing significant deviations from the typical form and habit.
- Small live crown size for the species.
- Not visibility prominent in the landscape.
- Makes a negligible contribution or has a negative impact on the amenity and visual character of an area.
- Low vigour and in poor to fair health and/ or condition.
- Structurally defective, unstable, and/or hazardous tree that may require substantial remedial works to reduce hazards and enable the tree to be retained with vitality and safety.
- Landscape or other planting readily replaced with a new planting from advanced nursery stock.

5. Very Low

- Environment weed species recognised as being invasive.
- Nuisance tree or species due to its position relative to buildings or infrastructure.
- Low vigour and in poor to very poor health and/ or condition.
- Structurally defective, unstable, and/or hazardous tree that cannot practicably be retained with vitality and safety through remedial works.



3. Impact Assessment Findings

Table 1 provides a tree schedule and findings in relation to Visual Tree Assessments, TPZ encroachment details, recommendations, observations, comments & plates.

Figure 1 illustrates subject trees; tree retention and removal; TPZ encroachments for trees to be retained; and project TPZ fence locations in relation to the development.

Key assessment findings are as follows:

- A total of 26 trees, shrubs and clumps were assessed within the area of the site.
- Five trees are recommended to be retained, of which, no substantial impact is expected for three trees, and two trees have Minor¹⁵ TPZ encroachments of less than 10%. Standards Australia (2009) note that TPZ locations may be varied for trees with Minor TPZ encroachments where the area lost to the encroachment is compensated for elsewhere and is contiguous with the TPZ, as is the case in this instance where considered necessary.
- No trees to be retained have Major¹⁶ TPZ encroachments outside the Structural Root Zone (SRZ)¹⁷, which is critical for tree stability. Trees with Minor TPZ encroachments are recommended to be retained and are expected to cope with construction activities, remain viable and maintain health, condition and vitality provided tree protection measures are effectively implemented as outlined below in **Section 4**.
- The remaining trees and shrubs are recommended to be removed for construction and environmental weed status.
- Trees and shrubs to be removed are mostly landscape plantings with varying levels of maintenance and care and generally readily replaceable with new landscape plantings.
- It is understood that there is no cut or fill works proposed near any retained trees on site.
- No significant heritage values were detected in relation to site vegetation from searches of the *Richmond Valley Local Environmental Plan 2012 (S. 5.10, Heritage Conservation)*, the *NSW State Heritage Inventory*, and the *Australian Heritage Database*.
- Site access for demolition and construction machinery is considered able to be routed around Tree Protection Zones so as to not impact trees to be retained.
- Proposed construction works are considered unlikely to substantially increase exposure of trees to prevailing winds and storms.

¹⁵ A **Minor TPZ encroachment** occurs where an incursion less than 10% of the TPZ area outside the SRZ is encroached by proposed works (Standards Australia 2009).

¹⁶ A **Major TPZ encroachment** occurs where an incursion greater than 10% of the TPZ area or within the SRZ is proposed (Standards Australia 2009).

¹⁷ **Structural Root Zone (SRZ)** is the radius of the area required for tree stability. It only needs to be calculated (using the formula $SRZ \text{ radius} = (D \times 50)^{0.42} \times 0.64$) when major encroachment into a TPZ is proposed. A larger area than the SRZ is required to maintain tree viability (Standards Australia 2009). The SRZ only needs to be calculated when a Major encroachment into a TPZ is proposed.



4. Recommendations

4.1. General Tree Protection Recommendations

Trees have been recommended to be retained where it is considered that they have conservation values; are not substantially defective or hazardous; and where development impacts can be sufficiently avoided and/ or minimised to maintain tree vitality into the future.

Establishment and maintenance of Project Tree Protection Zones (TPZs) throughout the construction process is important to protect tree roots and crowns; and maintain tree health and condition into the future.

Based on the proposed works, the following recommendations are made, refer to **Table 1** and **Figure 1**:

- In line with AS4970 and best practice, a Project Arborist should be engaged to guide implementation of tree protection measures.
- Tree protection should comply with Section 4, Tree Protection Measures, of Australian Standard 4970 – 2009 *Protection of trees on development sites* unless otherwise noted in this report or recommended by the Project Arborist.
- The Project Arborist should assist with establishment of project TPZ fences.
- The Project Arborist should be consulted to review any changes to design and construction plans in relation to tree protection and other recommendations.
- The Project Arborist should advise on tree protection for construction works within TPZs; and be onsite to monitor potential tree impacts for excavation works (as a minimum) within TPZs.
- Mulch up to 12cm depth and/ or lightweight load-sharing/ weight distribution mats, boards, planks or plates should be used in consultation with the Project Arborist if construction machinery are required to work within or pass through project TPZs.
- TPZ fences should be in place prior to the commencement of all works, including demolition and tree removal works, and before construction machinery and materials are brought onto the site.
- Tree protection fences are to be maintained in good condition during construction works and kept in place until after completion of construction works, including landscaping, or as otherwise advised by the Project Arborist.
- Any use of bobcat/ skid steer machinery for landscaping construction works are to be avoided where practicable within TPZ or otherwise monitored by the Project Arborist
- During any excavation works within tree TPZs, tree roots exposed >4cm diameter that would be lost due to construction, and coming from the general direction of retained trees, should be cleanly cut with a sharp handsaw or chainsaw.
- The role and importance of tree protection measures should be addressed with all construction staff during site inductions and toolbox talks.
- A copy of the TPZ Plan drawing (i.e. **Figure 1**) and this report should be retained on site with other construction drawings throughout the construction phases for reference as required.



The following activities should not be carried out within TPZs unless in consultation with the Project Arborist:

- Machinery access including excavators, bobcats, etc.
- Disposal of chemicals and liquids including concrete and mortar slurry, solvents, paint, fuel or oil.
- Stockpiling, storage or mixing of sand, gravel or other building materials.
- Refuelling, parking, storing or washing tools, equipment, machinery or vehicles.
- Soil excavation, trenching, placement of fill, or changes to soil levels.
- Installation of temporary offices, structures, or underground services.
- Erection of scaffolding.
- Tree removal or tree pruning.

4.2. Project Tree Protection Zone (TPZ) Fence Specifications

The project Tree Protection Zones (TPZs) are the areas dedicated to tree protection. **Figure 1** shows the recommended project TPZ fence locations in relation to retained trees and the construction footprint.

Project TPZs are a variation to that of AS4970 (Standards Australia 2009), designed to ensure tree protection under the existing site conditions and construction requirements. The project TPZs may be only partially enclosed by tree protection fences and are considered to be appropriate in this instance to exclude construction impacts.

Recommended Project TPZ fence specifications are as follows:

- Minimum flexible plastic barrier mesh TPZ fencing, refer to **Figure 2**. The fencing should be secure and fastened to prevent unassisted movement. Steel mesh construction fencing, refer to **Figure 3**, may be used as an alternative or as required.
- A minimum of one TPZ sign every 10m of project TPZ fence should be installed indicating “*Tree Protection Zone, No Access*” or similar, refer to **Figures 4 and 5**. Each sign shall be weather resistant; a minimum size of 29.7mm x 420mm; and include the name and contact details of the Project Manager and/or the Project Arborist. The signs shall be visible from the main work areas of the site.

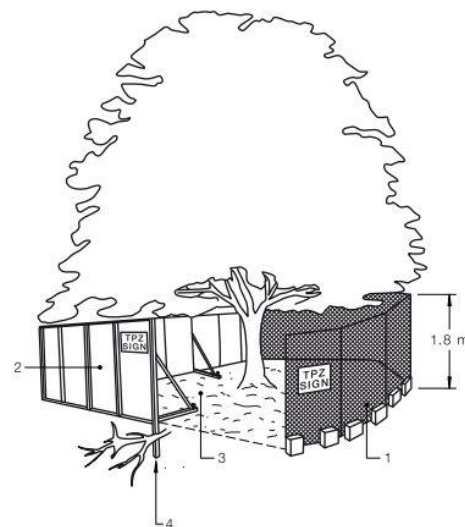


Figure 2. Example project Tree Protection Zone plastic barrier mesh fence



Figure 4. Example Tree Protection Zone sign, Standards Australia (2009)

Figure 3. Example Tree Protection Zone steel/ wire mesh fence, Standards Australia (2009)



Figure 5. Example Tree Protection Zone sign

4.3. Other Recommendations

- Any new landscape plantings for the site should consist of non-invasive species selections and endemic native species should be considered.
- To promote tree health, consider application (where practical) of forest mulch or tea tree mulch around drip zones of retained trees to a depth of up to 100mm and up to 0.5m from tree bases.
- Any tree pruning should be done in accordance with relevant sections (e.g. Section 5.4, Final Cut) of the Australian Standard AS4373 Pruning of amenity trees, and by a minimum AQF level 3 qualified arborist with appropriate experience.
- A rapid Visual Tree Assessment of all site trees by a minimum AQF Level 5 qualified arborist is recommended to be organised by the landholder/s every three years and following severe thunderstorms¹⁸.

5. General Assumptions and Limitations

- Information in this report relates only to the subject trees examined and reflects their condition at the time of inspection.
- Information presented in this report relies on information supplied by the client.
- No risk assessments were included as part of this assessment and no recommendations are made in regard to risk management.
- This assessment was limited to visual examination of accessible items without climbing, coring, dissecting or excavating. No responsibility is assumed for any tree

¹⁸ **Severe thunderstorms** produce any of the following: Large hail (2cm in diameter or larger); damaging wind gusts (generally wind gusts exceeding 90 km/h); heavy rainfall which may cause flash flooding; and/or Tornadoes (Australian Government Bureau of Meteorology, No Date, *Severe Thunderstorm Warning Services*, accessed 06/04/13 <http://www.bom.gov.au/catalogue/warnings/>).



defects that could only reasonably have been discovered by performing climbing, coring, dissecting or excavating.



- Michael Hallinan and Arbor Ecological bear no responsibility for the actions and consequences of any party that performs works associated with recommendations outlined in this report.



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Table 1. Visual Tree Assessment findings, TPZ encroachment details, recommendations, observations, comments & plates, refer to Figure 1.



Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T1 Tuckeroo <i>Cupaniopsis anacardioides</i> Planted; Native rainforest shrub or small tree TRV Moderate	15 17 2.5 2.0	Semi- mature Good Good	2.0 1.5 0	RETAIN tree, install TPZ fence No substantial impact expected Upright, Exposed roadside planting, Low volume deadwood ²¹ , Generally a structurally stable species	
T2 Acalypha <i>Acalypha</i> sp. or var. Planted; Exotic ornamental shrub TRV Low	9 12 3 2	Mature Fair Fair	2.0 1.5	REMOVE shrub for construction Shrub base is entirely within the construction footprint Multi-stemmed, Spreading, Overly closely planting and light reaching, Low volume deadwood	

¹⁹ **Recommendations.** Refer to Section 4 of this report for detailed recommendations.



²⁰ **Nature of any AS4970 TPZ encroachment** noted where relevant and may include the TPZ percentage encroachment and/ or SRZ encroachment distance from the most substantial incursion/ encroachment as per design drawings.

²¹ **Deadwood** refers to dead branches and crown sections categorised as a percentage of crown mass as low volume (up to 5%), moderate volume (6% to 12%), high volume (13% to 20%) and very high volume (>20%). Maximum deadwood diameter size estimate is generally noted only where greater than 8cm.





Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T3 Murraya <i>Murraya paniculata</i> Planted; Exotic ornamental shrub, Environmental weed species TRV Very Low	8 12 3.5 3	Semi- Mature Fair Fair	2.0 1.5	REMOVE shrub for construction and environmental weed status Shrub base is entirely within the construction footprint Spreading, Overly closely planting and light reaching, Poor structure and form, Low volume deadwood	
T4 Tuckeroo <i>Cupaniopsis anacardioides</i> Planted; Native rainforest shrub or small tree TRV Very Low	10 12 1.5 1.0	Juvenile Poor Poor	2.0 1.5	RETAIN tree , install TPZ fence No substantial impact expected Upright, Stunted growth, Exposed roadside planting, Low volume deadwood, Generally a structurally stable species	





Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T5 Weeping Bottlebrush <i>Callistemon viminalis</i> Planted; Native rainforest shrub or small tree TRV Very Low	15 18 4 2.5	Semi- Mature Very Poor Very Poor	2.0 1.6	REMOVE shrub/ tree for construction Shrub/ tree base is entirely within the construction footprint Upright, Codominant stems @ ~1.2m with narrow v-shaped union, Heavy infestation of mistletoe, Low crown foliage density, Small leaf size, Moderate volume deadwood to ~5cmØ	
T6 Mango <i>Mangifera indica</i> Planted; Exotic fruit tree TRV Very Low	26 30 3 3	Semi- Mature Poor Poor	3.1 2.0	REMOVE tree due to Poor health and condition and Very Low TRV NA Spreading, Low crown foliage density, Stunted growth, Multi- stemmed @ ~1m, Low volume deadwood	





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T7 to T9 Acalpyha <i>Acalpyha</i> sp. or var. Planted; Exotic ornamental shrub TRV Very Low	Average 6 11 2 2	Semi- Mature Poor Poor	2.0 1.5	REMOVE shrubs for construction and due to Poor health and condition and Very Low TRV Major TPZ encroachments within SRZ from building construction and stormwater drain installation Spreading; Low crown foliage density, Multi-stemmed, Moderate volume deadwood	
T10 Brush Cherry <i>Syzygium australe</i> Planted; Native rainforest tree TRV Moderate	25 29 5 6	Mature Fair Fair	3.0 2.0	REMOVE tree for construction Major TPZ encroachment 0.9m within SRZ from building construction Spreading, Codominant stems @ 0.5m with narrow v-shaped union, Low volume deadwood	





Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T11 & T12 Duranta <i>Duranta repens</i> Planted; Exotic ornamental shrub, Environmental weed species TRV Very Low	14 16 3 2	Mature Fair Fair	2.0 1.5	REMOVE shrubs for environmental weed status NA Spreading; Multi-stemmed from near base, Overly closely planting, Low volume deadwood	
T13 Murraya <i>Murraya paniculata</i> Planted; Exotic ornamental shrub, Environmental weed species TRV Very Low	8 14 2 1	Near dead Very Poor Very Poor	2.0 1.5	REMOVE shrub for environmental weed status NA Spreading; Multi-stemmed, near leafless, High volume deadwood	





Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T14 Little John Bottlebrush <i>Callistemon var. Little John</i> Planted; Native ornamental shrub TRV Low	17 22 2 1	Mature Fair Poor	2.0 1.8	REMOVE shrub for construction Major TPZ encroachment 1.6m within SRZ from building construction Moderate lean E, Crown displaced by exotic Senna weed infestation, Moderate volume deadwood to ~5cmØ	
T15 Mango <i>Mangifera indica</i> Planted; Exotic fruit tree TRV Very Low	44 54 3.5 2	Mature Poor Poor	5.3 2.5	REMOVE tree for construction Tree base is entirely within the construction footprint Upright; Dead sections in crown, High Lopping/ topping, Poor past pruning. Moderate volume deadwood to ~10cmØ	





Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T16 Brush Cherry <i>Syzygium australe</i> Planted; Native rainforest tree TRV Low	17 18 6 2	Mature Good Fair	2.0 1.6	REMOVE tree for construction Tree base is entirely within the construction footprint Moderate lean to N, Multi-stemmed @ ~1.6m, Overly close Brush Cherry screen plantings, Crown lift pruning, Low volume deadwood	
T17 Brush Cherry <i>Syzygium australe</i> Planted; Native rainforest tree TRV Low	14 16 6 4	Mature Good Fair	2.0 1.5	REMOVE tree for construction Tree base is entirely within the construction footprint Multi-stemmed, Overly close Brush Cherry screen plantings, Crown lift pruning, Low volume deadwood, Exotic Duranta weed near base	





Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T18 Brush Cherry <i>Syzygium australe</i> Planted; Native rainforest tree TRV Low	26 29 6 4	Mature Good Fair	3.1 2.0	REMOVE tree for construction Tree base is entirely within the construction footprint for stormwater pipe installation Upright, Multi-stemmed, Overly close Brush Cherry screen plantings, Crown lift pruning, Low volume deadwood	
T19 Chinese Celtis <i>Celtis sinensis</i> Planted; Exotic ornamental tree, Environmental weed species TRV Very Low	19 24 3 3	Semi-Mature Good Fair	2.3 1.8	REMOVE tree for environmental weed status NA Spreading, Multi-stemmed, damaging house gutter, Poor past pruning topping/ topping, Low volume deadwood	





Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T20 A Bottlebrush <i>Callistemon sp. or var.</i> Planted; Native ornamental shrub TRV Moderate	26 30 2 2	Mature Fair Fair	3.1 2.0	REMOVE shrub for construction Shrub base is entirely within the construction footprint Spreading; Multi-stemmed, Low volume deadwood	
T21 Brush Cherry <i>Syzygium australe</i> Planted; Native rainforest tree TRV Moderate	20 24 5 4	Mature Good Fair	2.4 1.8	REMOVE tree for construction Tree base is entirely within the construction footprint Slight lean to S, Codominant stems with narrow v-shaped union, Formative lopping/ topping and target avoidance pruning, i.e. house and powerline, Low volume deadwood	




Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T22 Exotic Cypress <i>Cyressus sp.</i> Planted; Exotic ornamental tree TRV Moderate	38 46 5 2.5	Mature Fair Fair	4.6 2.4	RETAIN tree, install TPZ fence; Project Arborist to advise on tree impact avoidance and minimisation; and monitor excavation works within TPZ, avoid structural tree roots when installing new colorbond fence within TPZ Minor TPZ encroachment of 3% outside the SRZ from stormwater pipe installation Upright, Signs of inner leaf dieback, Multi-stemmed near base, Low volume deadwood	
T23 Exotic Cypress <i>Cyressus sp.</i> Planted; Exotic ornamental tree TRV Very Low	34 40 5 3	Dead Dead Dead	NA NA	REMOVE dead tree NA	



Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T24 Exotic Cypress <i>Cypressus sp.</i> Planted; Exotic ornamental tree TRV Very Low	36 43 5 3	Dead Dead Dead	NA NA	REMOVE dead tree NA	
T25 Mango <i>Mangifera indica</i> Planted; Exotic fruit tree TRV Moderate	44 54 5 5	Semi- Mature Fair Fair	5.2 2.5	RETAIN tree, install TPZ fence, avoid structural tree roots when installing new colorbond fence within TPZ; Project Arborist to monitor excavation works within TPZ No substantial impact expected Spreading, Multi-stemmed from near base with narrow v-shaped unions, Concrete slab at base of tree, Low volume deadwood	



Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	TPZ (m) SRZ (m)	Recommendations ¹⁹ Nature of any AS4970 TPZ encroachment ²⁰ Health & Condition Observations and Comments	Plates
T26 Avocado <i>Persea americana</i> var. Planted; Exotic fruit tree TRV High	27 31 6 5	Semi- Mature Good Good	3.2 2.0	RETAIN tree, install TPZ fence, Project Arborist to advise on tree impact avoidance and minimisation; and monitor excavation works within TPZ Minor 2% TPZ encroachment outside the SRZ from retaining wall construction. Upright, Grafted and producing edible fruit (possibly Sharwil variety), Low volume deadwood	



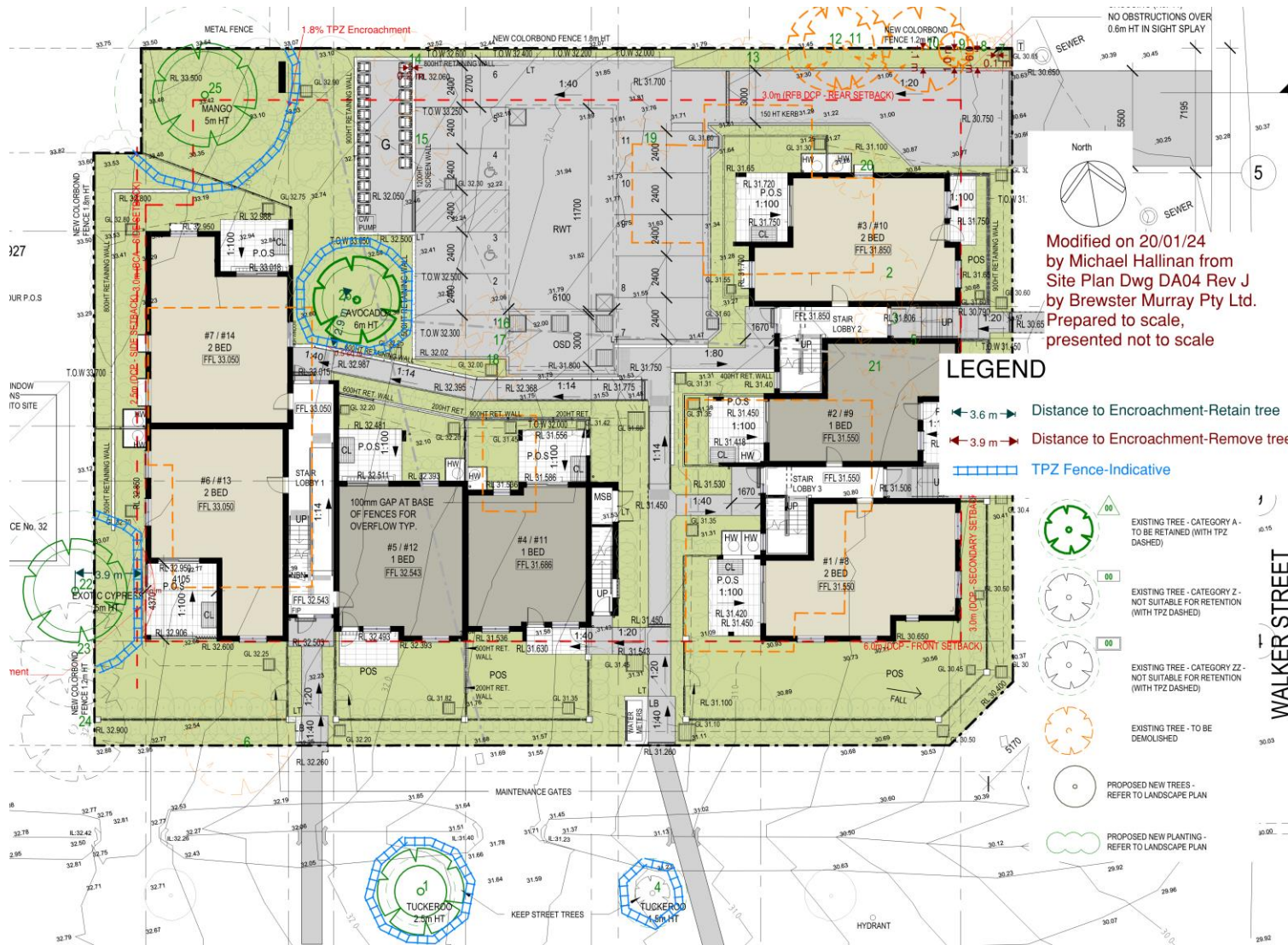


Figure 1. Tree removal, tree retention and tree protection plan drawing, refer to Table 1.



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