



# **Arboricultural Impact Assessment Report**

## **Seniors housing development, NSW Land & Housing Corporation**

**3 Cooke Avenue & 1, 3 and 5 Deegan Drive,  
Alstonville**

**Prepared for: DTA Architects**

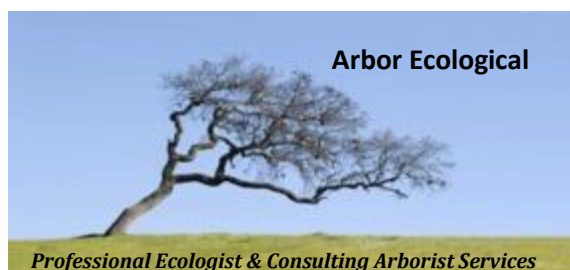
**Date: 21 August 2023**

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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 DTA Architects to undertake an arboricultural/ tree impact assessment and prepare an associated report for a NSW Land & Housing Corporation seniors housing development project for three properties at 3 Cooke Avenue & 1, 3 and 5 Deegan Drive, Alstonville, in the Ballina Local Government Area, hereafter referred to as *the site*.

The assessment followed a preliminary arboricultural/ tree impact assessment and report, including Visual Tree Assessments (VTAs)<sup>1</sup> 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 **Figures 1a and 1b**) 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*<sup>2</sup> as a primary reference and guide for tree protection and management, and with reference to the Ballina Shire Development Control Plan.
- To provide recommendations regarding tree removal, tree retention, tree pruning, tree protection measures and other vegetation management measures.

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<sup>1</sup> **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).

<sup>2</sup> **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 clay loam ferrosol (krasnozem) soil provides good growing conditions.

Ballina Shire Council online mapping shows the site is not attributed with any preferred or core Koala habitat, DCP *Wildlife Corridors* or *Natural Areas and Habitat*.

Similarly, the site is not mapped as *Biodiversity Values*, under the NSW Government *Biodiversity Values Map and Threshold Tool*. The *Biodiversity Values (BV) Map*<sup>3</sup> 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)<sup>4</sup> and Diameter immediately Above the Root Buttress (DARB)<sup>5</sup> in case of a Tree Protection Zone encroachment. Visual estimates were made tree height and average crown spread.

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<sup>3</sup> NSW Department of Planning and Environment (DPE) 2022, Biodiversity Values Map and Threshold Tool. Accessed 10/01/23, [www.lmbc.nsw.gov.au/](http://www.lmbc.nsw.gov.au/)

<sup>4</sup> **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).

<sup>5</sup> **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 health<sup>6</sup>, condition<sup>7</sup>, structural defects<sup>8</sup>, load<sup>9</sup> factors and age class<sup>10</sup>. Trees displaying low vigour<sup>11</sup>, weakly formed codominant stems<sup>12</sup>, substantial leans<sup>13</sup>, 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.

<sup>6</sup> **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.

<sup>7</sup> **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.

<sup>8</sup> **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.

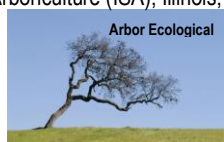
<sup>9</sup> **Loads** include dynamic load from wind and static load from gravity acting on a tree. These two loads can interact and are affected by factors including wind exposure, crown size relative to trunk diameter; crown density, abundance of interior branches, vines or mistletoe; and recent of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

<sup>10</sup> **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.

<sup>11</sup> **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*, 3<sup>rd</sup> Ed.).

<sup>12</sup> **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).

<sup>13</sup> **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).



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)<sup>14</sup>, 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 *Ballina Shire Local Environmental Plan*, 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 Figures 1a and 1b**. 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 Figures 1 and 2**.

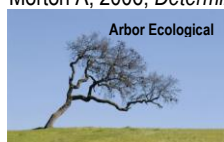
For consistency, commonly occurring ornamental shrubs have been assigned Tree Retention Value (TRV) scores in line with the criteria used for trees. It may be argued that ornamental shrubs have lower retention values since they are more easily replaced than established trees, with advanced nursery stock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

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<sup>14</sup> 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.

**Figures 1a and 1b** illustrate subject trees; tree retention and removal; relevant TPZ encroachments; and project TPZ fence locations in relation to demolition and construction works and trees to be retained.

Key assessment findings are as follows:

- A total of 65 trees, palms, shrubs and clumps were assessed within the area of the site.
- Ten trees and palms are recommended to be retained, of which, no substantial impact is expected for six, and three trees have a Minor<sup>15</sup> TPZ encroachment 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.
- One tree to be retained (T39) has a Major<sup>16</sup> TPZ encroachment outside the Structural Root Zone (SRZ)<sup>17</sup>, which is critical for tree stability. Proposed works within the TPZ are considered to be tolerable. Tree 39 and other trees recommended to be retained 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.
- Palm impacts are considered differently since TPZ and SRZ calculations under AS4970 are not an appropriate impact assessment measure for palms. Palms typically develop clumping, fibrous root systems with roots originating directly from the root crown below the trunk. Palm roots tend not to re-sprout when severed but are seasonally generated from the root crown. A healthy palm root ball can generally support the recovery of roots following some loss of roots. During development, the Tree Protection Zone (TPZ) of palms is therefore different to that of broad-leaved and conifer species.
- 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 are currently no cut or fill earthworks required within TPZs of trees to be retained, including *Deep Soil Zones and Private Open Space* areas indicated on provided plan drawings.
- No significant heritage values were detected in relation to site vegetation from searches of the *Ballina Local Environmental Plan 2021 (Schedule 5*,

<sup>15</sup> 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).

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

<sup>17</sup> **Structural Root Zone (SRZ)** is the radius of the area required for tree stability. It only needs to be calculated (using the formula  $SRZ\ radius = (D \times 50)^{0.42} \times 0.64$ ) 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.





*Environmental Heritage), 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.

For Major TPZ encroachments, Standards Australia (2009) note that the Project Arborist<sup>18</sup> must demonstrate that trees would remain viable if they are to be retained. Consideration should be given to factors such as:

- The location and distribution of roots and likely root loss. Detailed root investigations may or may not be required.
- Tree species and tolerance to root disturbance.
- Age, vigour and size of the tree.
- Lean and stability of the tree.
- Soil characteristics, topography and drainage.
- Design factors.

In regard to the Major TPZ encroachment proposed for Tree 39, consideration was given to likely construction impacts; tree structure and condition; tree health, maturity and size; known tree species susceptibility to root disturbance or loss; and matters relating to load affecting tree stability. Other impact mitigating factors are as follows:

- The Project Arborist is recommended to monitor excavation and TPZ fence management (as a minimum) within the TPZ and cleanly cut any exposed tree roots >4cm diameter that would be lost due to construction.
- No substantially large surface roots were observed in the area of the proposed encroachment.
- Expected tree root zone impacted areas are compensated for on other sides that are unlikely to be impacted by works.
- Proposed construction works are considered unlikely to substantially increase exposure of trees to prevailing winds and storms.

## 4. Recommendations

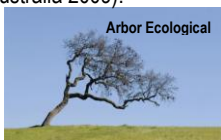
### 4.1. General Tree Protection Recommendations

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.

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<sup>18</sup> The **Project Arborist** should have minimum AQF Level 5 (Diploma level) qualifications and suitable experience in tree protection (Standards Australia 2009).



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

- 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.
- Project Arborist should review finalised stormwater plans and plans for underground services installation when available and advise on retained tree impact avoidance and minimisation measures.
- 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. **Figures 1a and 1b**) 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. **Figures 1a and 1b** show the recommended project TPZ fence locations in relation to retained trees and the construction footprint.

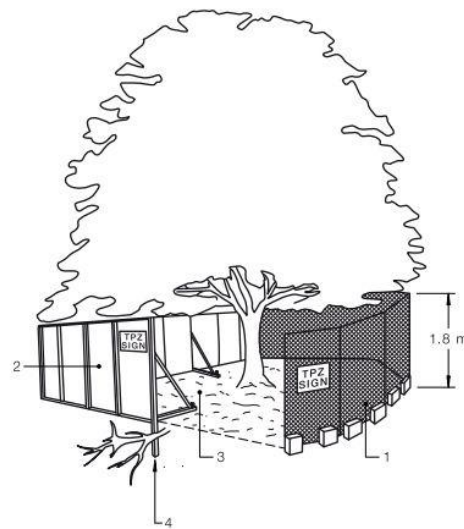
Project TPZs are a variation to that of AS4970 (Standards Australia 2009), designed to ensure tree protection under the existing site conditions and construction requirements. The project TPZs may be only partially enclosed by tree protection fences and are considered to be appropriate in this instance 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 3. Example Tree Protection Zone steel/ wire mesh fence, Standards Australia (2009)**





**Figure 4. Example Tree Protection Zone sign, 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 biannually and following severe thunderstorms<sup>19</sup>.

<sup>19</sup> **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/>).







## 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.
- It is understood that there are currently no cut or fill earthworks required within TPZs of trees to be retained, including *Deep Soil Zones and Private Open Space* areas indicated on provided plan drawings.
- 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 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.





**Table 1. Visual Tree Assessment findings, TPZ encroachment details, recommendations, observations, comments & plates, refer to Figures 1a and 1b.**







Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T1 Mickey Mouse Plant <i>Ochna serrulata</i> Exotic environmental weed shrub species TRV Very Low	N/A N/A 2 2	Mature Fair Fair	N/A N/A	REMOVE shrub for environmental weed status NA Multi-stemmed from base, spreading		
T2 Azalea <i>Azalea sp. or var.</i> Planted; exotic ornamental shrub species TRV Low	12 15 2 2	Mature Fair Fair	2.0 1.5	REMOVE shrub due to Low TRV NA Multi-stemmed from base, spreading, High azalea mite infestation, Low inner foliage density		

<sup>20</sup> **Recommendations.** Refer to Section 4 of this report for detailed recommendations.

<sup>21</sup> **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.

















Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T3 A Cypress <i>Cupressus</i> sp. or var. Planted; exotic ornamental tree species TRV Low	58 65 10 7	Over- Mature Poor Poor	7.0 2.8	<b>REMOVE</b> tree for construction and due to Poor health and condition and Low TRV Major TPZ encroachment on the edge of the SRZ from building construction Poor structure and form, codominant stems with u-shaped union, 3 stemmed, Slight lean, Uncorrected; High volume deadwood <sup>22</sup> to ~8 cmØ		
T4 Murraya <i>Murraya paniculata</i> Planted; exotic ornamental, environmental weed shrub species TRV Low	29 33 2 2.5	Mature Good Good	3.5 2.0	<b>REMOVE</b> shrub for construction and for environmental weed status Shrub base is entirely within the construction footprint Spreading; Hedged, Multi-stemmed, Low volume deadwood		
T5 Brush Cherry <i>Syzygium australe</i> Planted; native rainforest shrub or small tree species TRV Moderate	15 18 2 2.5	Mature Fair Good	2.0 1.6	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint Spreading; Hedged, Multi-stemmed, Low volume deadwood		

<sup>22</sup> **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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T6 A Camelia <i>Camellia</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	31 35 2 2.5	Mature Good Good	3.7 2.2	REMOVE shrub for construction Major TPZ encroachment 0.8m within the SRZ from bin store construction Spreading; Multi-stemmed, Low volume deadwood		
T7 A Photinia <i>Photinia</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	17 19 2.5 3	Mature Good Good	2.0 1.7	REMOVE shrub for construction Shrub base is entirely within the construction footprint for concrete path construction Spreading; Multi-stemmed, Low volume deadwood		
T8 An Ilex <i>Ilex</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	14 16 3.5 2	Mature Good Good	2.0 1.5	REMOVE shrub for construction Major TPZ encroachment 0.8m within the SRZ from bin store construction Spreading; Multi-stemmed, 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T9 Indian Hawthorn <i>Raphiolepis</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	12 14 2 1.5	Mature Good Good	2.0 1.5	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for concrete path construction Spreading; Multi-stemmed, Low volume deadwood		
T10-T14 Yesterday Today and Tomorrow (x5) <i>Brunfelsia pauciflora</i> Planted; exotic ornamental shrub species TRV Low	Average of 5 N/A N/A 3 2	Average of 5 Mature Fair Fair	N/A N/A	<b>REMOVE</b> shrubs for construction and for Low TRV Shrub bases are entirely within the construction footprint for driveway and dwelling construction Spreading; Multi-stemmed, Screen planting, Overly close shrub spacing, Moderate volume deadwood to ~5cmØ		
T15 A Hibiscus <i>Hibiscus</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	11 14 2.5 1.5	Mature Good Fair	2.0 1.5	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for dwelling construction Upright; Multi-stemmed, Low volume deadwood, planted too close to structure with resulting poor form		











Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T16 A Citrus <i>Citrus sp.</i> Planted; exotic fruit tree species TRV Moderate	17 20 3 2.5	Mature Fair Good	1.7 2.0	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for dwelling construction Upright, Low volume deadwood; multi- stemmed; Moderate stink bug infestation		
T17 A Citrus <i>Citrus sp.</i> Planted; exotic fruit tree species TRV Moderate	16 19 2.5 4	Mature Good Fair	2.0 1.7	<b>RETAIN</b> tree, install TPZ fence No substantial impact expected Upright; Moderate volume deadwood; Limited access to inspect tree on adjacent property. Ipomoea weed over crown. Overly close plant spacing		
T18 A Citrus <i>Citrus sp.</i> Planted; exotic fruit tree species TRV Moderate	26 30 4 3	Mature Fair Fair	3.0 2.0	<b>RETAIN</b> tree, install TPZ fence Minor 1% TPZ encroachment outside the SRZ for concrete driveway construction Upright, Multi-stemmed, Low volume deadwood, Limited access to inspect tree on adjacent property, Ipomoea weed over crown, Overly close plant spacing		








Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T19 A Hibiscus <i>Hibiscus</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	17 20 2.5 2	Mature Fair Good	2.0 1.7	REMOVE shrub for construction Major TPZ encroachment 0.9m within the SRZ for concrete path construction Upright; Hedged, Multi-stemmed, Low volume deadwood		
T20 A variegated Croton <i>Croton</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	11 14 2.5 1.5	Mature Fair Good	2.0 1.5	REMOVE shrub for construction Shrub base is entirely within the construction footprint for dwelling construction Spreading; Multi-stemmed, Low volume deadwood		
T21 A Camelia <i>Camellia</i> sp. or var. Planted; exotic ornamental shrub species TRV Moderate	20 24 3 3	Mature Good Good	2.4 1.8	REMOVE shrub for construction Shrub base is entirely within the construction footprint for dwelling construction Spreading; Multi-stemmed, 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T22 Happy Plant <i>Dracaena Massangeana</i> Planted; exotic ornamental species TRV Very Low	29 33 5 2	Over Mature Very poor Very poor	2.0 1.6	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for dwelling construction Spreading; Multi-stemmed, High level leaf scorch, situated in exposed position, Low volume deadwood		
T23 Murraya <i>Murraya paniculata</i> Planted; exotic ornamental, environmental weed shrub species TRV Low	15 17 4.5 3	Mature Good Fair	2.0 1.6	<b>REMOVE</b> shrub for environmental weed status NA Spreading; Hedged, Multi-stemmed, Low volume deadwood, survey miscalculation of tree dimensions		
T24 Grevillea Golden Gem <i>Grevillea</i> var. Planted; native ornamental shrub or small tree species TRV Low	19 29 4 5	Mature Good Poor	2.3 2.0	<b>RETAIN</b> tree, install TPZ fence No substantial impact expected. Works proposed on the edges of TPZ Spreading; Lower trunk horizontal severe lean resulting in poor form, upper crown lean corrected, Crown concentrated to West, evidence of crown lift, pruning wounds not occluded, Climbing nightshade in crown, Low volume deadwood		











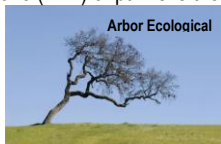
Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T25 Weeping Bottlebrush <i>Callistemon viminalis</i> Planted; native ornamental shrub or small tree species TRV Low	40 48 3 2	Mature Fair Poor	4.8 2.4	<b>REMOVE</b> shrub/ tree for construction Shrub/ tree base is entirely within the construction footprint for dwelling construction Spreading; Slight lean to NW, Crown concentrated to N/NW, Severely topped, Low volume deadwood		
T26 Blue Lilly Pilly <i>Syzygium oleosum</i> Planted; native ornamental rainforest tree species TRV Moderate	11 13 3 3	Semi- Mature Good Fair	2.0 1.5	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for car park construction Spreading; Multi-stemmed, Low Live Crown Ratio (LCR) <sup>23</sup> , Codominant stems with narrow v-shaped union, Crown concentrated to N, Historic crown lift and formative pruning evident, Low volume deadwood		
T27 Blue Lilly Pilly <i>Syzygium oleosum</i> Planted; native ornamental rainforest tree species TRV Moderate	11 13 3 3	Semi- Mature Good Good	2.0 1.5	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for car park construction Spreading; Multi-stemmed, Historic crown lift and formative pruning evident, Low volume deadwood		






<sup>23</sup> Live Crown Ratio (LCR) refers to the ratio of the size of a tree's live crown to tree height, or the ratio of tree height with foliage (Dunster et al. 2013).



Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T28 Port Wine Magnolia <i>Magnolia figo</i> Planted; exotic ornamental tree species TRV Moderate	12 16 5 4	Mature Good Fair	2.0 1.5	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for car park construction Spreading, Multi-stemmed, Slight lean to SW, Crown concentrated to N, Historic crown lift and formative pruning evident, Epicormic growth present at pruning sites, Low volume deadwood		
T29 Riberry <i>Syzygium luehmannii</i> Planted; native ornamental rainforest tree species TRV Moderate	33 35 7 4.5	Mature Good Fair	4.0 2.0	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for car park construction Spreading; Pseudo co dominant, 3 stems at ~1m, Crown concentrated to NE, Historic crown lift and formative pruning evident, Low volume deadwood		
T30 Bangalow Palm <i>Archontopoenix cunninghamiana</i> Planted; native rainforest palm species TRV Moderate	27 35 10 4	Mature Good Good	2.0 1.5 <sup>24</sup>	<b>REMOVE</b> palm for construction Palm base is entirely within the construction footprint for car park construction Upright; Low volume deadwood		






<sup>24</sup> TPZ and SRZ calculations under AS4970 are not an appropriate impact assessment measure for palms. Palms typically develop clumping, fibrous root systems with roots originating directly from the root crown below the trunk. Palm roots tend not to re-sprout when severed but are seasonally generated from the root crown. A healthy palm root ball can generally support the recovery of roots following some loss of roots. During development, the Tree Protection Zone (TPZ) of palms is therefore different to that of broad-leaved and conifer species.







Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T31 Mulberry <i>Morus alba</i> Likely planted; exotic fruit tree, environmental weed species TRV Very Low	22 27 7 5	Mature Fair Poor	2.6 2	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for car park construction Exotic, Moderate lean to S/SE, Crown concentrated to S/SE, Morning Glory in crown, Low volume deadwood		
T32 Avocado <i>Persea americana</i> Planted; exotic fruit tree species TRV Moderate	65 72 11 15	Mature Good Good	2.8 7.8	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for car park construction Exotic, Moderate lean, N/NW, Crown concentrated to W, Historic crown lift, formative and target avoidance pruning evident, Low volume deadwood, Nest box at ~3m		
T33 Bangalow Palm <i>Archontopoenix cunninghamiana</i> Planted; native rainforest palm species TRV Moderate	22 26 8 3	Mature Good Good	2.0 1.5	<b>REMOVE</b> palm for construction Palm base is entirely within the construction footprint for dwelling construction Upright; 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T34 Bangalow Palm <i>Archontopoenix cunninghamiana</i> Planted; native rainforest palm species TRV Low	26 34 10 4	Over- mature Good Fair	2.0 1.5	<b>REMOVE</b> palm for construction Palm base is entirely within the construction footprint for dwelling construction Upright; Low vigour, Staghorn present on trunk, Low volume deadwood		
T35 Bangalow Palm <i>Archontopoenix cunninghamiana</i> Planted; native rainforest palm species TRV Moderate	22 27 8 4	Mature Good Good	2.0 1.5	<b>REMOVE</b> palm for construction Palm base is entirely within the construction footprint for dwelling construction Upright; Low volume deadwood		
T36 Japanese Camellia <i>Camellia japonica</i> Planted; exotic ornamental shrub species TRV Moderate	13 15 2 1	Mature Good Fair	2.0 1.5	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for dwelling construction Spreading; Multi-stemmed, Historic lopping and topping pruning evident, 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates
T37 African Tulip Tree <i>Spathodea campanulata</i> Planted or naturally occurring; exotic ornamental, environmental weed tree species TRV Low	10 8 64 71	Mature Good Fair	7.6 2.8	<b>REMOVE</b> tree for construction and for environmental weed status Tree base is entirely within the construction footprint for dwelling construction Fluted pseudo co-dominant stems, Crown concentrated to W, Low crown foliage density, Leaf tip dieback, Exposed large woody roots damaged by mowing, Moderate volume deadwood	 
T38 Christmas Bush <i>Ceratopetalum gummiferum</i> Planted; native ornamental small tree or large shrub species TRV Very Low	68 80 10 4	Over- mature Poor Poor	8.0 3.0	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for dwelling construction Upright; 3 stemmed, Moderate leaf tip dieback, Very low crown foliage density, Crown concentrated to N, Historic crown lift and formative pruning evident, High volume deadwood to ~8cmØ	 






Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates
T39 Silky Oak <i>Grevillea robusta</i> Likely planted; native forest tree species TRV High	66 74 10 9	Mature Good Fair	7.9 2.9	<b>RETAIN</b> tree, install TPZ fence. Project Arborist to monitor excavation works and TPZ fence management within TPZ Major 43% TPZ encroachment outside the SRZ for concrete path and building construction Upright; Crown concentrated to W, Historic crown lift evident, Exposed large woody roots, single girdled root, Low volume deadwood to ~8cmØ, Small hollow branches evident, Lorikeets and Corellas feeding at time of inspection, Potential fauna habitat tree	 
T40 Silky Oak <i>Grevillea robusta</i> Likely planted; native forest tree species TRV High	43 47 11 5	Mature Fair Fair	5.0 2.4	<b>RETAIN</b> tree, install TPZ fence. Project Arborist to monitor excavation works within TPZ Minor 2% TPZ encroachment outside the SRZ for concrete path construction Upright; Low leaf tip dieback, Crown concentrated to S/SW, Low volume deadwood to	
T41 A Dracaena <i>Dracaena sp. or var.</i> Planted; exotic ornamental shrub species TRV Low	19 23 5 3	Mature Good Fair	2.0 1.5	<b>REMOVE</b> shrub due to Low TRV NA Spreading; Multi-stemmed, Historic lopping and topping pruning evident, 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates
T42 A Pine <i>Pinus sp.</i> Likely planted; exotic ornamental, environmental weed tree species <b>TRV Low</b>	55 66 12 8	Mature Fair Fair	6.6 2.7	<b>REMOVE</b> tree for construction and for environmental weed status Tree base is entirely within the construction footprint for concrete path construction Low Live Crown Ratio, Crown concentrated to NW, Moderate volume deadwood to ~5cmØ	
T43 Weeping Fig <i>Ficus benjamina</i> Planted; native rainforest tree species endemic to NQ <b>TRV Moderate</b>	53 59 8 18	Mature Fair Poor	6.5 2.7	<b>REMOVE</b> tree for construction Tree base is entirely within the construction footprint for concrete path construction Spreading; Moderate lean to NW, Crown concentrated to NW, Exposed large woody roots, Poor past pruning for target avoidance, i.e. house and powerline, Low foliage density, Foliage concentrated at branch ends, Invasive roots, Fruit eaten by native fauna, Low volume deadwood	
T44 Pecan Nut <i>Carya illionensis var.</i> Planted; exotic nut tree species <b>TRV Moderate</b>	52 54 11 9	Mature Good Fair	6.2 2.5	<b>REMOVE</b> tree for construction Major 19% TPZ encroachment outside SRZ from building construction Spreading; Pseudo co-dominant stems @ ~1.5m, Included bark at stem union, Poor past pruning evident, Epicormic growth, 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates
T45 A Dracaena <i>Dracaena</i> sp. or var. Planted; exotic ornamental shrub species TRV Low	10 13 2 1	Mature Fair Fair	2.0 1.5	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for dwelling construction Spreading; Multi-stemmed, Historic lopping and topping pruning evident, Low volume deadwood	
T46 Cordyline sp. Planted; exotic ornamental shrub species TRV Low	10 13 2 1	Mature Fair Fair	2.0 1.5	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for dwelling construction Spreading; Multi-stemmed, Moderate leaf scorch, Shade plant species, Historic lopping and topping pruning evident, Low volume deadwood	
T47 Matt Rush <i>Lomandra longifolia</i> Planted; native ornamental grass- like species TRV Low	N/A N/A 1.5 1	Mature Good Good	N/A N/A	<b>REMOVE</b> rush for construction Rush base is entirely within the construction footprint for dwelling construction Low volume deadwood, readily transplanted	









Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T48 China Doll <i>Radermachera sinica</i> Planted; exotic ornamental tree species TRV Low	7 8 3 1	Semi- Mature Fair Poor	2.0 1.5	<b>REMOVE</b> tree due to Poor condition and Low TRV NA Upright; Multi-stemmed, Epicormic regrowth from failed or cut stem, Moderate leaf scorch, Shade plant species, Moderate volume deadwood to ~5cmØ		
T49 A Dracaena <i>Dracaena sp. or var.</i> Planted; exotic ornamental shrub species TRV Low	18 20 2.5 1.5	Semi- Mature Fair Poor	2.1 1.6	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for communal building construction Spreading; Multi-stemmed, Historic lopping and topping pruning evident, Low volume deadwood		
T50 Variegated Croton <i>Croton var.</i> Planted; exotic ornamental shrub species TRV Moderate	10 12 3 1.5	Semi- Mature Good Fair	2.0 1.5	<b>REMOVE</b> shrub for construction Shrub base is entirely within the construction footprint for communal building construction Spreading; Multi-stemmed, Spread restricted by dwelling structure, 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T51 A Cypress <i>Cupressus sp.</i> Planted; exotic ornamental tree species TRV Low	78 85 11 7	Over- Mature Poor Poor	9.3 3.1	<b>REMOVE</b> tree for construction Major TPZ encroachment 0.7m inside the SRZ from dwelling construction Spreading; Codominant stems with narrow v- shaped union @ ~1m, Crown concentrated to N, Moderate lean to N, High volume deadwood to ~20cmØ, Dead E stem presents as hazardous		
T52 Royal Poinciana <i>Delonix regia</i> Planted; exotic ornamental tree species TRV Moderate	103 109 7 13	Mature Fair Fair	9.3 3.4	<b>REMOVE</b> tree for construction Major TPZ encroachment 2.9m inside the SRZ from dwelling construction Spreading; Codominant stems with u-shaped union, Unbalanced crown concentrated to N, Over extended branches to N and W, Low volume deadwood to ~20cmØ		
T53 Mickey Mouse Plant <i>Ochna serrulata</i> Planted or naturally occurring; exotic environmental weed shrub species TRV Very Low	N/A N/A 2 2	Mature Fair Fair	N/A N/A	<b>REMOVE</b> shrub for environmental weed status NA Multi-stemmed from base, spreading		








Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T54 Mickey Mouse Plant <i>Ochna serrulata</i> Planted or naturally occurring; exotic environmental weed shrub species TRV Very Low	N/A N/A 2 2	Mature Fair Fair	N/A N/A	REMOVE shrub for environmental weed status NA Multi-stemmed from base, spreading		
T55 A Callistemon <i>Callistemon</i> sp. Planted; native ornamental tree species TRV Low	13 18 5 2.5	Mature Fair Fair	2.0 1.6	REMOVE tree for construction Major TPZ encroachment 1.4m inside the SRZ for concrete path construction Upright; Moderate lean to W, Crown concentrated to W, Unbalanced crown, Historic lopping and topping pruning evident, Exposed girdled roots, Low volume deadwood to ~8cmØ		
T56 to T58 Brush Cherry (x3) <i>Syzygium australe</i> Planted; native rainforest shrub or small tree species TRV Low	Average of 3 5 6 2 0.5	Average of 3 Juvenile Fair Fair	Average of 3 2.0 1.5	REMOVE T56 for construction RETAIN T57 & T58, install TPZ fence Major T56 TPZ encroachment 1.2m inside the SRZ for concrete path construction. T57 & T58 no substantial impact expected Upright, Heavily pruned/ trained to a columnar form, Highly exposed plantings, 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	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T59 A Eucalypt <i>Eucalyptus sp.</i> Planted; native forest tree species TRV Very Low	14 19 5 3	Over- Mature Near Dead Poor Poor	2.0 1.6	<b>REMOVE</b> near dead tree NA Spreading; Almost leafless, Very high volume deadwood to ~8cmØ		
T60 Murraya <i>Murraya paniculata</i> Planted; exotic ornamental shrub, environmental weed shrub species TRV Low	11 14 2 1.5	Over- Mature Good Fair	2.0 1.5	<b>REMOVE</b> shrub for environmental weed status NA Spreading; Hedged, Multi-stemmed, Adjacent to dead stump, Low volume deadwood		
T61 Bangalow Palm <i>Archontopoenix cunninghamiana</i> Planted; native rainforest palm species TRV Moderate	19 25 6 4	Mature Good Good	2.0 1.5	<b>REMOVE</b> palm for construction Major TPZ encroachment inside the palm root ball SRZ for concrete path construction Upright; Crown concentrated to N, Low volume deadwood		



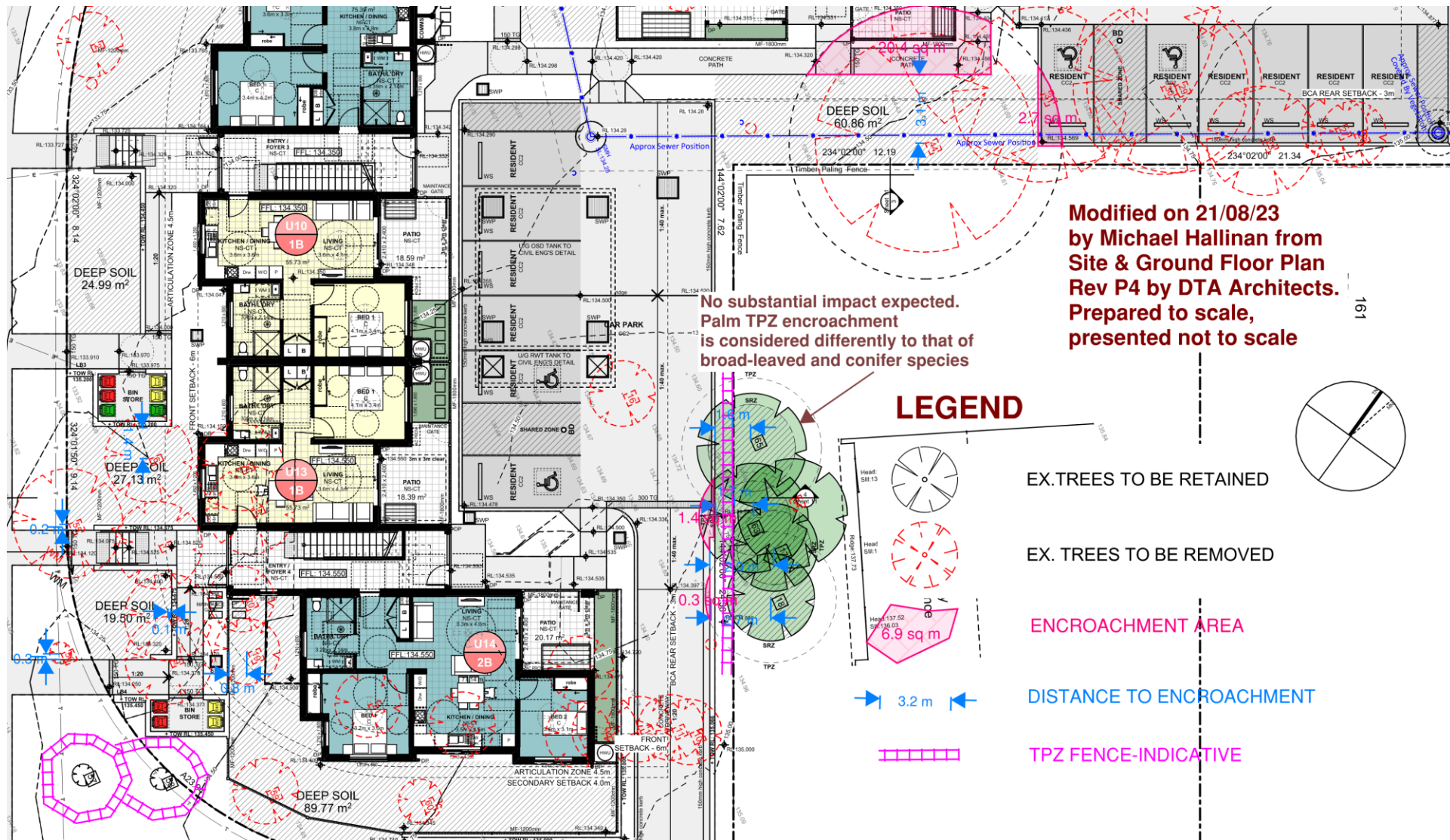


Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates	
T62 Golden Cane Palm <i>Dypsis lutescens</i> Planted; exotic ornamental palm species TRV Moderate	N/A N/A 4 2	Mature Fair Fair	2.0 1.5	<b>REMOVE</b> palm for construction Major TPZ encroachment inside the palm root ball SRZ for construction Spreading; Multi-stemmed, Poor past pruning, Low volume deadwood		
T63 A Citrus <i>Citrus sp.</i> Planted; exotic fruit tree species TRV Moderate	18 21 4 2	Mature Fair Fair	2.1 1.7	<b>RETAIN</b> tree, install TPZ fence Minor 10% TPZ encroachment outside the SRZ for concrete driveway construction Upright, Multi-stemmed, Moderate volume deadwood to ~5cmØ, Limited access to inspect tree on adjacent property, Ipomoea weed over crown, Overly close plant spacing		
T64 A Citrus <i>Citrus sp.</i> Planted; exotic fruit tree species TRV Moderate	25 29 4 3	Mature Fair Fair	3.0 1.9	<b>RETAIN</b> tree, install TPZ fence No substantial impact expected Upright, Multi-stemmed, Moderate volume deadwood to ~5cmØ, Limited access to inspect tree on adjacent property, Ipomoea weed over crown, Overly close plant spacing		



Tree Number & Identification Species Status and Values Tree Retention Values (TRVs)	DBH (cm) DARB (cm) Height & Spread (m)	Age Class Health Condition	AS4970 TPZ (m) SRZ (m)	Recommendations <sup>20</sup> Nature of any AS4970 TPZ encroachment <sup>21</sup> Health & Condition Observations and Comments	Plates
T65 Golden Cane Palm <i>Dypsis lutescens</i> Planted; exotic ornamental palm species TRV Moderate	27 30 4.5 3.5	Mature Fair Fair	3.2 2.0	<b>RETAIN</b> palm, install TPZ fence No substantial impact expected including to the palm root ball SRZ for construction Spreading; Multi-stemmed, Limited access to inspect palm on adjacent property, Poor past pruning, Low volume deadwood	 





**Figure 1a. Tree retention, tree removal and tree protection plan drawing, South**

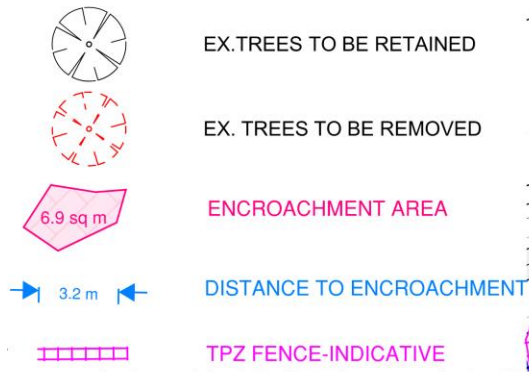


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 Deegan Drive, Alstonville, 21/08/23



## LEGEND



Modified on 28/07/23  
by Michael Hallinan from  
Site & Ground Floor Plan  
Rev P4 by DTA Architects.  
Prepared to scale,  
presented not to scale

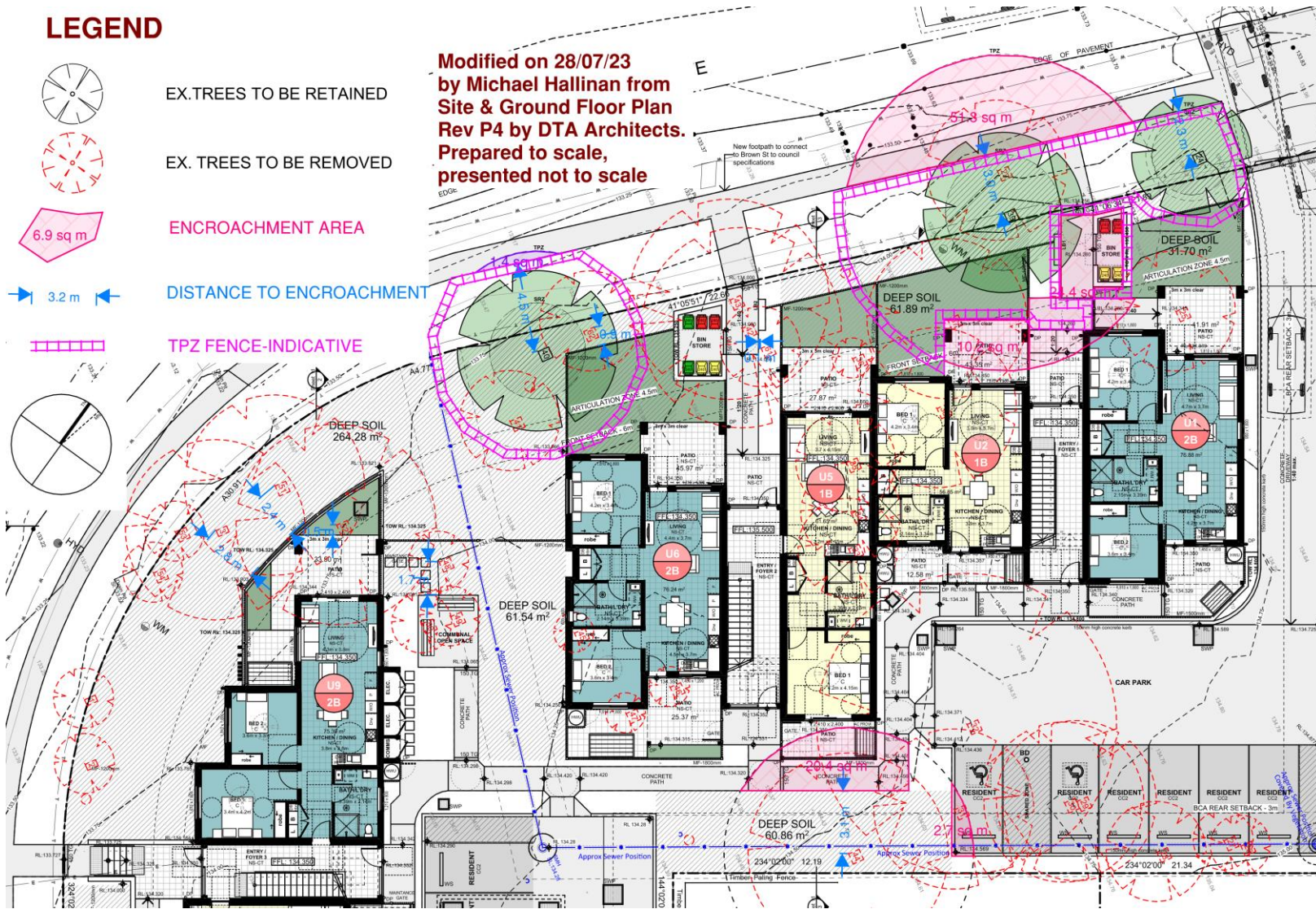


Figure 1b. Tree retention, tree removal and tree protection plan drawing, North



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