arboricultural impact assessment report

AIA-01
Revision A, Issued for SSDA
2 September 2025

PROJECT
AFFORDABLE HOUSING
211A-215 Harbour Drive,
Coffs Harbour, NSW, 2450

CLIENT / PRINCIPAL
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Parramatta, NSW, 2150

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Acknowledgements & Qualifications

This document has been prepared by Arterra Design Pty Ltd, using the expertise of our in-house (AQF Level 5), consulting arborists, Robert Smart and/or Chloe Bristow.

Robert Smart is a member of the International Society of Arboriculture (ISA), an accredited member of the Institute of Australian Consulting Arboriculturists (IACA), a Registered Consulting Arborist with Arboriculture Australia (AA) and a licenced Quantified Tree Risk Assessment (QTRA) practitioner. Robert Smart has over 25 years' experience in assessing and managing trees in complex development sites. Robert is also a Registered Landscape Architect with over 30 years' experience.

Disclaimer

This document is only to be used in relation to the project referenced in the title of the report and is only to be used for the purpose for which it was commissioned and in accordance with the specific brief and contract entered into between Arterra Design and the Client. Arterra Design accepts no liability or responsibility whatsoever in respect to any use, or reliance upon this report and its supporting material, by any third party.

i EXECUTIVE SUMMARY

This Arboricultural Impact Assessment (AIA) has been prepared by Arterra on behalf of Homes NSW for a State Significant Development Application (SSD-83294209) for construction of a residential flat building up to four storeys with a total of 60 apartments for the purpose of affordable housing at 211A-215 Harbour Drive, Coffs Harbour NSW.

In March 2025, Arterra was engaged by Homes NSW (the client) to undertake an AIA of the trees at 211A-215 Harbour Drive, Coffs Harbour, NSW (the site), to inform the design and construction of the proposed development.

This report assesses the potential impacts of the proposed works. A detailed tree assessment and impact schedule was completed for all the existing trees close to the proposed building works. (Refer to Appendix 4.2 – Tree Impact Assessment Schedule). The trees were photographed, allocated a unique identification number and plotted onto a scaled survey base plan for referencing and identification throughout the report and for future discussions and co-ordination with all Contractors and relevant stakeholders (Refer to Appendix 4.1 – Tree Plans).

A total of **61** trees were assessed for this report. 22 trees are adjacent the site, with one of these trees being a street tree on North Street and 21 located on adjacent properties. The remaining trees are within the site boundary. These are trees that would be considered 'prescribed trees' under the Coffs Harbour Coffs Harbour Council DCP 2015 – Section E1.1 Preservation of Trees and Vegetation (DCP). Small trees (<5.0m), shrubs (<5.0m) and dead trees have typically not been included in our assessment.

The trees are largely the remaining trees that once surrounded low density residential development and were planted as part of domestic garden embellishments. Most trees are small and insignificant specimens, or more recent self-sown weeds and other undesirable species. Most only date from the late 1970s and early 1980s. Over 57% of the trees are rated with a low or very low retention values. The only high value tree is a good quality street tree on the North Street frontage.

The following points arise from the impact assessment:

- **24** trees (39%) are to be retained and protected.
- **37** trees (61%) are to be removed. Of those trees
    - **31** are rated with a **Low or Very Low/ Remove** retention value (84%).
    - All these trees are in the footprint of the proposed building or unacceptably impacted by the required site works.
- 1 High value street tree (T01 - *Flindersia australis*) at the northeast corner of the site on the North Street frontage is to be retained.

Table i - Ultimate Disposition - Trees to be Retained and Removed

Tree Retention Values	Trees to be retained	Trees to be removed	Total Trees
High	1	0	1
Moderate	19	6	25
Low	4	13	17
Nil /Should Remove	0	18	18
TOTAL	**24**	**37**	**61**

Of the **24** trees to be retained and protected:

- **20** are rated as **High / Moderate** retention value (77% of the total of all high and moderate value trees)
- **19** have no or minimal foreseeable impact from the proposed works.
- **3** have a 'minor encroachment' (<10%) into their NRZs.
- **2** have a 'moderate encroachment' (10-20%) into their NRZs.
- **No trees** have a major encroachment' (>20%) into their NRZs.
- **2 trees** require canopy pruning considered to be a moderate level of pruning (<20%) into their canopy area. This level of pruning, although undesirable, is considered tolerable and far preferable to suggesting the trees be removed for this reason alone. The trees are high branching and some foliage may be able to be retained above the level of the building and therefore is likely to be less than currently estimated.

It is the author's opinion that the potential tree impacts can be managed with minimal impact to the trees if the proposed tree protection measures and protocols are strictly implemented and the ground level construction work immediately around the trees is closely monitored by a suitably qualified Project Consulting Arborist. This report outlines the potential tree impacts and how the anticipated works are to be managed and mitigated, including the following key items:

- Installation of the required tree protection measures prior to any works occurring on site.
- Meeting of the contractor and the Project Consulting Arborist on site prior to works to discuss the protection requirement and methods and the site access.
- Site inductions and regular 'tool box talks' by the Contractor reinforcing tree protection as the highest priority.
- It will be vital that the appointed Contractor ensures the required tree protection measures are implemented, then maintained, and that sufficient care is exercised during the works.

This document has been prepared by Arterra, using the expertise of our in-house consulting arborist (AQF Level 5), Robert Smart. Robert Smart is a member of the International Society of Arboriculture (ISA), an accredited member of the Institute of Australian Consulting Arboriculturists (IACA), a Registered Consulting Arborist with Arboriculture Australia (AA) and a licenced Quantified Tree Risk Assessment (QTRA) practitioner.

Robert Smart AAILA , ISA, AA, IACA
Director, Registered Landscape Architect (054), Registered Consulting Arborist (1804).

1.0 INTRODUCTION

1.1 Background

This Arboricultural Impact Assessment has been prepared by Arterra on behalf of Homes NSW for a State Significant Development Application (SSD-83294209) for construction of a residential flat building up to four storeys with a total of 60 apartments for the purpose of affordable housing at 211A-215 Harbour Drive, Coffs Harbour NSW. (the site).

The purpose of this AIA report is to provide an assessment of the likely tree impacts and arboricultural advice regarding the development proposal for the site and to address the Secretary's Environmental Assessment Requirements (SEARs) for the project issued on 2 May 2025 which identified the following specific assessment requirements:

Table 1.1 – SEARs Requirements

Item	Description of Requirement	Section Reference (this report)
14. Trees and Landscaping	If the proposal involves impacts to trees, provide and Arboricultural Impact Assessment that assesses the number, location, condition and significance of trees to be removed including: • any existing canopy coverage to be retained on site • tree root mapping if the proposal involves significant impacts to tree protection zones of retained trees identified as being significant.	Refer: - Section 2.4 Number of Trees - Section 2.9 Existing Canopy Cover - Appendix 4.2 – Detailed Schedule of Trees - Appendix 4.1 – Existing Tree Plans
	Provide a landscape plan, that: • Details the proposed site planting, including location, number and species of plantings, heights of trees at maturity and proposed canopy coverage (as a percentage of the site area) • Provides evidence that opportunities to retain significant trees have been explored and/or informs the plan.	Refer: Separate Landscape Plan / Report by others.

Items listed above relating to the existing trees on the site are addressed directly by Arterra, however, the remaining items listed have been addressed in collaboration with the Project Landscape Architect. Refer to Landscape documentation for site wide landscape plan addressing landscape related matters.

Figure 1.1 – View north to the site from the south side of Harbour Drive. (Photo: Arterra 08/03/25).

1.2 The Site

Homes NSW has identified the site as an opportunity to deliver new, quality affordable housing apartments in a well-located area that is serviced by a high level of amenity, services and public active transport.

Figure 1.2 – Site location and context. Site outlined in red. (Source: Arterra / Nearmap April 2024)

The site is located at 211A-215 Harbour Drive, Coffs Harbour, in City of Coffs Harbour Local Government Area (LGA).

The site has a total site area of 3,804 square metres (sqm) and has two street frontages; Harbour Drive to the south-west and North Street to the east. Refer to Figure 1.2 and 1.3

The site is currently vacant, with only some minor structures such as driveways associated with former dwellings previously on the site. A number of existing trees are also located on the site.

The site is within 200m of the Coffs Harbour City Centre and is close to local schools, open space and recreational areas. A bus stop is located immediately in front of the site, along Harbour Drive and providing bus services throughout Coffs Harbour.

Figure 1.3 – Site location. (Photo: Homes NSW).

1.3 Aims of this Report

This arboricultural impact assessment has been prepared to identify the trees to be retained and removed as part of the redevelopment project and to assess potential tree impacts. The specific aims of the report are to:

- assess the health and condition of the trees and record all the relevant data for existing trees;
- assess significance, Useful Life Expectancy (ULE) and retention values of the existing trees;
- provide recommendations as to which trees should ideally be retained and protected;
- identify the proposed Tree Protection Zones (TPZ) of the trees being retained;
- identify and assess the likely arboricultural impacts of the development on the trees; and
- provide recommendations on the tree protection measures that will be required during construction to ensure the trees are successfully retained.

The assessment is restricted to the trees within or immediately adjoining the site that are likely to be impacted by the works proposed works. Other trees outside the extent of the proposed works and unlikely to be impacted, are not addressed as part of this report.

All tree plans contained in this report are based on information provided to Arterra, including site survey and architectural drawings. The tree plans should only be used for reference and relating to tree issues and are not suitable for any other purpose.

The following limitations apply to this report's use: -

1. Plans: All plans are based on information provided to Arterra. They should only be used relating to tree issues and are not suitable for any other purpose.
2. Notification of proposed alterations to disturbance within Notional Root Zones (NRZs) or Tree Protection Zones (TPZs): Arterra must be clearly notified of any proposed alterations to the plans or additional disturbance in the NRZs / TPZs, so that we can advise on the implications before any work is undertaken.

1.4 Relevant Controls or Legislation

The site is legally described as Lot 14, DP516300, Lot 15, Section 11 DP504105 and Lot 100, DP1041655. It is zoned R3 Medium Density Housing under Coffs Harbour Council LEP 2013. We understand the site is not heritage listed, nor in a heritage conservation area and that the site is not mapped as a nature or biodiversity conservation area.

The trees located on and around the site are protected under the Coffs Harbour Council DCP 2015 – Section E1.1 Preservation of Trees and Vegetation.

Native Trees taller than five (5) metres or with a trunk diameter of greater than 150mm, are prescribed trees for the purposes of the SEPP (Biodiversity and Conservation) 2021 and protected under the DCP unless otherwise exempt under the SEPP. Hollow bearing and listed 'significant trees' are also protected.

1.5 Conduct and Author Qualifications

This document has been prepared by Arterra, using the expertise of our in-house (AQF Level 5), consulting arborists, Robert Smart. Robert Smart is a member of the International Society of Arboriculture (ISA), an accredited member of the Institute of Australian Consulting Arboriculturists (IACA), a Registered Consulting Arborist with Arboriculture Australia (AA) and a licenced Quantified Tree Risk Assessment (QTRA) practitioner. Robert Smart has over 25 years' experience in assessing and managing trees in complex development sites. Robert is also a Registered Landscape Architect with over 30 years' experience.

Furthermore, Mr Smart confirm that he has read and agree to be bound by the NSW Uniform Civil Procedure Rules 2005, Part 31 Division 2 Provisions, Schedule 7 - Expert witness code of conduct.

Arterra provides specialist consulting arborist services only; and does not provide any physical tree services such as climbing, pruning, removal, root investigations or root pruning. Our advice is based on impartial professional assessment, as we do not derive any financial benefit from specifying pruning or other physical arborist services. We do not specify any such activities unless we determine them to be essential to ongoing tree health or stability.

1.6 Key Definitions and Abbreviations

The following abbreviations are used throughout this report.

"NRZ" = Notional Root Zone

This is the area as defined by AS 4970:2025 – "Protection of Trees on Development Sites" and means the typical minimum area above and below ground at a given distance from the trunk to provide for protection of the tree. Most importantly it represents the root zone required to be left undisturbed to maintain a healthy and viable tree. Please note, that roots will usually extend well beyond this zone, so this represents the minimum remaining root zone required, assuming all others are lost or damaged due to construction. It is typically calculated as a circle centred on the trunk unless existing site conditions can be assessed and indicate otherwise.

"TPZ" = Tree Protection Zone

Although based on the NRZ above, this is a consolidated and often more simplified area to be applied during construction for tree protection. This area is often shaped to deal with practical construction realities whilst maintaining appropriate protection of the notional root zone (NRZ) (i.e fencing a nominal circular NRZ can be difficult and impractical. TPZ areas often define a square or rectangular shape which includes the area calculated as the nominal NRZ). It often amalgamates and simplifies tree protection zones, particularly when they are overlapping and can be amended for items such as buildings, walls, pathways and existing fences. It also protects areas that are contiguous to the calculated nominal NRZ, which are to be applied when there is an incursion calculated within the NRZ or the nominal NRZ is not completely circular due to structures potentially impeding root growth.

"SRZ" = Structural Root Zone

This is the area as defined by AS 4970:2025 "Protection of Trees on Development Sites" and means the area immediately around the base of the tree at a given distance from the trunk within which the woody roots and soil cohesion are considered vital to the structural stability of the tree. Disturbance, damage or removal of soil and roots within this area will typically render the tree unstable and require its removal. It is typically calculated as a circle, centred on the trunk, unless existing site conditions can be assessed and indicate otherwise.

"DSH" = Diameter at Standard Height

This is the diameter of the trunk measured at 1.4m above ground level.

"DGL" = Diameter at Ground Level

This is the diameter of the trunk measured at ground level, but just above any root flare.

Non-Destructive Digging

This is the process of safely excavating the ground surface to minimise the risk of damage to existing tree roots. This method is used to map and locate existing tree roots within the TPZ and/or SRZ and helps to guide and inform the installation and/or construction of proposed services and/or structures which are in close proximity to retained trees. This is often achieved through hand digging using a shovel, trowel and/or fork with care not to damage the bark and wood of any roots. Dry vacuum extraction is an appropriate non-destructive alternative to hand digging. When this work occurs within a TPZ and/or SRZ of a tree to be retained, a consulting arborist should always be

present to monitor the works. Alternatively, services can be installed via under boring at a depth of not less than 1.2m below existing ground levels, when passing the tree(s).

Inclusion or Included Bark Branch Union
Growth of bark at the interface of two or more branches on the inner side of the branch union which is unable to be lost from the tree and accumulates, or is trapped, between the acutely divergent branches. This can form a weakened branch union in some species.

Epicormic Growth
Juvenile shoots produced along branches or trunks from dormant or latent buds concealed beneath bark. Production can be stimulated by fire, pruning, wounding or root damage and may also be an indicator of tree stress or decline.

1.7 Documents Reviewed

The following plans and documents were reviewed as part of this tree impact assessment:

Studio Johnston Architects drawings dated 29 August 2025
- GA Plans Lower Ground Floor - A-110-L01 rev A
- GA Plans Ground Floor - A-110-001 rev A
- GA Plans Level 01- A-110-0002 rev A
- GA Plans Level 02- A-110-003 rev A
- GA Plans Level 03- A-110-004 rev A
- GA Plans Roof Level- A-110-005 rev A
- GA Sections – Section A & B- A-310-001 rev A
- GA Sections – Section C & D- A-310-002 rev A

Jane Irwin Landscape Architects
- Landscape Concept Plans and CAD DWG's received dated 29 August 2025

Mott MacDonald Engineers
- Civil and Stormwater Preliminary Concept Plan for Coordination. SK01-02 dated 28 July 2025

LTS - Surveyors:
- Detail and Levels Survey – Sheets 1 to 5 – Ref No. 52501-001D dated 23 March 2025.

Based on the extent of the proposed works, we believe it can be achieved to avoid major trenching or disturbance to the existing trees that are proposed to be retained. It is assumed that any existing services that are no longer required will be capped off and left in situ, if located under trees to be retained.

1.8 Assessment Methodology

Data Collection
On the 8 March 2025, Rob Smart of Arterra carried out a visual inspection of the site. Arterra attended the site to undertake a detailed assessment of the trees within the site and likely to be impacted by the proposed development. The trees' health and condition were assessed via a visual inspection undertaken from the ground only. Requisite tree data (including DSH, DGL, height & canopy spread, condition & proximity to services) were recorded using an Apple iPad and FileMaker Pro database.

The basic health and condition criteria that were inspected for each tree is summarised as follows:
- tree size, broad age-class and general balance of the tree;
- canopy foliage size, colour and density;
- dieback and epicormic growth;
- trunk or branch wounding, branch tear outs and pruning history;
- structural defects such as co-dominant stems, cracks, splits, included bark, decay;
- pests and disease evidence or occurrence;
- above-ground obstructions; and
- evidence of recent site disturbance.

All trees were photographed, given a unique identification number, and plotted onto a scaled base plan for referencing and identification throughout the report and for future discussions and co-ordination. Tree trunk diameters were measured using a metric diameter tape measure. Tree heights were measured using the two-point

clinometer function of a Nikon Forestry Pro laser range finder. Canopy spreads were estimated by pacing out distances along the cardinal axis of the canopy and cross-referencing to survey information and aerial photos.

No specialised equipment or methods were employed to test for the extent of decay in any of the trees, apart from a nylon 'sounding' mallet. No plant samples were analysed or independently tested to verify or formally identify any pests or diseases.

Desktop Review and Research

Digital AutoCAD files of the proposed works were imported into Arterra's standard CAD software (ArchiCAD v27) and superimposed over the tree and site survey information. The extent of site disturbance was analysed for the proposed building works, landscaping, services and other site grading. An assessment was made of the likely extent of impacts on the TPZs, considering the likely construction impacts depending on the type of work being undertaken (cut or fill, suspended slabs, decks, service trenches). Various area calculations and measurements were made in the CAD software of the likely incursions into the TPZs or SRZs.

Historical aerial photography was gathered from NSW Spatial viewer. More recent aerial imagery was obtained from the NearMap website with aerial photos of the site dating from October 2024 imported into the above software for cross checking and assessment.

1.9 Pre-Development Tree Assessments – Tree Retention Values

The information gathered in the field was tabulated and the retention value assessed using a combination of techniques commonly used and recognised in the arboricultural industry. The tree life expectancy was established using the Useful Life Expectance (ULE) system. A summary of these systems is provided below.

Useful Life Expectance (ULE)

ULE is a system based on Jeremy Barrell's work developed in 1993. It determines the time a tree may be expected to be retained based on its age, health, condition, and location. This is then moderated by the economics of maintenance or other costs of retaining the tree. A long ULE means the tree is presently expected to live longer than 40 years with minimal intervention and cost. A short ULE indicates a tree that is not expected to live longer than 5 years or may require substantial intervention or costs to retain it. The reference to 'safe' useful life expectancy is generally no longer used in the industry as it implies a certainty that cannot be delivered.

Retention Values

The proposed retention value of the trees was determined based on a considered combination of the size, age, condition and suitability of the tree. Each tree was then ranked according to one of 4 retention categories.

1. **"High" Retention Value** – these are trees that are typically in good or very good condition, large and visually prominent, historically or environmentally important. They may also be lesser quality trees, but part of an important grouping of trees. They should represent a serious physical constraint to the development and their removal avoided where possible and feasible.
2. **"Moderate" Retention Value** – these are trees that are in good to reasonable condition and should be retained where possible and feasible to do so. They may also be lesser trees, but part of an important grouping of trees and therefore warrant retention based on the group's value.
3. **"Low" Retention Value** – these are trees that are in poor condition or have structural defects, are particularly small or commonplace, are not historically, environmentally or socially significant and should not be considered as a constraint to the development. They could be retained only if they are not likely to be impacted by, or constrain potential desirable, development outcomes.
4. **"Should Remove" / Nil Retention Value** – these are trees that are in very poor health, exhibit poor form, or have serious structural defects, are considered weeds or combination of all these, and therefore should be considered for removal regardless of any development.

Consideration has also been given to the relationship of the trees to one another and their proximity to the likely development areas on the site. For example, trees that are part of a closely spaced group, or are likely to be significantly misshapen or unstable with the removal of surrounding trees and structures are considered with these factors in mind.

1.10 Tree Assessment – Notional Root Zone and Tree Protection Zone Calculations

To ensure the long-term survival and growth of any tree to be retained on the development site, a suitable area is required to be protected around the tree. This area should typically be as large as possible. It should also take into consideration: -

- The size and age of the tree;
- Above and below ground properties;

- The health and condition of the tree;
- The species of tree and its tolerance to disturbance;
- Soil conditions, type, depth and site hydrology and
- Site specific conditions and any existing obstructions to root development

The **Notional Root Zones** (NRZs) have been calculated using the formula and criteria outlined in AS 4970:2025 Protection of Trees on Development Sites. In summary the standard applies the calculation for the radius of the NRZ as 12 x (the tree trunk diameter (in metres) calculated at standard height (DSH)). DSH is taken at 1.4m above ground level.

A maximum NRZ radius will be 15m (unless crown protection is required) while the minimum NRZ radius shall be 2m. The NRZ is typically assumed to be radial and centred on the centre of the tree's trunk unless other site factors or tree canopy size and location dictate an adjustment.

Encroachments of up to **10%** of the NRZ area may be accepted as long as it is also outside of the Structural Root Zone (SRZ). This is known as a "**minor encroachment**".

Encroachments of between **10% to 20%** of the area are known as a "**moderate encroachment**". This level of encroachment needs to be carefully assessed by the Project Consulting Arborist. It may be acceptable within the NRZ as long as it is outside of the Structural Root Zone (SRZ) and relevant factors are considered such as the location and distributions of roots, the trees health and tolerance to disturbance, existence or present or past obstacles that may have affected root development, the nature of the disturbance and tree maintenance and care activities to be applied.

Encroachments greater than **20%**, are known as "**major encroachments**". These will only be accepted with additional and very specific evidence that the tree will not be unduly impacted by the proposed works.

Whenever an encroachment is made into a NRZ, a suitable compensatory area should be made elsewhere and physically contiguous to the remaining TPZ.

The **Structural Root Zone (SRZ)** is the area defined as the minimum area required to retain the **structural stability** of the tree. The formula for calculating the SRZ is outlined in AS 4970 Section 3.5. No encroachments into the SRZ shall typically be warranted or allowed.

2.0 BACKGROUND, OBSERVATIONS & ASSESSMENT

2.1 Site History and Existing Trees

Refer to accompanying T-01 Tree Retention Value Plan for the locations of the trees currently on, or immediately adjacent to the site. Review of historical aerial imagery is shown on the following pages. Imagery of the site from 1964 shows the site with housing but no significant trees present. The aerial image from 1984 shows the site partially developed for housing units with very few trees on the site and all natural vegetation assumed cleared. Trees of any note first appear in the 1989 image on the northern and southern site boundaries. The 2025 image shows the site in its current configuration and the various images suggesting the oldest trees remaining on the site may date from no earlier than the late 1980s.

The following images demonstrate the general development of the site and the ages of tree planting.

Figure 2.1 – Aerial image of the site in 1964, although a poor quality image it illustrates the site was likely without significant trees and surrounding development of detached housing was in progress. (Source: Arterra / NSW Spatial Services)

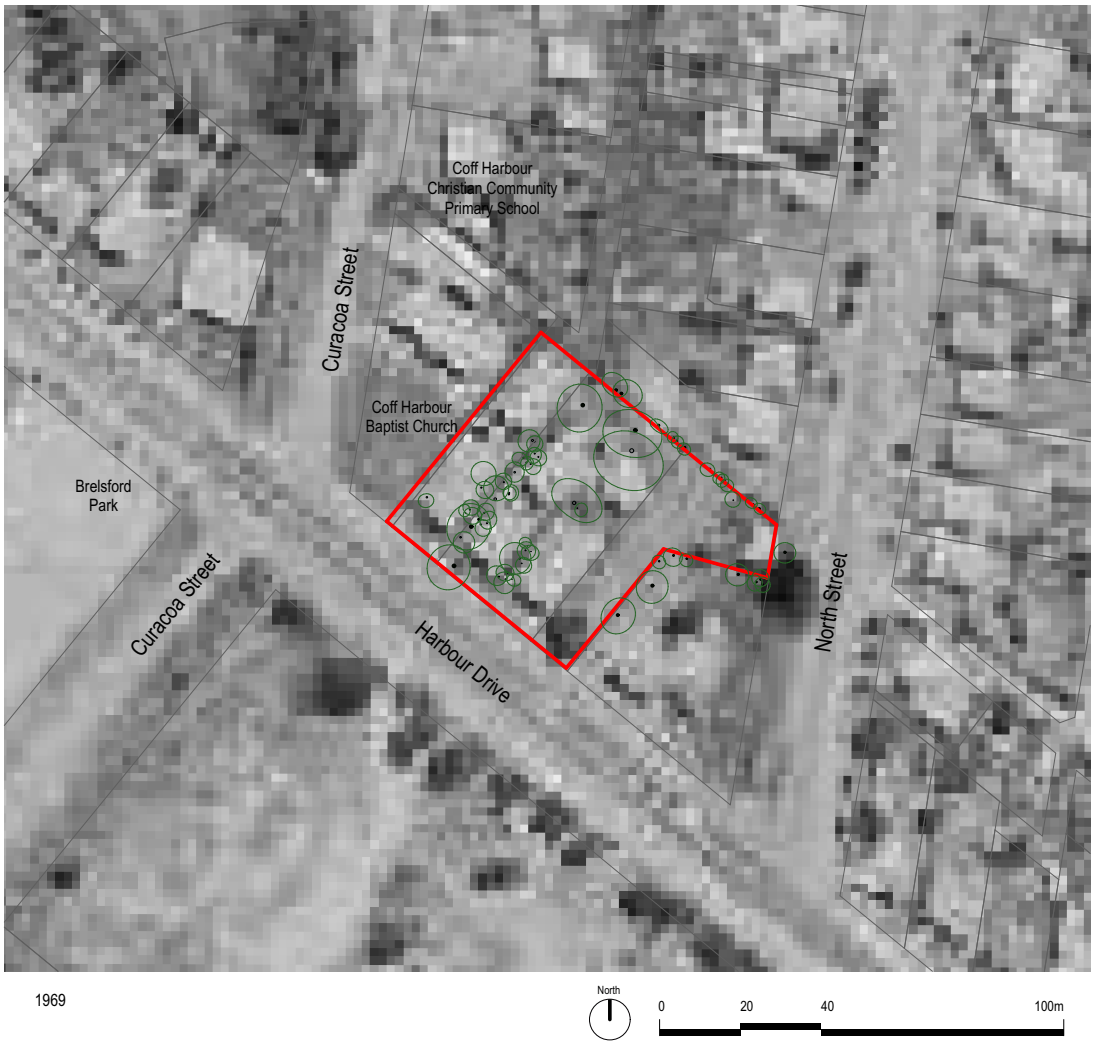


Figure 2.2 – Aerial image of the site in 1969, although a poor quality image it illustrates the site was likely without significant trees and surrounding development of detached housing remained in progress. (Source: Arterra / NSW Spatial Services)

Figure 2.3 – Aerial image of the site in 1984 illustrating the site with few trees. (Source: Arterra / NSW Spatial Services)

Figure 2.4 – Aerial image of the site in 1994 with numerous trees starting to be present amongst the social housing units, with most trees likely dating from the late 1980s and early 1990s. (Source: Arterra / NSW Spatial Services)

Figure 2.5 – Aerial image of the site in 2013 shows the site with the previous social housing units removed while most interspersed trees remained. It is assumed the units were demolished in the early 2000s and the trees that once occurred between the units largely retained with the site largely being unchanged since that time. (Source: Arterra / Nearmap).

Figure 2.6– Aerial image of the site in 2024 shows the site in its current configuration. The trees most worthy of protection are neighbouring trees on the site boundaries and those High and Moderate value trees in the site, toward the north and south boundaries. (Source: Arterra / Nearmap).

2.2 Climate and Microclimate

Coffs Harbour is on the NSW north coast and therefore shares the general climate of this region with moderate temperatures, good rainfall and minimal climatic and weather extremes. It is typically described as a subtropical climate with hot to warm summers and mild winters, with relatively uniform rainfalls greater than 1,00mm / year. There is no distinct dry season.

The site is approximately 315km south of Brisbane and the site is less than 2.0km from the coast at Coffs Harbour. It has an approximate average annual rainfall of 1700mm, fairly evenly spread across the year but with a drier period during the late winter and early spring months (Jul-Sept). The highest rainfall period is usually March with an average of 318mm and the driest month being July with an average of 60mm.

Maximum average daily temperatures range from 28.2ºC in January and to 19.9ºC in July. The minimum average daily temperatures range from a high of 20.2ºC in January down to lows of 7.7ºC in July.

The primary wind direction is from the north-east to the south in the afternoons while it is predominantly from the west and south-west in the mornings. This is common of coastal areas dominated by "sea breeze" affects. Review of climate data indicates that the primary direction for strong winds is from the south or north-east and in the afternoons.

The most significant climatic influences to consider would be the warm temperatures, higher rainfall, sea breezes and possibly salt spray as a result of the coastal, subtropical location.

2.3 Soils, Landform and Native Vegetation

The site is on the side slope of local rise, approximately 370m west of nearby Coffs Creek and 1km west of the ocean and Coffs Harbour Jetty. Soil mapping suggests the site lies within the Megan Soil Landscape Association. These are low rolling hills on late carboniferous sediments. Characterised by moderately deep well drained yellow earths and more poorly drained Yellow Podzolic soils. Underlying geology is highly variable and can change over short distances. Soils are usually strongly acidic and naturally low fertility.

Natural topsoils are likely to have been dark to reddish brown pedal clay loams with light clay subsoils with low fertility and low permeability.

Natural vegetation has been extensively cleared but would have been Tall Open Forest (Wet Sclerophyll Forest) and some tall closed-forest in more protected gullies. It was likely the site was naturally dominated by the following species. (Reference: Milford, H.B. 1999, Soil Landscapes of the Coffs Harbour 1:100 000 Sheet - Department of Land and Water Conservation, Sydney).

- *Eucalyptus microcorys* (Tallwood)
- *Eucalyptus saliva* (Sydney Blue Gum)
- *Eucalyptus acmenioides* (White Mahogany)
- *Eucalypts paniculata* (Grey Ironbark)
- *Eucalyptus propinqua* (Small-fruited Grey Gum)
- *Lophostemon confertus* (Brush Box)
- *Corymbia maculata* (Spotted Gum)

A representative soil sample was taken in the field, near Tree T24 in the lower south of the site. The results from the sample taken were somewhat reflective of the naturally occurring soils and did indicate a yellow podzolic soil. From the topsoil sample taken at a 200mm depth, the soil structure was strongly pedal with medium to coarse sub angular blocky peds. The soil texture was a clay loam trending towards light clay with the colour being a mid to dark brown. The soil was neutral with a pH of 7.0-7.5. There was moderately distinct change from A to B horizons at around 500mm depth. The subsoil from a depth of 700mm was also sampled. The subsoil structure was very strongly pedal with fine to moderate sub angular blocky peds. The soil texture was a light to medium clay. Its colour was orange brown. The soil pH was moderately acidic at pH 5.5

Figure 2.7 – Topsoil sample / profile noting extremely light to medium clay subsoil. (Photos: Arterra 8 March 2025).

2.4 Identification and Assessment of Existing Trees

The site assessment identified a total of **61** trees.

- **22** are adjacent the site on the properties to the north and east, with **1** of these (T01) is a is a 'High' retention value street tree on the North Street frontage which is to be retained and protected.
- The remaining **39** trees are located within the site boundary.
- **35** trees are rated as Low or Very Low / Remove retention value.

The trees are largely the remaining trees that once surrounded low density residential development and were planted as part of domestic garden embellishments. Most trees are small and insignificant specimens, or more recent self-sown weeds and other undesirable species. Most only date from the late 1970s and early 1980s. Over 57% of the trees are rated with a low or very low retention value. The only high value tree is a good quality street tree on the North Street frontage.

The following Table 1 shows the breakdown of the tree population, by retention values.

Table 2.1 - Assessed Tree Population and Retention Value

Retention Value	Number of Trees	Population %
High	1	1%
Moderate	25	41%
Low	17	28%
Very Low / Remove	18	30%
Total trees on site	**61**	**100%**

Detailed information on each tree including heights, trunk diameters, canopy spreads, age classes and condition are all provided in Appendix 4.2 - 'Tree Impact Assessment Schedule'.

2.5 Tree Biology and Tree Care Basics

Trees are dynamic living organisms. Trees can be very susceptible to damage, stress and declining rapidly if overly impacted by construction. Trees take decades to grow but can be injured and killed in a very short time frame. This is particularly due to the irreparable damage to the often shallow, extensive and unseen root systems. It is rarely possible to repair a stressed or damaged tree, after the damage has occurred. Proper protection is the key to minimising construction related impacts. Severing of roots within the Structural Root Zone (SRZ) can also lead to potentially unsafe instability of the tree as a structure.

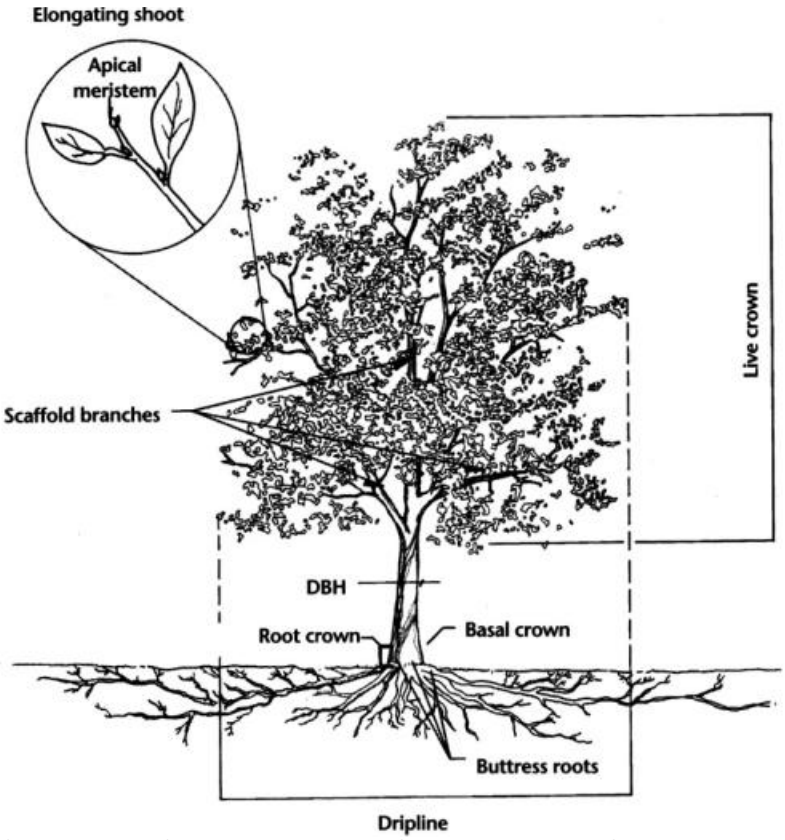


Figure 2.8 – Typical form and structure of a tree illustrating the typical form, location and extent of root growth (Source: Matheny and Clark, 1998)

Basic Tree Needs

As a living organism a tree remains alive by completing the following chemical reaction -
Carbon Dioxide and water in combination with chlorophyll and light is converted to Glucose and Oxygen [CO_2 + H_2O + light = sugar ($C_6H_{12}O_6$ [Glucose]) + O_2]

The process ultimately leads to the plant cells 'respiring' and producing energy for survival, a natural requirement for all living cells. Anything that affects a plant's photosynthesis and then cellular respiration will affect the overall plant health. The limiting factors of photosynthesis and respiration will typically be the availability of oxygen, water and nutrients that make up the important chemical molecules and reactions.

Trees therefore have five basic requirements to survive and successfully grow:-

1. Oxygen (and particularly oxygen within the soil);
2. Water (a cellular necessity and primarily taken up by the tree roots);
3. Light & Sufficient Foliage (to photosynthesise and create the resources needed for cellular survival);
4. Soil (for physical anchorage and critical chemical nutrients) and
5. Physical Space (both above and below ground to grow).

Importantly, a minimum of 15% soil oxygen is required for active root growth and nutrient uptake. Less than 10% available soil oxygen starts to restrict root extension and growth and a minimum of 3% soil oxygen is required to just maintain root existence. Less than this will result in root death (Harris 1999).

One of the most insidious effects of construction on trees is often that of soil compaction or covering of root zones with impervious surfaces, as it:-

- Reduces infiltration rates of surface water;
- Reduces the availability of water to the roots as they can't naturally extract remaining moisture when soil becomes too dry;
- Reduces air to roots (roots cease to function properly and die without oxygen);
- Increased soil strength caused by compaction mean that roots need more energy to growth through it or can't even physically penetrate the soil;
- Roots are physically broken or crushed and there is increased potential for fungal and pathogen attack. (Harris 1999).

Tree Tolerance

Typically, older and larger trees are less tolerant of construction impacts. Different species also have different tolerance of injury and disturbance. Importantly it needs to be stressed, that a tree does not "heal" from injury as animals do. Typically, any injury made to a tree results in the tree expending considerable energy reserves to create new growth that "seals" and surrounds a wound and then attempting to compensate structurally and physically for any losses. Impacts to trees are therefore cumulative and a series of otherwise small and unrelated impacts can easily result in the death of a tree.

A tree that is already compromised or showing signs of stress is far less likely to tolerate construction impacts due to its lower levels of energy reserves and already weakened state. Therefore, a tree that is only in a fair condition or poor condition is less likely to tolerate construction impacts than a young tree in good or excellent condition.

Weakened or stressed trees are also far less able to combat the myriad of normal environmental stresses and pathogens that are naturally imposed against them such as drought, decay, fungi, bacteria and insect pests.

2.6 The Proposed Construction Works

The proposed development comprises the construction of a new residential flat building to accommodate apartments to be used for affordable housing, a communal room, basement car parking including excavation, tree removal and associated servicing, landscaping and public domain works. The proposed works will result in a major site disturbance which may have potentially significant impacts on the trees within and adjacent to the site.

The proposed development will involve:

- Minor landscape demolition works;
- Use of large scale civil and earthmoving equipment;
- Access to and from the site with large trucks and construction plant;
- Major excavations;
- Large stockpiles of excavated material and demolition waste;
- Stockpiles/ storage of building materials;
- Trenching for services;
- Major building works involving concreting, painting and general construction;
- Use of large cranes;
- Parking for site personnel and deliveries;
- Paving and retaining walls and;
- Landscaping.

Key Assumptions:

- Any new pedestrian paths within the TPZs shall be constructed at or above the existing surface levels to minimise surface root impacts.
- Temporary battering, stockpiling or grading will not occur in the designated TPZ. Excavation for footings or basements adjacent to the TPZ will be undertaken using piling or other temporary vertical shoring methods.
- Despite the above, the line of disturbance outside of the building line has been typically estimated at a minimum of 1.5-2.0m from the face of the building to allow for provision of water proofing, services, access and scaffolding around the building during construction.
- All construction access, haulage routes and deliveries are to be away from trees and TPZs as much as possible.
- Where no spot levels or proposed contours are indicated it is assumed that the existing surface levels are retained.
- It is assumed that any new landscape grading within the nominated tree protection areas will be minimal and installed using high quality, imported manufactured topsoil. No cultivation of the existing soils shall be undertaken within the defined TPZ.
- For any retaining walls situated near trees, their footings will be oriented away from the trees (ie: footings will extend no further than the face closest to the tree). Other construction approaches and details can be considered, with review and approval from supervising consulting arborist.

2.7 Tree Impact and Removal Assessment

The intention of this assessment is to clearly illustrate the trees to be retained and removed as part of the proposed works. It is also to determine any incursions into the retained trees' root zones and canopies by the proposed work and evaluate the likely impacts on the existing trees. A detailed listing of the incursions and likely impacts of the proposed works on each tree is shown in Appendix 4.2 - Tree Impact Assessment Schedule and Appendix 4.1 - Tree Plans.

The following points arise from the impact assessment:

- **24** trees (39%) are to be retained and protected.
- **37** trees (61%) are to be removed. Of those:
    - **31** are rated with a **Low or Very Low/ Remove** retention value.
    - All are in the footprint of the proposed building works or unacceptably impacted by the extent of the required associated site works.
- 1 High value street tree (T01 - *Flindersia australis*) at the northeast corner of the site on the North Street frontage is to be retained.

Table 2.2 - Ultimate Tree Disposition - Trees to be Retained and Removed

Tree Retention Values	Trees to be retained	Trees to be removed	Total Trees
High	1	0	1
Moderate	19	6	25
Low	4	13	17
Nil /Should Remove	0	18	18
TOTAL	**24**	**37**	**61**

Of the **24** trees to be retained and protected:

- **20** are rated as **High / Moderate** retention value (77% of the total of all high and moderate value trees)
- **19** have no or minimal foreseeable impact from the proposed works.
- **3** have a 'minor encroachment' (<10%) into their NRZs.
- **2** have a 'moderate encroachment' (10-20%) into their NRZs.
- **No trees** have a major encroachment' (>20%) into their NRZs.
- **2 trees** require canopy pruning considered to be a moderate level of pruning (<20%) into their canopy area. This level of pruning, although undesirable, is considered tolerable and far preferable to suggesting the trees be removed for this reason alone. The trees are high branching and some foliage may be able to be retained above the level of the building and therefore is likely to be less than currently estimated.

Table 2.3 –TPZ Incursions Involving Potential Root Loss (as per AS4970-2025)

Tree ID	Species	NRZ Area	NRZ Incursion	NRZ % Incursion	Comment
T11	*Corymbia citriodora*	87m2	7m2	8%	Minor incursion considered acceptable
T12	*Corymbia citriodora*	108m2	10m2	9%	Minor incursion considered acceptable
T36	*Glochidion ferdinandi*	65m2	7m2	11%	Moderate incursion considered acceptable
T37	*Mangifera indica*	104m2	3m2	3%	Minor incursion considered acceptable
T42	*Syzygium leuhmannii*	43m2	6m2	14%	Moderate incursion considered acceptable

Table 2.4 – Proposed Tree Canopy Pruning

Tree ID	Species	Canopy Area	Canopy Area Pruned	% Pruning	Comment
T11	*Corymbia citriodora*	104m2	18m2	17%	Moderate pruning considered acceptable
T12	*Corymbia citriodora*	136m2	17m2	12%	Moderate pruning considered acceptable

Despite the proximity of the works to the existing trees, it is the author's opinion that the trees can be successfully retained and protected. There will need to be careful oversight during critical periods of works. If this is successfully applied, the trees should experience only minor impacts. Prior to commencement of works, the TPZ is to be fully fenced and mulched, with temporary irrigation installed as per the tree protection specification. The works shall be undertaken with care to protect the adjacent trees including overhead canopy and the existing ground surface within the TPZ. All work must be undertaken sensitively and roots greater than 40mm in diameter are to be retained and protected. Importantly, the project consulting arborist must be present to oversee all works within the TPZ.

Figure 2.9 – 'High' retention value street tree T01 (Flindersia australis) at right, on the North Street frontage. (Photo: Arterra 8 March 2025)

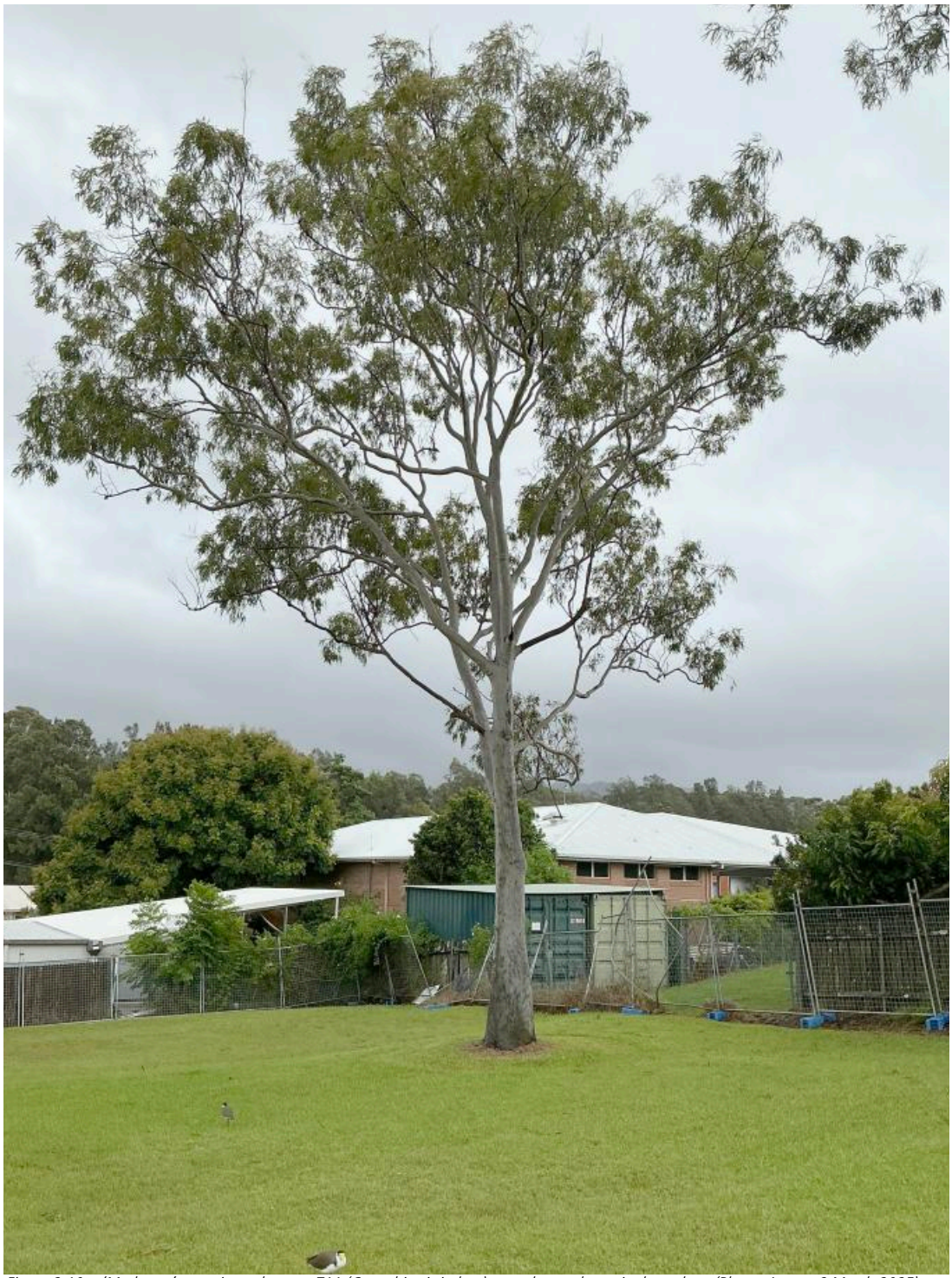


Figure 2.10 – 'Moderate' retention value tree T11 (Corymbia citriodora) near the northern site boundary. (Photo: Arterra 8 March 2025)

Figure 2.11 – 'Moderate' retention value tree T112(Corymbia citriodora) near the northern site boundary. (Photo: Arterra 8 March 2025)

Figure 2.12 – 'Moderate' retention value tree T36 (Glochidion ferdinandi) in adjacent property to the east. (Photo: Arterra 8 March 2025)

2.8 Existing Canopy Cover and Canopy Retained

Canopy coverage has been calculated as a percentage (%) of the total site area (total site area 3,804m2). This has been calculated using the m^2 of 'projected' canopy onto the underlying ground surface and only within the site boundary. Overlapping canopy is not counted twice. Table 2.5 outlines the existing canopy cover for the site. Refer to accompanying and separate Landscape Plans and Report prepared by Jane Irwin Landscape Architects for the proposed canopy coverage expected as part of the ultimate landscape and development outcomes.

Table 2.5 - Existing Canopy Cover

Tree Canopy Coverage	Canopy Coverage (m^2)	% of Total Site Area
Existing Canopy Coverage – Total	974 m2	25%
Existing Canopy Coverage – Likely to be retained	167 m2	4%
Existing Canopy Coverage – Likely to be removed	807 m2	21%
Existing Study Area	3,804 m2	100%

Figure 2.13 – Overall site plan showing the site and its existing urban canopy cover and relative percentages. (Source: Arterra)

3.0 TREE MANAGEMENT RECOMMENDATIONS

3.1 Potential Tree Related Impacts Needing to be Managed During Construction

The potential impacts from the proposed construction can be summarised as tree damage and 'reduced life expectancy' caused by:

- Root loss and disturbance due to inappropriate excavation for the building and services;
- Compaction of the root zone from storage or stockpiling of materials;
- Contamination of the soil from; the preparation of chemicals, wash down/ cleaning of equipment, refuelling of vehicles and dumping of waste;
- Compaction of the root zones from haul roads and the parking or use of vehicles/ plant equipment;
- Root disturbances from unauthorised cut and fill and soil level changes;
- Physical damage to the tree trunks and branches from passing machinery;
- Damage to the tree roots from landscaping and pedestrian pathway construction; and
- Inappropriate or excessive pruning for construction access.

The following sections of this report provide the recommendations and proposed measures that will aim to minimise and avoid these impacts as much as realistically possible.

3.2 Management of Construction Period Tree Impacts

The following recommendations are made to specifically reduce the negative construction impacts on the existing trees identified to be retained.

- Appropriately fence all TPZs outside of the already noted incursions for the duration of all major site construction work. See Appendix 4.1 Tree Plans for locations and extent.
- Ensure that all work within the identified TPZs is carried out with appropriate skill and care to limit surface impacts. If roots greater than 40mm Ø are encountered, works shall cease and direction sought from the project arborist before proceeding further.
- Carefully control and fence access to and from the construction areas so that movement does not occur through any TPZs other than for the already identified building incursions.
- Ensure all the new above and below ground services are excluded from running through any TPZs beyond any already noted incursions.
- Minimise the re-grading of the ground surface within the identified TPZs, beyond the noted building incursions, to meet and match proposed pathways and other building levels. No excavation below existing levels shall typically be allowed.
- Mulching of the entire TPZ as specified in Tree Plans. This will aid tree health with moisture retention, limit possible compaction from pedestrian traffic, and improve soil conditions within the TPZs.
- Avoid digging into existing root zones for the installation of any proposed landscaping around the trees and the installation sizes of new plants to be 5L or less to ensure that excavations are less than 200mm in depth. It is recommended to build up soil levels for any new planting areas to a maximum of 200mm to enable the new planting to occur without disturbing existing tree roots.
- Do not allow storage or stockpiling of any materials or site sheds within established TPZs unless it can be demonstrated that this will not impact on the tree retention, and it is specifically approved in writing by the Project Consulting Arborist.

3.3 Proposed Tree Protection & Activity Sequencing

The following sequence of activities should be followed for this project:

1. A Tree Protection Specification & Plan is to be prepared and issued as part of the construction contract prior to any construction work.
2. The Project Consulting Arborist, Landscape Architect, Civil and Structural Engineers, Client and Contractor Site Foreman are to meet prior to beginning any work on the site to discuss and review all work procedures, construction access routes, stockpiling and tree protection measures (including fence types and locations, access, cranage points, piling methods etc.).
3. Contractors to discuss locations and type of any sediment and erosion controls (if any) and install them with minimal tree impact when within or passing through the TPZ.
4. Trees identified for removal on the Tree Protection and Removal Plan (T-02) are to be identified on site and clearly marked. Removal and clearing of existing trees should be done by qualified arboricultural staff with care not to impact or damage other surrounding trees throughout the process. Stumps are to be ground when near remaining trees to avoid the use of excavators and the like from grubbing out stumps, which may lead to damage of any intertwined roots.
5. Designated TPZs are to be mulched with 75mm of recycled hardwood woodchip mulch to improve soil conditions around tree and remain in place until future final landscaping.

6. Ground protection boards, or equivalent, are to be place in areas where the Tree Protection Area is not able to be completely fenced or unanticipated access is required.
7. The Construction Phase TPZ is to be clearly defined and fenced off with a 1.8m high metal or plywood temporary fence prior to any further work within the vicinity of the trees as shown on the Tree Plans. Any required rumble boards shall be installed to protect TPZ areas where temporary access is required.
8. Plywood (or similar) is to be placed under any scaffolds or pedestrian works paths when they are running through any identified TPZs.
9. Building works to be completed (external).
10. Contractor to remove the TPZ fencing and only then install final pathways and landscaping within the TPZs under the trees, but only after construction of the building exterior and all civil works are completed.

3.4 Demolition Work Near Trees or within TPZs

Demolition of paths and other structures required within a TPZ shall be done with small, tracked equipment or by hand, with care to limit surface damage and disturbance of the root zone. All such work within TPZs shall be supervised and overseen by a qualified project consulting arborist. Paving sections being removed must not be dragged across exposed roots. With existing pavement removed, the ground and roots are to be appropriately protected until new paving is installed and trafficking of the area minimised.

3.5 Tree Protection Fencing & Definition of TPZs

Establish a clearly defined tree protection zone as indicated in Appendix 4.1 Tree Plans. Install a 1.8m high temporary fence with either plywood hoarding or temporary steel mesh or chain wire fencing with adequate lateral bracing. Fencing shall comply with the requirements of AS 4687-2007 Temporary fencing and hoardings. These areas around the trees shall be delineated as a "Tree Protection Zone" during the remaining construction process, via appropriate weatherproof signage at not more than 50m spacing. Access will typically be excluded from these zones and the levels will be left largely at the existing levels with the exception of the installation of the 75mm of mulch where noted. No stockpiling, excavation, trenching, re-fuelling or material storage should be allowed in this area without prior approval from the project consulting arborist.

3.6 Ground Protection within TPZs

Vehicular movement and access shall typically not be required or approved through the TPZs. If it is absolutely necessary and it is proposed to create any access or haul road, or similar, within the TPZ of a retained tree, the Contractor shall install rumble strips / boards over the designated TPZ ground surface. No excavation shall be allowed. Contractor shall first place a suitable permeable geotextile to the extent required and then a 100mm thick layer of wood chip mulch or coarse no-fines gravel over the extent to be covered with the rumble strip / boards. Then place hardwood boards (minimum 3600 x 200 x 75mm) on their flat edge, side by side, with a 30 - 50mm gap to form a rumble strip. These boards are to be held together with three galvanised metal bracing straps nailed to each board. The two outer straps are to be approximately 200mm in from the ends of the boards. The third strap is to be along the centre line of the boards.

Another appropriate alternative would be to install HDPE Ground Protection Mats. This mat can be laid as two parallel tracks or a single roadway, linked together with metal connections. These are extremely durable and manoeuvrable and can withstanding vehicle weights up to 80 tonnes.

Figure 3.1 – Example of acceptable Tree Protection Area ground protection (Photo: Arterra)

Figure 3.2 – Example of acceptable Tree Protection Area ground protection (Photo: Arterra)

3.7 Trunk and Lower Branch Protection

A trunk barrier is to be erected around the circumference of the tree trunk and root buttress where shown. This barrier will consist of two to three 'rings' of 50mm diameter unsocked ag-line wrapped around tree trunk or branch and the ends cable tied to secure in place. A layer of battens is to be placed over and tight to the ag-lines. The battens are to have a maximum spacing of 50mm. The height of the battens is to be at least 2.4 meters or to the height of the first branches. Lower large branches may require the same protection if likely to be damaged by passing vehicles or equipment. Secure battens in place with galvanised steel bracing straps. Do not nail or screw into or otherwise injure the trunk or bark. Battens may be made from any suitable waste timber of similar sizes and depths. All sharp or protruding edges are to be properly covered with tape or similar padding.

Figure 3.3– Example of acceptable Trunk Protection batten installation. (Photo: Arterra)

3.8 Provision of Temporary Irrigation

No temporary irrigation system is anticipated for the works. If unexpected ground disturbance, other climatic factors or pest and disease dictate, at the sole discretion of the Project Consulting Arborist, a temporary and automated (battery powered timer is sufficient) watering system may need to be placed within the TPZs to maintain adequate water to the retained trees and help maintain their healthy condition. This can be a surface mounted 'residential-style' soaker hose and/or surface sprinkler systems. It is to be surface visible and spray delivered so that is operation can be easily visible and verified. It should be on a designated supply line, separate from other construction related water supplies to minimise its likelihood of being disconnected.

Typically, during spring and summer months it should be set to run for a minimum of 20 minutes every day, in the early morning. During, autumn and winter months it should be set to run for 1 hour once every week. The operation can be suspended temporarily in periods of extensive and/or prolonged rain.

The system is to remain in place for the duration of construction, or until the Project Consulting Arborist approves its removal. It may be removed to allow the final landscape treatments to proceed. If accidentally disturbed or damaged by construction activities, it is to be reinstated as soon as practicable.

3.9 Other Tree Protection Measures to be Implemented

The following is a summary of the main measures that will be required during construction. These should be adopted for the Construction Contract and conditioned by Council.

Controlled Construction Access & Parking

Construction access points and stockpiling and storage areas shall be clearly identified and fenced where appropriate. Uncontrolled access points and parking of vehicles outside of designated areas is to be avoided. If temporary access is required through a tree protection zone, ground protection shall be employed to limit soil compaction and root damage and disturbance.

Clearing and Removal of Trees to be Removed

Removal and clearing of existing trees should be done by qualified arboricultural staff with care not to impact or damage other surrounding trees throughout the process. Existing stumps should be grubbed out or ground in a controlled fashion to remove wood that may decay and promote unwanted pathogens.

Communication - Tool Box Meetings and Construction Inductions

All contractors and subcontractors shall be inducted prior to working on the site. All inductions shall include description and identification of the Tree Protection Zones and the restriction on work and activities with regard to trees. The site foreman shall ensure that all new staff and contractors are appropriately inducted and that brief "tool box" meetings are conducted regularly to ensure Tree Protection is maintained at the forefront of all construction workers minds.

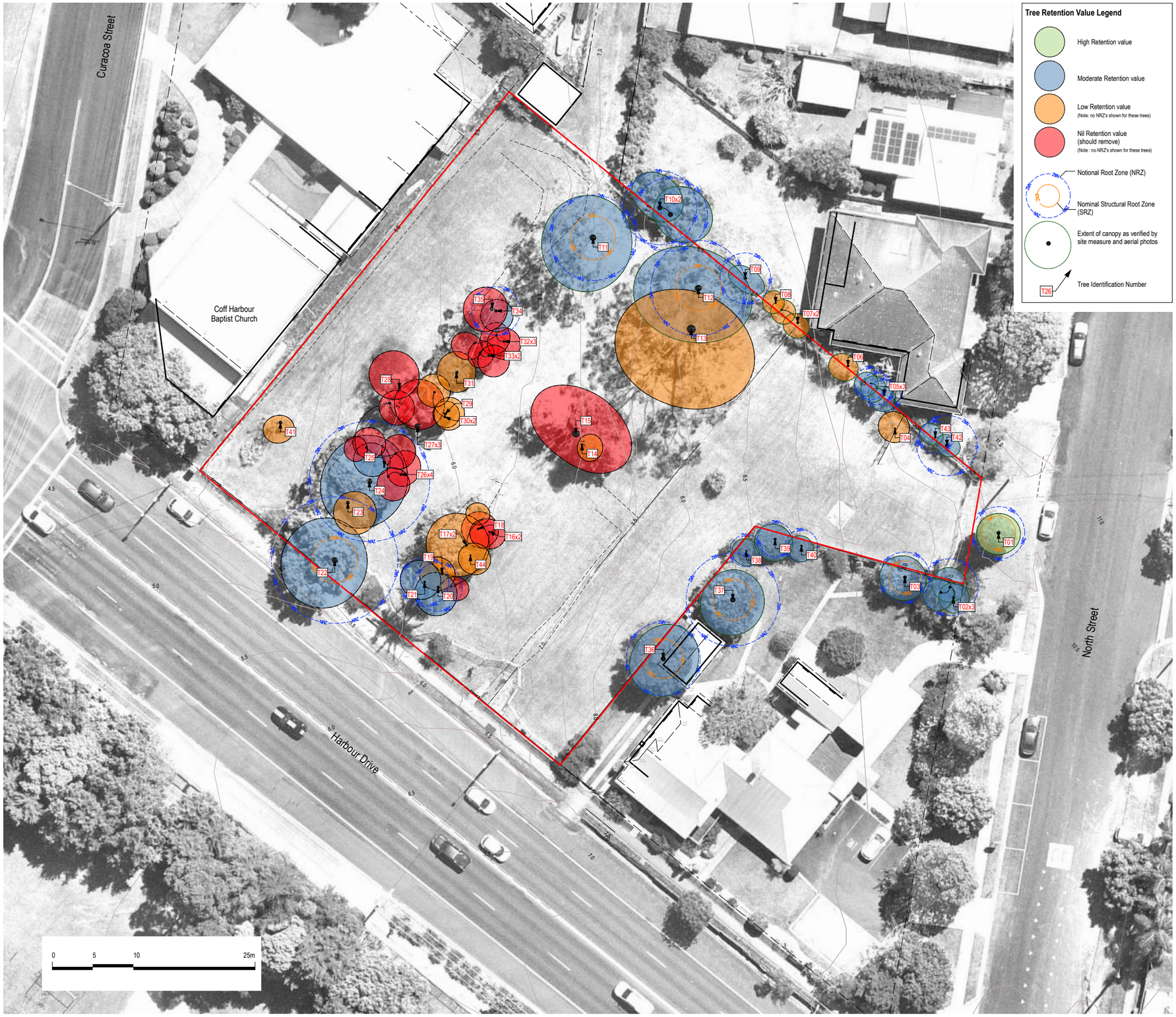
3.10 References

- Milford, H.B. 1999, Soil Landscapes of the Coffs Harbour 1:100 000 Sheet - Department of Land and Water Conservation, Sydney.
- Harris, R.W, Clark, J.R & Matheny, Nelda P, 1999*, Arboriculture: Integrated management of landscape trees, shrubs and vines*. 3rd Ed. Prentice Hall. New Jersey, US
- Matheny, Nelda P and Clark J.R, 1998, *Trees and development - a technical guide to preservation of trees during land development*, International Society of Arboriculture, Illinois, US.
- Roberts, J. Jackson, N. and Smith, M. 2006. *Tree roots in the built environment. No.8* Research for Amenity Trees, Dept. for Communities and Local Government, London.
- Standards Australia, 2007, *AS 4373-2007 Pruning of amenity trees*. Standards Australia, Sydney.
- Standards Australia, 2025, *AS 4970-2025 Protection of Trees on Development Sites*. Standards Australia, Sydney.
- Standards Australia, 2007, AS 4687-2007 *Temporary fencing and hoardings*. Standards Australia, Sydney.

- End of report –

4.0 APPENDICES

4.1 Tree Plans



Tree Retention Value Legend

- High Retention value
- Moderate Retention value
- Low Retention value (Note: no NRZ's shown for these trees)
- Nil Retention value (should remove) (Note : no NRZ's shown for these trees)
- Notional Root Zone (NRZ)
- Nominal Structural Root Zone (SRZ)
- Extent of canopy as verified by site measure and aerial photos
- T26 Tree Identification Number

Homes NSW - HAFF2, Coffs Harbour - Tree Assessment Schedule

Tree ID	Trees in Group	Tree Species	Common Name	Trunk Diameter Std Height (dsh) (m)	Trunk Diameter at base (dgl) (m)	NRZ radius (m) 12xdbh (AS 4970)	Nominal SRZ radius (m) (AS 4970)	Retention Value	Recommendation
1	1	*Flindersia australis*	**Crows Ash**	0.27	0.34	3.24	2.10	**High**	Retain
2	3	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.19	0.22	3.50	1.11	**Moderate**	Retain
3	1	*Diospyros nigra*	**Chocolate Pudding Fruit Tree**	0.26	0.31	3.12	2.02	**Moderate**	Retain
4	1	*Plumeria rubra*	**Frangipani**	0.17	0.19	2.04	1.65	**Low**	Remove
5	3	*Xanthosternon chrysanthus*	**Golden Penda**	0.08	0.09	2.00	1.20	**Moderate**	Retain
6	1	*Michelia figo*	**Port-Wine Magnolia**	0.20	0.20	2.40	1.68	**Low**	Retain
7	2	*Plumeria rubra*	**Frangipani**	0.16	0.22	2.00	1.75	**Low**	Retain
8	1	*Grevillea 'Sandra Gordon'*	**Grevillea Cultivar**	0.09	0.11	2.00	1.31	**Low**	Retain
9	1	*Syzygium luehmannii*	**Small Leaf Lilly Pilly**	0.26	0.31	3.12	2.02	**Moderate**	Retain
10	2	*Mangifera indica*	**Mango**	0.38	0.47	4.56	2.41	**Moderate**	Retain
11	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.44	0.64	5.28	2.74	**Moderate**	Retain
12	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.49	0.67	5.88	2.80	**Moderate**	Retain
13	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.72	0.99	8.64	3.30	**Low**	Remove
14	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.14	0.17	2.00	1.57	**Low**	Remove
15	1	*Glochidion ferdinandi*	**Cheese Tree**	0.59	0.83	7.08	3.06	**Nil / Remove**	Remove
16	2	*Cinnamomum camphora*	**Camphor Laurel**	0.08	0.10	2.00	1.26	**Nil / Remove**	Remove
17	2	*Glochidion ferdinandi*	**Cheese Tree**	0.18	0.24	2.16	1.82	**Low**	Remove
18	1	*Pittosporum undulatum*	**Sweet Pittosporum**	0.15	0.24	2.00	1.82	**Nil / Remove**	Remove
19	1	*Tibouchina lepidota*	**Lasiandra**	0.20	0.31	2.40	2.02	**Low**	Remove
20	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.23	0.26	3.00	1.13	**Moderate**	Remove
21	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.21	0.24	3.00	1.12	**Moderate**	Remove
22	1	*Glochidion ferdinandi*	**Cheese Tree**	0.65	0.67	7.80	2.80	**Moderate**	Remove
23	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	0.29	0.39	3.48	2.23	**Low**	Remove
24	1	*Mangifera indica*	**Mango**	0.62	0.65	7.44	2.76	**Moderate**	Remove
25	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.21	0.26	3.00	1.13	**Moderate**	Remove
26	4	*Cinnamomum camphora*	**Camphor Laurel**	0.10	0.25	2.00	1.85	**Nil / Remove**	Remove
27	3	*Schefflera actinophylla*	**Umbrella Tree**	0.30	0.63	3.60	2.73	**Nil / Remove**	Remove
28	1	*Albizia julibrissin*	**Persian Silk Tree**	0.17	0.24	2.04	1.82	**Nil / Remove**	Remove
29	1	*Thuja orientalis cv.*	**Chinese Arborvitae**	0.20	0.32	2.40	2.05	**Low**	Remove
30	2	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.22	0.25	3.00	1.13	**Low**	Remove
31	1	*Thuja orientalis cv.*	**Chinese Arborvitae**	0.20	0.40	2.40	2.25	**Low**	Remove
32	3	*Celtis sinensis*	**Chinese Hackberry**	0.13	0.23	2.00	1.79	**Nil / Remove**	Remove
33	2	*Cinnamomum camphora*	**Camphor Laurel**	0.23	0.25	2.76	1.85	**Nil / Remove**	Remove
34	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.21	0.30	3.00	1.15	**Moderate**	Remove
35	1	*Schefflera actinophylla*	**Umbrella Tree**	0.29	0.50	3.48	2.47	**Nil / Remove**	Remove
36	1	*Glochidion ferdinandi*	**Cheese Tree**	0.38	0.48	4.56	2.43	**Moderate**	Retain
37	1	*Mangifera indica*	**Mango**	0.48	0.52	5.76	2.51	**Moderate**	Retain
38	1	*Citrus x latifolia*	**Persian (Common) Lime**	0.07	0.10	2.00	1.26	**Moderate**	Retain
39	1	*Litchi chinensis*	**Lychee**	0.18	0.22	2.16	1.75	**Moderate**	Retain
40	1	*Citrus x latifolia*	**Persian (Common) Lime**	0.12	0.15	2.00	1.49	**Moderate**	Retain
41	1	*Spathodea campanulata*	**African Tulip Tree**	0.24	0.37	2.88	2.18	**Low**	Remove
42	1	*Syzygium luehmannii*	**Small Leaf Lilly Pilly**	0.31	0.38	3.72	2.20	**Moderate**	Retain
43	1	*Callistemon viminalis cv.*	**Weeping Bottlebrush**	0.12	0.16	2.00	1.53	**Moderate**	Retain
44	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	0.17	0.19	2.04	1.65	**Low**	Remove

TREE RETENTION VALUE NOTES

The proposed retention value of the trees was determined based on a considered combination of the size, age, condition and suitability of the tree. Each tree was then ranked according to one of 4 retention categories;

1. **"High" Retention Value** — these are trees that are typically in good or very good condition, large and visually prominent, historically or environmentally important. They should represent a serious physical constraint to development and their removal avoided where possible and feasible.
2. **"Moderate" Retention Value** — these are trees that are in good to reasonable condition, with no major structural defects and could be retained where possible and feasible to do so.
3. **"Low" Retention Value** — these are trees that are of poor condition or have structural defects, are particularly small or common place, are not historically, environmentally or socially significant and should not be considered as a constraint to development. They could be retained only if they are not likely to be impacted by or constrain potentially desirable development outcomes.
4. **"Nil" Retention Value** — these are trees that are in very poor health, or poor form, or have serious structural defects, are considered weeds or combination of all these, and therefore should be considered for removal regardless of any development.

Consideration has also been given to the relationship of the trees to one another and their proximity to the likely development areas on the site. For example, trees that are part of a closely spaced group, or are likely to be significantly misshapen or unstable with the removal of surrounding trees and structures are considered with these factors in mind.

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NOTE
Refer to the accompanying Arboricultural Impact Assessment Report for full description of trees, measurements and methods used to assess the trees, and proposed tree protection measures.

REVISION	DESCRIPTION	CHKD	DATE
A	For SSDA Application	RWS	2/9/25

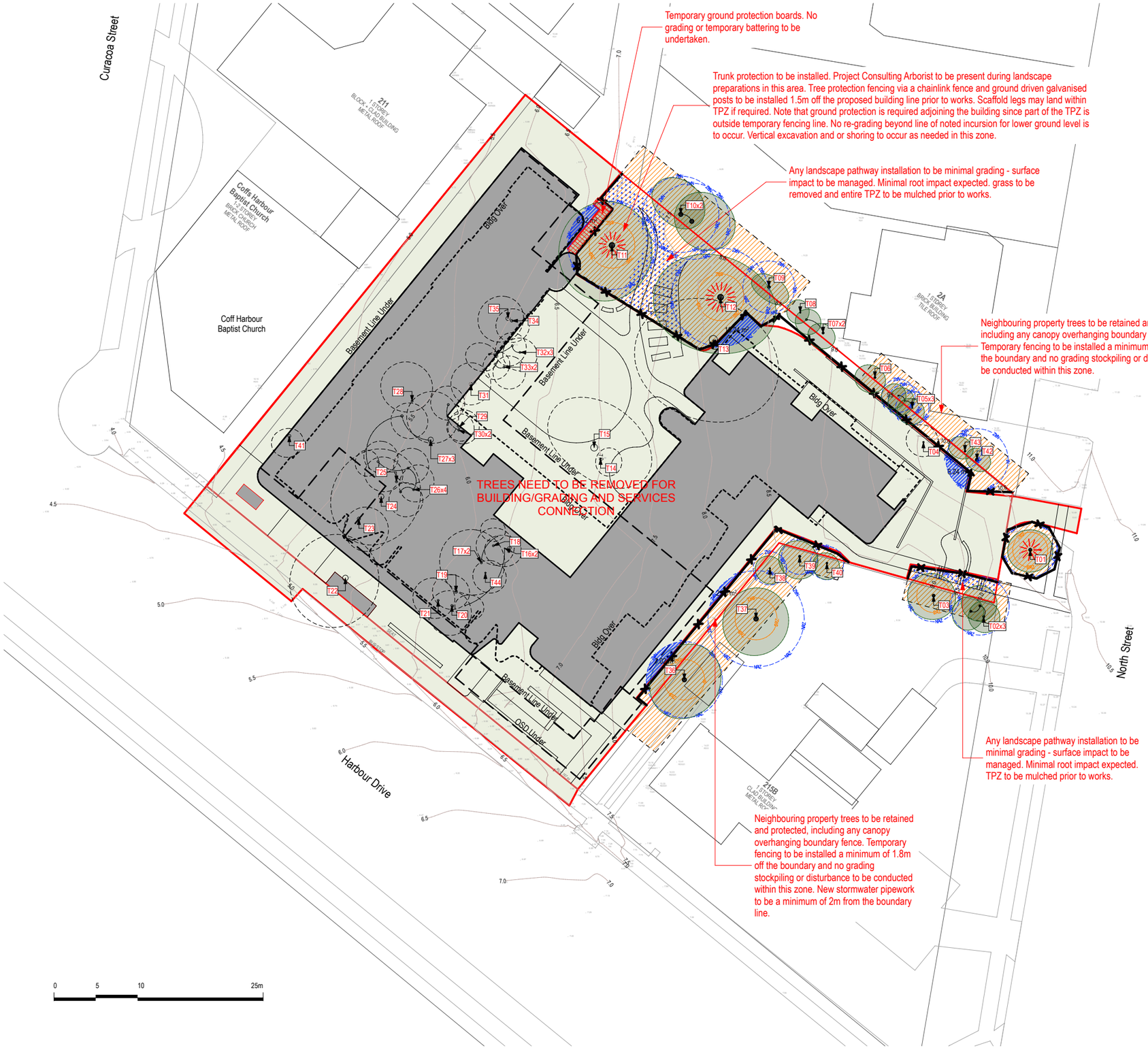
PROJECT & CLIENT
211A-215 Harbour Drive Coffs Harbour
Homes NSW

Project No : 24.20
Designed : RWS
Drawn : RWS
Scale : 1:250@A1/1:500@A3

DRAWING TITLE
Tree Retention Value Plan

DRAWING NUMBER T-01
REVISION A

Plotted at : 7:27 am 2/9/2025



Homes NSW - HAFF2, Coffs Harbour - Tree Assessment Schedule

Tree ID	Trees in Group	Tree Species	Common Name	Trunk Diameter Std Height (dsh) (m)	Trunk Diameter at base (dgl) (m)	NRZ radius (m) 12xdbh (AS 4970)	Nominal SRZ radius (m) (AS 4970)	Retention Value	Recommendation
1	1	*Flindersia australis*	**Crows Ash**	0.27	0.34	3.24	2.10	**High**	Retain
2	3	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.19	0.22	3.50	1.11	**Moderate**	Retain
3	1	*Diospyros nigra*	**Chocolate Pudding Fruit Tree**	0.26	0.31	3.12	2.02	**Moderate**	Retain
4	1	*Plumeria rubra*	**Frangipani**	0.17	0.19	2.04	1.65	**Low**	Remove
5	3	*Xanthostemon chrysanthus*	**Golden Penda**	0.08	0.09	2.00	1.20	**Moderate**	Retain
6	1	*Michelia figo*	**Port-Wine Magnolia**	0.20	0.20	2.40	1.68	**Low**	Retain
7	2	*Plumeria rubra*	**Frangipani**	0.16	0.22	2.00	1.75	**Low**	Retain
8	1	*Grevillea 'Sandra Gordon'*	**Grevillea Cultivar**	0.09	0.11	2.00	1.31	**Low**	Retain
9	1	*Syzygium luehmannii*	**Small Leaf Lilly Pilly**	0.26	0.31	3.12	2.02	**Moderate**	Retain
10	2	*Mangifera indica*	**Mango**	0.38	0.47	4.56	2.41	**Moderate**	Retain
11	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.44	0.64	5.28	2.74	**Moderate**	Retain
12	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.49	0.67	5.88	2.80	**Moderate**	Retain
13	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.72	0.99	8.64	3.30	**Low**	Remove
14	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.14	0.17	2.00	1.57	**Low**	Remove
15	1	*Glochidion ferdinandi*	**Cheese Tree**	0.59	0.83	7.08	3.06	**Nil / Remove**	Remove
16	2	*Cinnamomum camphora*	**Camphor Laurel**	0.08	0.10	2.00	1.26	**Nil / Remove**	Remove
17	2	*Glochidion ferdinandi*	**Cheese Tree**	0.18	0.24	2.16	1.82	**Low**	Remove
18	1	*Pittosporum undulatum*	**Sweet Pittosporum**	0.15	0.24	2.00	1.82	**Nil / Remove**	Remove
19	1	*Tibouchina lepidota*	**Lasiandra**	0.20	0.31	2.40	2.02	**Low**	Remove
20	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.23	0.26	3.00	1.13	**Moderate**	Remove
21	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.21	0.24	3.00	1.12	**Moderate**	Remove
22	1	*Glochidion ferdinandi*	**Cheese Tree**	0.65	0.67	7.80	2.80	**Moderate**	Remove
23	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	0.29	0.39	3.48	2.23	**Low**	Remove
24	1	*Mangifera indica*	**Mango**	0.62	0.65	7.44	2.76	**Moderate**	Remove
25	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.21	0.26	3.00	1.13	**Moderate**	Remove
26	4	*Cinnamomum camphora*	**Camphor Laurel**	0.10	0.25	2.00	1.85	**Nil / Remove**	Remove
27	3	*Schefflera actinophylla*	**Umbrella Tree**	0.30	0.63	3.60	2.73	**Nil / Remove**	Remove
28	1	*Albizia julibrissin*	**Persian Silk Tree**	0.17	0.24	2.04	1.82	**Nil / Remove**	Remove
29	1	*Thuja orientalis cv.*	**Chinese Arborvitae**	0.20	0.32	2.40	2.05	**Low**	Remove
30	2	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.22	0.25	3.00	1.13	**Low**	Remove
31	1	*Thuja orientalis cv.*	**Chinese Arborvitae**	0.20	0.40	2.40	2.25	**Low**	Remove
32	3	*Celtis sinensis*	**Chinese Hackberry**	0.13	0.23	2.00	1.79	**Nil / Remove**	Remove
33	2	*Cinnamomum camphora*	**Camphor Laurel**	0.23	0.25	2.76	1.85	**Nil / Remove**	Remove
34	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	0.21	0.30	3.00	1.15	**Moderate**	Remove
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38	1	*Citrus x latifolia*	**Persian (Common) Lime**	0.07	0.10	2.00	1.26	**Moderate**	Retain
39	1	*Litchi chinensis*	**Lychee**	0.18	0.22	2.16	1.75	**Moderate**	Retain
40	1	*Citrus x latifolia*	**Persian (Common) Lime**	0.12	0.15	2.00	1.49	**Moderate**	Retain
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42	1	*Syzygium luehmannii*	**Small Leaf Lilly Pilly**	0.31	0.38	3.72	2.20	**Moderate**	Retain
43	1	*Callistemon viminalis cv.*	**Weeping Bottlebrush**	0.12	0.16	2.00	1.53	**Moderate**	Retain
44	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	0.17	0.19	2.04	1.65	**Low**	Remove

Tree Protection and Removal Plan Legend

- Existing Tree Retained — Extent of canopy as verified by site measure and aerial photos
- Existing Tree Removed — (Note: no NRZ's shown for these trees)
- T26 — Tree Identification Number
- Proposed Building
- Construction Period Tree Protection Zone - consolidated area
- Tree Protection Zone Temporary Fencing
- Trunk Protection Battens to be installed
- Ground Protection- Rumble Boards to be installed
- Non-destructive excavation / trenching
- Expected loss of roots due to excavation or trenching
- Surface impact to be managed - minimal root loss expected
- Notional Root Zone Radius (NRZ)
- Nominal Structural Root Zone (SRZ) shown where relevant
- Extent of ground modification and disturbance

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NOTE
Refer to the accompanying Arboricultural Impact Assessment Report for full description of trees, measurements and methods used to assess the trees, and proposed tree protection measures.

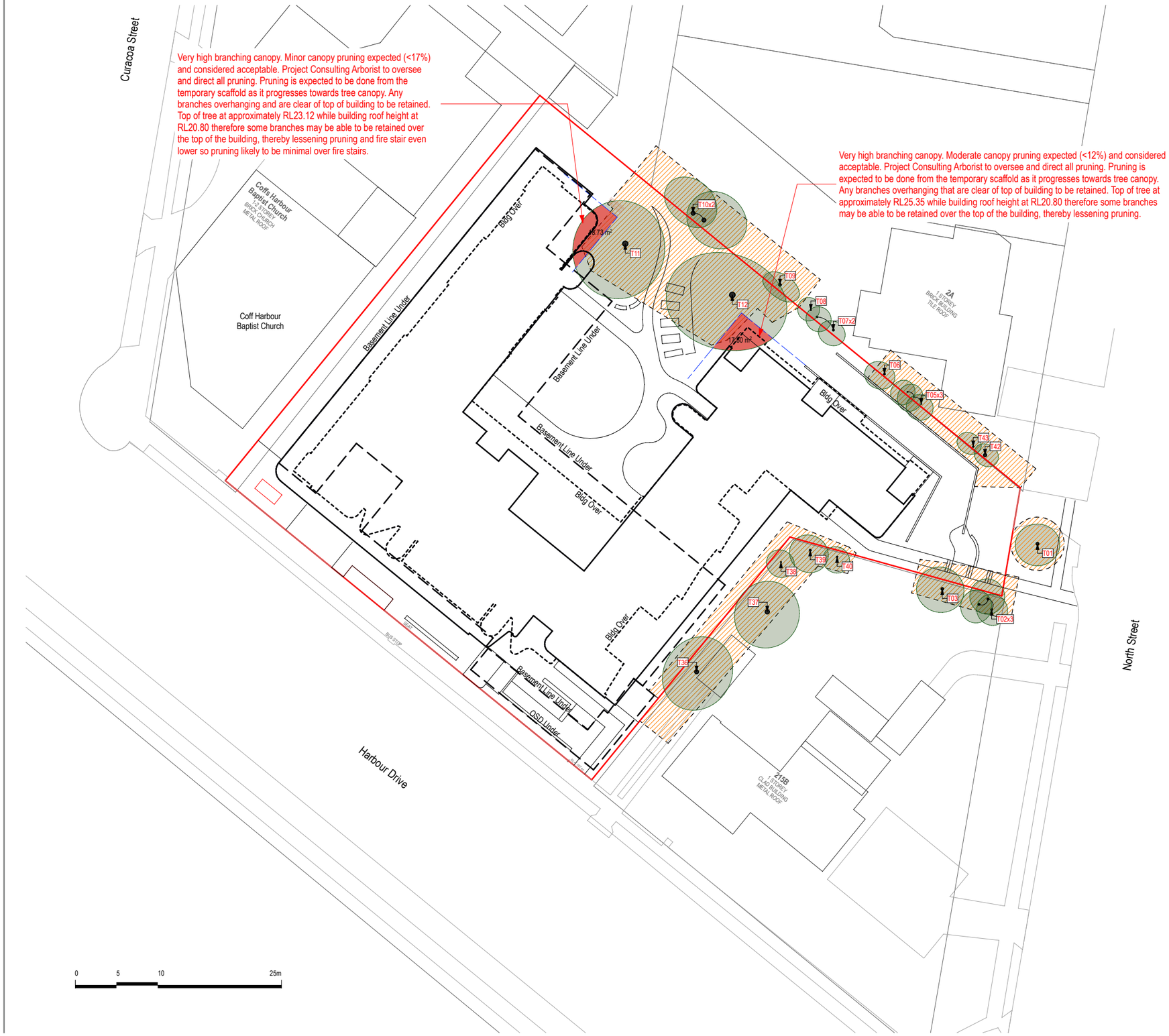
REVISION	DESCRIPTION	CHKD	DATE
A	For SSDA Application	RWS	2/9/25

PROJECT & CLIENT
211A-215 Harbour Drive Coffs Harbour
Homes NSW

Project No : 24.20
Designed : RWS
Drawn : RWS
North
Scale : 1:250@A1/1:500@A3

DRAWING TITLE: Tree Protection and Removal Plan
DRAWING NUMBER: T-02
REVISION: A

Plotted at : 7:27 am 2/9/2025



Homes NSW - HAFF2, Coffs Harbour - Tree Assessment Schedule

Tree ID	Trees in Group	Tree Species	Common Name	Trunk Diameter Std Height (dsh) (m)	Trunk Diameter at base (dgl) (m)	NRZ radius (m) 12xdbh (AS 4970)	Nominal SRZ radius (m) (AS 4970)	Retention Value	Recommendation
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3	1	*Diospyros nigra*	**Chocolate Pudding Fruit Tree**	0.26	0.31	3.12	2.02	**Moderate**	Retain
4	1	*Plumeria rubra*	**Frangipani**	0.17	0.19	2.04	1.65	**Low**	Remove
5	3	*Xanthostemon chrysanthus*	**Golden Penda**	0.08	0.09	2.00	1.20	**Moderate**	Retain
6	1	*Michelia figo*	**Port-Wine Magnolia**	0.20	0.20	2.40	1.68	**Low**	Retain
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8	1	*Grevillea 'Sandra Gordon'*	**Grevillea Cultivar**	0.09	0.11	2.00	1.31	**Low**	Retain
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11	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.44	0.64	5.28	2.74	**Moderate**	Retain
12	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.49	0.67	5.88	2.80	**Moderate**	Retain
13	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.72	0.99	8.64	3.30	**Low**	Remove
14	1	*Corymbia citriodora*	**Lemon Scented Gum**	0.14	0.17	2.00	1.57	**Low**	Remove
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23	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	0.29	0.39	3.48	2.23	**Low**	Remove
24	1	*Mangifera indica*	**Mango**	0.62	0.65	7.44	2.76	**Moderate**	Remove
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44	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	0.17	0.19	2.04	1.65	**Low**	Remove

Tree Canopy Pruning Plan Legend

- Existing Tree Canopy — Extent of canopy as verified by site measure and aerial photos
- 12.82 m² — Proposed Canopy Pruning Extent (m2 shown)
- T26 — Tree Identification Number
- Ground Level TPZ

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NOTE
Refer to the accompanying Arboricultural Impact Assessment Report for full description of trees, measurements and methods used to assess the trees, and proposed tree protection measures.

REVISION	DESCRIPTION	CHKD	DATE
A	For SSDA Application	RWS	2/9/25

PROJECT & CLIENT
211A-215 Harbour Drive Coffs Harbour
Homes NSW

Project No : 24.20
Designed : RWS
Drawn : RWS
North Scale : 1:250@A1/1:500@A3

DRAWING TITLE: Tree Canopy Pruning Plan
DRAWING NUMBER: T-03
REVISION: A

Plotted at : 7:27 am 2/9/2025

TREE PROTECTION SPECIFICATIONS

1. Tree Protection Measures and Protocols.

All work around existing trees to be retained shall be in accordance with AS 4970-2025 Protection of trees on development sites with the clear establishment of the required Tree Protection Zones (TPZ's). If the scope of work allowed within or the extent of the Tree Protection Zones of existing trees is not clear, please refer to the Contract Manager or Project Consulting Arborist for clarification.

Before any site works commence tree protection zones and other measures must be established and conveyed to those all working on the site. The Contractor shall ensure all subcontractors are inducted prior to working on the site. All inductions shall include description and identification of the Tree Protection Zones and the restriction on work and activities with regard to trees.

Damage to roots or degradation of the soil through compaction and/or excavation within TPZ's is likely to cause serious damage to the tree. Any work operations required within TPA's must be carried out with extreme care. All trees, palms and other shrubs within TPZ's are to be retained unless shown otherwise on the Tree Protection Plan(s). Trees marked for retention shall not be used to display signage, or as fence or cable supports for any reason. No materials stockpiling, chemicals or washout areas are permitted immediately upslope of or within the Tree Protection Area. The washing down of wheel barrows, paint cans/brushes, acids and the like shall not to be done near existing trees as the runoff is very harmful to tree roots.

No fuel powered pumps or generators or air compressors are to be placed within TPZ's. No fuel or chemicals shall be stored and no equipment or vehicles shall be serviced or re-fuelled within a TPZ.

2. Controlled Construction Access

Construction access points, stockpiling and storage areas shall be clearly identified on site and fenced off where appropriate. Uncontrolled access and parking of vehicles inside TPZ's shall be avoided. If access is required through a tree protection area, the access way shall be treated with ground protection.

3. Tree Protection Fencing & Signage

The Tree Protection Plan(s) shows the extent of areas to be fenced and protected. Protection measures shall be certified as adequate by the Project Consulting Arborist. This fencing may form part of the general construction site fencing, where practical. It shall remain in place as long as possible and typically not be removed until the final landscape installation in those areas begins.

All tree protection fencing shall be 1800mm high galvanised chain wire or welded steel mesh. Fencing must be bolted together and secured with the necessary back stays and bracing.

Star pickets with bunting or danger tape shall not constitute acceptable tree protection fencing.

Suitable signage as defined by AS 4970-2025 Appendix C shall be affixed to the external side of the fencing at a spacing of not less than 1 sign per 50 lineal metres of fence, with at least one sign per designated area.

If fence locations conflict with the proposed works, contact the Project Consulting Arborist and Contract Manager for resolution. No new services (unless under-bored) shall be located within or through the Tree Protection Area.

4. Trunk and Lower Branch Protection

A trunk barrier is to be erected around the circumference of the tree trunk and root buttress where shown. This barrier will consist of two to three 'rings' of 50mm diameter socked ag-line wrapped around tree trunk or branch and the ends cable tied to secure in place. A layer of battens is to be placed over and tight to the ag-lines. The battens are to have a maximum spacing of 50mm. The height of the battens is to be 2 metres or to the height of the first branches. Lower large branches may require the same protection if likely to be damaged by passing vehicles or equipment. Secure battens in place with galvanised steel bracing straps. Do not nail into or otherwise injure the trunk or bark. Battens may be made from any suitable waste timber of similar sizes and depths. All sharp or protruding edges are to be properly covered with tape or similar padding.

5. Works within the TPZ's

All work within the root zone of existing trees shall be undertaken with the utmost care. If by necessity a tree requires removal of branches for building or access, pruning shall be done in strict accordance with accepted arboriculture techniques and AS 4373-2007. No rubbish, spoil or new materials shall be placed on the root zone of any existing tree or against their trunks.

6. Ground Protection

If it is proposed to create any access route, or similar, within the TPZ of a retained tree, the Contractor shall install rumble boards over the TPA ground surface. No excavation shall be allowed. Contractor shall first place a suitable permeable geotextile to the extent required and then a 100mm thick layer of wood chip mulch or coarse no-fines gravel over the extent to be covered. Then place hardwood boards (minimum 3600 x 200 x 75mm) on their flat edge, side by side, with a 30 - 50mm gap to form a rumble strip. These boards are to be held together with three galvanised metal bracing straps nailed to each board. The two outer straps are to be approximately 200mm in from the ends of the boards. The third strap is to be along the centre line of the boards. Suitably robust and proprietary ground protection matts or boards manufactured for ground protection and heavy vehicle access may also be used.

7. Provision of Temporary Irrigation

No temporary irrigation requirement is anticipated for this project. However if accidental damage or other weather extremes dictate and the Project Consulting Arborist considers one is necessary it shall be installed as per the following. A temporary and automated (battery powered timer is sufficient) watering system to be placed within the specified TPZs of the trees nominated to maintain adequate water to the retained trees and help maintain their healthy condition. This shall be a surface mounted 'residential-style' soaker hose and/or similar surface sprinkler systems. It is to be surface visible and spray delivered so that is operation can be easily visible and verified. It should be on a designated supply line, separate from other construction related water supplies to minimise its likelihood of being disconnected.

Typically, during spring and summer months it should be set to run for a minimum of 30 minutes every day, in the early morning. During, autumn and winter months it should be set to run for 1 hour once every week. The operation can be suspended temporarily in periods of extensive and prolonged rain. The system is to remain in place for the duration of construction, or until the Project Consulting Arborist approves it's removal. It may be removed to allow final landscape treatments to proceed. If accidentally disturbed or damaged by construction activities, it is to be reinstated as soon as practicable.

8. Structural Demolition Within TPZ's

Project Consulting Arborist shall be on site during all demolition work within the TPZ's to monitor and advise on tree protection. Secateurs and a handsaw shall be available to deal with and cleanly cut any exposed roots that have to be cut. Machines with a long reach may be used if they can work from outside TPZ's or from protected areas within TPz's. They shall not encroach onto unprotected soil in TPZ's.

Debris to be removed from TPz's must be moved across existing hard surfacing or temporary ground protection in a way that prevents compaction and disturbance of soil. Alternatively, it can be lifted out by machines provided this does not disturb TPZ's or damage the canopy. If appropriate, leave below ground structures such as footings and disused pipes in place if their removal will cause excessive root disturbance.

When pulling up existing paving the Contractor shall work backwards, lifting demolished paving back onto the existing paving. Roots may be found growing under the pavement and should not be trafficked. Roots growing into existing sub-base should be left and new surface finishes placed over the top without disturbance.

9. Excavations or Trenching within TPZ's

Excavation within TPA's shall not be allowed using mechanical equipment such as excavators or backhoes. Excavation within TPZ's shall only be carried out carefully by hand taking care not to damage the bark and wood of any roots. Specialist tools for removing soil around roots using compressed air (air spade), or water vacuum extraction shall be an appropriate alternative to hand digging and is the preferred method.

Exposed roots to be removed shall be cut cleanly with a sharp saw or secateurs at the face of the excavation. Roots temporarily exposed must be protected by appropriate covering with damp hessian or sand. Roots greater than 50mm in diameter are to be retained and shall only be cut in exceptional circumstances and only after consultation with the Project Consulting Arborist. Roots greater than 100mm in diameter shall typically not be allowed to be cut and must be worked around.

10. Soft Landscaping Installation

Final trimming and planting shall be judiciously undertaken around trees. All soft landscaping within the tree protection zones will be installed with care to avoid root disturbance from irrigation trenching, lighting installation and the planting of larger plants. Permanent irrigation (if used) shall be installed as spray heads located outside of TPZ's and spraying inwards. All other services such as small-scale electrical services shall also be designed and installed to avoid any excavation or trenching around the trees.

No significant excavation or cultivation, especially by rotary hoes or excavators, shall occur within TPZ's. Where new designs require the levels to be increased, good quality and permeable top soil shall be used. It should be firmed into place but not over compacted. All areas close to tree trunks shall be kept at the original ground level. Where turf is to be installed tree trunks shall have mulched rings applied rather than grass laid up to the trunk.

The size of the installed plants shall typically be less than 5L pots so that the maximum depth of the new root balls is less than 200mm. Any planting proposed that is larger than this shall be only installed outside of the SRZ and with care to not injure roots while digging planting holes.

11. Canopy Pruning

The Contractor shall prune branches of protected trees only as directed by the Project Consulting Arborist. Pruning is only to be undertaken by a qualified arborist (under the supervision of a person with AQF Level 4 or above). The Project Consulting Arborist is to be present at all times during the pruning work. Work is to be in strict accordance with AS4373 Pruning of Amenity Trees. Do not treat wounds.

12. Root Pruning

Pruning of roots of protected trees shall only be as directed the Project Consulting Arborist. The Tree Contractor shall use only a qualified arborist (AQF Level 4 or above). The Project Consulting Arborist is to be present at all times during the root pruning.

Roots are not to be cut using normal excavation machinery of any sort. This usually results in splitting and massive disturbance well past the intended line of cut. When required to cut roots, use hand methods and sharp hand tools (e.g. secateurs, hand saw) such that the remaining root systems are preserved intact and undamaged. Roots are to be cut back by hand square to the direction of the root travel (or edge of the excavation). Do not cut any tree roots exceeding 40mm diameter unless permitted. Excavations within root zones should be kept open for as short a period as possible. Any excavated face containing roots is to be temporarily supported, where necessary, to prevent soil loss from around the other retained roots.

13. Accidental Tree Damage

Should a tree be accidentally damaged, the Contractor shall immediately notify the Project Consulting Arborist. Timing can be of the essence, particularly with bark injuries, trunk damage or chemical contaminations.

If a branch has been broken, it shall be removed and the damaged end pruned to a suitable branch collar. If the branch has been torn out of the trunk, assessment shall be made and the damage cleaned up by as much as possible without further damage to the tree.

If roots are accidentally disturbed or excavated, any broken, crushed and torn sections shall be exposed and pruned leaving clean cuts to minimise risk of infection by fungal pathogens and promote good conditions for new root growth.

Example image of acceptable tree protection fencing measures to be applied. (1.8m high chainlink fencing with posts driven into ground)

Example image of acceptable tree protection fencing measures to be applied. (1.8m high rigid metal fencing with appropriate lateral bracing)

Example image of acceptable trunk protection battens

Example image of acceptable ground protection rumble boards

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NOTE
Refer to the accompanying Arboricultural Impact Assessment Report for full description of trees, measurements and methods used to assess the trees, and proposed tree protection measures.

REVISION	DESCRIPTION	CHKD	DATE
A	For SSDA Application	RWS	2/9/25

PROJECT & CLIENT
211A-215 Harbour Drive Coffs Harbour
Homes NSW

Project No : 24.20
Designed : RWS
Drawn : RWS
Scale : N/A
North

DRAWING TITLE
Tree Protection Specifications

DRAWING NUMBER
T-04

REVISION
A

Plotted at : 7:27 am 2/9/2025

4.2 Tree Impact Assessment Schedule

Homes NSW - HAFF2, Coffs Harbour - Tree Assessment Schedule

Tree ID	Trees in Group	Tree Species	Common Name	Height (m)	Spread Average (m)	Trunk Diameter Standard Height (dsh) (m)	Trunk Diameter at base (dgl) (m)	Notional Root Zone radius (m) 12xdbh (AS 4970)	Nominal SRZ radius (m) (AS 4970)	Age Class	Current Vigour	Current Form	Tree Origin	Noted Defects	SULE Rating	Retention Value	General Comments and Notes	Incursion and Impact	Recommendation
1	1	*Flindersia australis*	**Crows Ash**	9.0	5.0	0.27	0.34	3.24	2.10	Mature	Good	Excellent	Endemic		Long (>40 years)	**High**	Public street tree. Part of a consistent avenue row planting along street. Early mature specimen, good condition and should be retained.	No impacts expected	Retain
2	3	*Archontophoenix cunninghamiana*	**Bangalow Palm**	5.5	5.0	0.19	0.22	3.50	1.11	Mature	Good	Average	Endemic		Long (>40 years)	**Moderate**	Neighbouring property tree, very close to fenceline. Cluster of 3. Typical average dimension given.	Minor surface impacts to be managed. Minimal impact expected.	Retain
3	1	*Diospyros nigra*	**Chocolate Pudding Fruit Tree**	7.0	4.0	0.26	0.31	3.12	2.02	Mature	Good	Average	Exotic		Medium (15-40 years)	**Moderate**	Neighbouring property fruit tree, very close to fenceline, overhanging boundary.	Minor surface impacts to be managed. Minimal impact expected.	Retain
4	1	*Plumeria rubra*	**Frangipani**	4.0	4.0	0.17	0.19	2.04	1.65	Mature	Fair	Poor	Exotic	Lean-Major	Replaceable (Small/Young)	**Low**	Major lower trunk lean, then corrected in upper canopy. Small tree, replaceable.	Within construction and disturbance footprint.	Remove
5	3	*Xanthostemon chrysanthus*	**Golden Penda**	6.0	3.0	0.08	0.09	2.00	1.20	Semi-mature	Good	Average	Native		Long (>40 years)	**Moderate**	Row planting of neighbouring property tree, very close to fenceline.	No impacts expected	Retain
6	1	*Michelia figo*	**Port-Wine Magnolia**	9.0	6.0	0.20	0.20	2.40	1.68	Over-mature	Poor	Average	Exotic	Tip Dieback, Co-dominant Stems	Short (5-15 years)	**Low**	Neighbouring property tree, very close to fenceline. Overmature, generally poor condition. Multi-stemmed from base. Large shrub.	No impacts expected	Retain
7	2	*Plumeria rubra*	**Frangipani**	4.0	3.0	0.16	0.22	2.00	1.75	Mature	Fair	Average	Exotic		Replaceable (Small/Young)	**Low**	Neighbouring property tree, very close to fenceline.	No impacts expected	Retain
8	1	*Grevillea 'Sandra Gordon'*	**Grevillea Cultivar**	5.0	3.0	0.09	0.11	2.00	1.31	Mature	Good	Average	Native		Medium (15-40 years)	**Low**	Neighbouring property tree, very close to fenceline.	No impacts expected	Retain
9	1	*Syzygium luehmannii*	**Small Leaf Lilly Pilly**	4.0	4.0	0.26	0.31	3.12	2.02	Mature	Good	Poor	Endemic	Epicormic Growth	Medium (15-40 years)	**Moderate**	Neighbouring property tree, very close to fenceline. Previously heavily pruned.	No impacts expected	Retain
10	2	*Mangifera indica*	**Mango**	5.0	6.0	0.38	0.47	4.56	2.41	Mature	Good	Poor	Exotic	Epicormic Growth, Very Asymmetric Form	Medium (15-40 years)	**Moderate**	Neighbouring property trees, two specimens very closely spaced, very close to fenceline. Previously heavily pruned.	No impacts expected	Retain
11	1	*Corymbia citriodora*	**Lemon Scented Gum**	16.0	12.0	0.44	0.64	5.28	2.74	Mature	Fair	Average	Native	Deadwood-Minor	Long (>40 years)	**Moderate**		Minor incursion (<8%) to west side of tree for building basement. Minimal impact expected and considered acceptable. Moderate canopy pruning but considered acceptable and preferable to removing tree.	Retain
12	1	*Corymbia citriodora*	**Lemon Scented Gum**	17.0	14.0	0.49	0.67	5.88	2.80	Mature	Fair	Average	Native	Deadwood-Minor	Long (>40 years)	**Moderate**		Minor incursion (<9%) to east side of tree for ground floor building construction. Minimal impact expected and considered acceptable. Moderate canopy pruning but consdiered acceptable and preferable to removing tree.	Retain
13	1	*Corymbia citriodora*	**Lemon Scented Gum**	18.0	12.0	0.72	0.99	8.64	3.30	Mature	Poor	Average	Native	Buldges, Deadwood-Minor	Medium (15-40 years)	**Low**	Slightly asymmetric canopy form to south. Lower trunk buldges with numerous locations of sap exudate around lower trunk. Generally quite sparse canopy.	Within construction and disturbance footprint.	Remove
14	1	*Corymbia citriodora*	**Lemon Scented Gum**	8.5	2.5	0.14	0.17	2.00	1.57	Semi-mature	Fair	Poor	Native	Poor Taper	Replaceable (Small/Young)	**Low**	Self sown sapling growing in unmaintained area. Small and replaceable.	Within construction and disturbance footprint.	Remove
15	1	*Glochidion ferdinandi*	**Cheese Tree**	8.0	9.0	0.59	0.83	7.08	3.06	Mature	Poor	Poor	Endemic	Co-dominant Stems, Tip Dieback, Decay-Minor, Deadwood-Major, Branch Tearouts, Epicormic Growth	Remove (<5 years)	**Nil / Remove**	Very multi-trunked tree with extensive dieback, deadwood and branch failures.	Within construction and disturbance footprint.	Remove
16	2	*Cinnamomum camphora*	**Camphor Laurel**	9.0	4.0	0.08	0.10	2.00	1.26	Semi-mature	Fair	Poor	Invasive		Remove (<5 years)	**Nil / Remove**	Self sown saplings. Invasive and undesirable species, should be removed.	Within construction and disturbance footprint.	Remove
17	2	*Glochidion ferdinandi*	**Cheese Tree**	9.5	5.0	0.18	0.24	2.16	1.82	Mature	Fair	Average	Endemic		Replaceable (Small/Young)	**Low**	Group of two specimens, one larger specimen and one smaller sapling to the north. Only fair condition. Considered small and replaceable. Large specimens dimensions given. Smaller tree DBH 0.08m, DGL 0.09m	Within construction and disturbance footprint.	Remove
18	1	*Pittosporum undulatum*	**Sweet Pittosporum**	6.0	4.0	0.15	0.24	2.00	1.82	Mature	Poor	Poor	Endemic	Co-dominant Stems	Remove (<5 years)	**Nil / Remove**	Multi-trunked with major butt sweep at base and asymmertic form to north.	Within construction and disturbance footprint.	Remove
19	1	*Tibouchina lepidota*	**Lasiandra**	6.0	5.0	0.20	0.31	2.40	2.02	Over-mature	Fair	Poor	Exotic	Co-dominant Stems, Tip Dieback, Deadwood-Major	Short (5-15 years)	**Low**	Over-mature, multi-trunked specimen.	Within construction and disturbance footprint.	Remove
20	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	8.5	4.0	0.23	0.26	3.00	1.13	Mature	Good	Average	Endemic		Long (>40 years)	**Moderate**		Within construction and disturbance footprint.	Remove
21	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	7.0	4.0	0.21	0.24	3.00	1.12	Mature	Good	Average	Endemic		Long (>40 years)	**Moderate**		Within construction and disturbance footprint.	Remove
22	1	*Glochidion ferdinandi*	**Cheese Tree**	9.0	10.0	0.65	0.67	7.80	2.80	Mature	Fair	Average	Endemic		Long (>40 years)	**Moderate**	Prominent native tree on Harbour Drive street frontage. Some minor tip dieback but otherwise in good condition. Small Cupaniopsis sampling growing next to trunk and through canopy. Extensive exposed surface roots emanating around tree. Single street lighting power line passing through canopy.	Major incursion (>40%) to north side of tree for building, driveway and grade changes and within SRZ. Impact considered unacceptable.	Remove
23	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	9.0	4.0	0.29	0.39	3.48	2.23	Over-mature	Poor	Average	Native	Tip Dieback, Epicormic Growth	Short (5-15 years)	**Low**	Overmature specimen with extensive dieback. Tall Celtis sinensis sapling also growing under and along side tree.	Within construction and disturbance footprint.	Remove
24	1	*Mangifera indica*	**Mango**	9.0	10.0	0.62	0.65	7.44	2.76	Mature	Excellent	Excellent	Exotic	Co-dominant Stems	Long (>40 years)	**Moderate**	DBH taken at 0.6m due to branching habit. Good specimen with no observable defects. Exotic species but good tree worthy of retention.	Within construction and disturbance footprint.	Remove
25	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	8.5	4.0	0.21	0.26	3.00	1.13	Mature	Good	Average	Endemic		Long (>40 years)	**Moderate**		Within construction and disturbance footprint.	Remove
26	4	*Cinnamomum camphora*	**Camphor Laurel**	9.0	6.0	0.10	0.25	2.00	1.85	Semi-mature	Fair	Average	Invasive		Remove (<5 years)	**Nil / Remove**	Group of four self sown, saplings. Invasive and undesirable species, should be removed.	Within construction and disturbance footprint.	Remove

Tree ID	Trees in Group	Tree Species	Common Name	Height (m)	Spread Average (m)	Trunk Diameter Standard Height (dsh) (m)	Trunk Diameter at base (dgl) (m)	Notional Root Zone radius (m) 12xdbh (AS 4970)	Nominal SRZ radius (m) (AS 4970)	Age Class	Current Vigour	Current Form	Tree Origin	Noted Defects	SULE Rating	Retention Value	General Comments and Notes	Incursion and Impact	Recommendation
27	3	*Schefflera actinophylla*	**Umbrella Tree**	8.0	3.0	0.30	0.63	3.60	2.73	Mature	Fair	Average	Invasive	Co-dominant Stems	Remove (<5 years)	**Nil / Remove**	Also includes smaller self sown sapling coming through nearby Mango. Generally invasive and undesirable exotic species. Larger specimens dimensions given.	Within construction and disturbance footprint.	Remove
28	1	*Albizia julibrissin*	**Persian Silk Tree**	7.0	6.0	0.17	0.24	2.04	1.82	Semi-mature	Fair	Poor	Exotic	Very Asymmetric Form, Lean-Major	Remove (<5 years)	**Nil / Remove**	Somewhat invasive species. Liklely self sown. Very poor form.	Within construction and disturbance footprint.	Remove
29	1	*Thuja orientalis cv.*	**Chinese Arborvitae**	5.0	3.0	0.20	0.32	2.40	2.05	Mature	Good	Average	Exotic	Co-dominant Stems	Replaceable (Small/Young)	**Low**	Multi-trunked from base.	Within construction and disturbance footprint.	Remove
30	2	*Archontophoenix cunninghamiana*	**Bangalow Palm**	7.0	4.0	0.22	0.25	3.00	1.13	Mature	Good	Average	Endemic	Lean-Minor	Long (>40 years)	**Low**		Within construction and disturbance footprint.	Remove
31	1	*Thuja orientalis cv.*	**Chinese Arborvitae**	5.0	4.0	0.20	0.40	2.40	2.25	Mature	Good	Average	Exotic		Replaceable (Small/Young)	**Low**	Multi-trunked from base.	Within construction and disturbance footprint.	Remove
32	3	*Celtis sinensis*	**Chinese Hackberry**	9.0	6.0	0.13	0.23	2.00	1.79	Mature	Fair	Average	Invasive	Tip Dieback	Remove (<5 years)	**Nil / Remove**	Multiple saplings and stems. Invasive exotic species, should be removed.	Within construction and disturbance footprint.	Remove
33	2	*Cinnamomum camphora*	**Camphor Laurel**	8.0	3.0	0.23	0.25	2.76	1.85	Semi-mature	Fair	Average	Invasive	Co-dominant Stems, Inclusions, Tip Dieback	Remove (<5 years)	**Nil / Remove**	Multiple saplings and stems. Invasive exotic species, should be removed.	Within construction and disturbance footprint.	Remove
34	1	*Archontophoenix cunninghamiana*	**Bangalow Palm**	9.0	4.0	0.21	0.30	3.00	1.15	Mature	Good	Average	Endemic		Long (>40 years)	**Moderate**		Within construction and disturbance footprint.	Remove
35	1	*Schefflera actinophylla*	**Umbrella Tree**	7.5	5.0	0.29	0.50	3.48	2.47	Mature	Fair	Average	Invasive	Co-dominant Stems	Remove (<5 years)	**Nil / Remove**	Generally invasive and undesirable exotic species.	Within construction and disturbance footprint.	Remove
36	1	*Glochidion ferdinandi*	**Cheese Tree**	8.0	10.0	0.38	0.48	4.56	2.43	Mature	Fair	Average	Endemic	Co-dominant Stems	Medium (15-40 years)	**Moderate**	Large neighbouring property tree. Southern side of tree appears in better condition to northern side. Overhanging boundary fence.	Only just into a moderate incursion (<11%) to west side of tree for building. Minimal impact expected and other contiguous areas protected and considered acceptable.	Retain
37	1	*Mangifera indica*	**Mango**	7.5	10.0	0.48	0.52	5.76	2.51	Mature	Excellent	Average	Exotic		Long (>40 years)	**Moderate**	Large neighbouring property tree. DBH taken at 0.6m due to branching habit.	Minor incursion (<3%) to west side of tree for building. Minimal impact expected and other contiguous areas protected and considered acceptable.	Retain
38	1	*Citrus x latifolia*	**Persian (Common) Lime**	4.0	4.0	0.07	0.10	2.00	1.26	Mature	Good	Average	Exotic		Medium (15-40 years)	**Moderate**	Neighbouring property fruit tree. Overhanging fence.	No impacts expected	Retain
39	1	*Litchi chinensis*	**Lychee**	4.0	5.0	0.18	0.22	2.16	1.75	Mature	Good	Average	Exotic		Medium (15-40 years)	**Moderate**	Neighbouring property fruit tree. Overhanging fence.	No impacts expected	Retain
40	1	*Citrus x latifolia*	**Persian (Common) Lime**	4.0	4.0	0.12	0.15	2.00	1.49	Mature	Good	Average	Exotic		Medium (15-40 years)	**Moderate**	Neighbouring property fruit tree. Overhanging fence.	No impacts expected	Retain
41	1	*Spathodea campanulata*	**African Tulip Tree**	9.0	6.0	0.24	0.37	2.88	2.18	Mature	Fair	Average	Invasive	Branch Tearouts, Co-dominant Stems	Remove (<5 years)	**Low**	Undesirable invasive species.	Within construction and disturbance footprint.	Remove
42	1	*Syzygium luehmannii*	**Small Leaf Lilly Pilly**	5.0	3.0	0.31	0.38	3.72	2.20	Mature	Good	Poor	Endemic	Epicormic Growth, Co-dominant Stems	Medium (15-40 years)	**Moderate**	Neighbouring property tree, very close to fenceline.	Moderate incursion (<14%) to south-west side of tree for grading and services. Minimal impact expected and other contiguous areas protected and considered acceptable.	Retain
43	1	*Callistemon viminalis cv.*	**Weeping Bottlebrush**	4.0	2.0	0.12	0.16	2.00	1.53	Mature	Fair	Poor	Native	Epicormic Growth, Co-dominant Stems	Medium (15-40 years)	**Moderate**	Neighbouring property tree, very close to fenceline.	No impacts expected	Retain
44	1	*Ceratopetalum gummiferum*	**New South Wales Christmas Bush**	10.0	4.0	0.17	0.19	2.04	1.65	Mature	Fair	Poor	Native	Very Asymmetric Form, Poor Taper	Medium (15-40 years)	**Low**		Within construction and disturbance footprint.	Remove

4.3 Tree Data Summary Sheets

ID # 001
Species: Flindersia australis
Common: Crows Ash
Height: 9.0
No. in grp 1
DBH: 0.27 DGL: 0.34
TPZ: 3.24 SRZ: 2.1
Current Form: Excellent
Current Vigour: Good
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **High**

Comments

Public street tree. Part of a consistent avenue row planting along street. Early mature specimen, good condition and should be retained.

ID # 002
Species: Archontophoenix cunninghamiana
Common: Bangalow Palm
Height: 5.50
No. in grp 3
DBH: 0.19 DGL: 0.22
TPZ: 2.28 SRZ: 1.75
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

Neighbouring property tree, very close to fenceline. Cluster of 3. Typical average dimension given.

ID # 003
Species: Diospyros nigra
Common: Chocolate Pudding Fruit Tree
Height: 7.0
No. in grp 1
DBH: 0.26 DGL: 0.31
TPZ: 3.12 SRZ: 2.02
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments

Neighbouring property fruit tree, very close to fenceline, overhanging boundary.

ID # 004
Species: Plumeria rubra
Common: Frangipani
Height: 4.0
No. in grp 1
DBH: 0.17 DGL: 0.19
TPZ: 2.04 SRZ: 1.65
Current Form: Poor
Current Vigour: Fair
Age Class: Mature
SULE: Replaceable
Retention Value: **Low**

Comments

Major lower trunk lean, then corrected in upper canopy. Small tree, replaceable.

ID # 005
Species: Xanthostemon chrysanthus
Common: Golden Penda
Height: 6.0
No. in grp 3
DBH: 0.08 DGL: 0.09
TPZ: 2 SRZ: 1.5
Current Form: Average
Current Vigour: Good
Age Class: Semi-mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

Row planting of neighbouring property tree, very close to fenceline.

ID # 006
Species: Michelia figo
Common: Port-Wine Magnolia
Height: 9.0
No. in grp 1
DBH: 0.20 DGL: 0.20
TPZ: 2.4 SRZ: 1.68
Current Form: Average
Current Vigour: Poor
Age Class: Over-mature
SULE: Short (5-15 years)
Retention Value: **Low**

Comments

Neighbouring property tree, very close to fenceline. Overmature, generally poor condition. Multi-stemmed from base. Large shrub.

ID # **007**

Species: Plumeria rubra

Common: Frangipani

Height: 4.0
No. in grp 2
DBH: 0.16 DGL: 0.22
TPZ: 2 SRZ: 1.75
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Replaceable
Retention Value: **Low**

Comments

Neighbouring property tree, very close to fenceline.

ID # **008**

Species: Grevillea 'Sandra Gordon'

Common: Grevillea Cultivar

Height: 5.0
No. in grp 1
DBH: 0.09 DGL: 0.11
TPZ: 2 SRZ: 1.5
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Low**

Comments

Neighbouring property tree, very close to fenceline.

ID # **009**

Species: Syzygium luehmannii

Common: Small Leaf Lilly Pilly

Height: 4.0
No. in grp 1
DBH: 0.26 DGL: 0.31
TPZ: 3.12 SRZ: 2.02
Current Form: Poor
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments

Neighbouring property tree, very close to fenceline. Previously heavily pruned.

ID # **010**

Species: Mangifera indica

Common: Mango

Height: 5.0
No. in grp 2
DBH: 0.38 DGL: 0.47
TPZ: 4.56 SRZ: 2.41
Current Form: Poor
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments

Neighbouring property trees, two specimens very closely spaced, very close to fenceline. Previously heavily pruned.

ID # **011**

Species: Corymbia citriodora

Common: Lemon Scented Gum

Height: 16.0
No. in grp 1
DBH: 0.44 DGL: 0.64
TPZ: 5.28 SRZ: 2.74
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

ID # **012**

Species: Corymbia citriodora

Common: Lemon Scented Gum

Height: 17.0
No. in grp 1
DBH: 0.49 DGL: 0.67
TPZ: 5.88 SRZ: 2.8
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

ID # 013
Species: Corymbia citriodora
Common: Lemon Scented Gum
Height: 18.0
No. in grp 1
DBH: 0.72 DGL: 0.99
TPZ: 8.64 SRZ: 3.3
Current Form: Average
Current Vigour: Poor
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Low**

Comments

Slightly asymmetric canopy form to south. Lower trunk buldges with numerous locations of sap exudate around lower trunk. Generally quite sparse canopy.

ID # 014
Species: Corymbia citriodora
Common: Lemon Scented Gum
Height: 8.50
No. in grp 1
DBH: 0.14 DGL: 0.17
TPZ: 2 SRZ: 1.57
Current Form: Poor
Current Vigour: Fair
Age Class: Semi-mature
SULE: Replaceable
Retention Value: **Low**

Comments

Self sown sapling growing in unmaintained area. Small and replaceable.

ID # 015
Species: Glochidion ferdinandi
Common: Cheese Tree
Height: 8.0
No. in grp 1
DBH: 0.59 DGL: 0.83
TPZ: 7.08 SRZ: 3.06
Current Form: Poor
Current Vigour: Poor
Age Class: Mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**

Comments

Very multi-trunked tree with extensive dieback, deadwood and branch failures.

ID # 016
Species: Cinnamomum camphora
Common: Camphor Laurel
Height: 9.0
No. in grp 2
DBH: 0.08 DGL: 0.10
TPZ: 2 SRZ: 1.5
Current Form: Poor
Current Vigour: Fair
Age Class: Semi-mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**

Comments

Self sown saplings. Invasive and undesirable species, should be removed.

ID # 017
Species: Glochidion ferdinandi
Common: Cheese Tree
Height: 9.50
No. in grp 2
DBH: 0.18 DGL: 0.24
TPZ: 2.16 SRZ: 1.82
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Replaceable
Retention Value: **Low**

Comments

Group of two specimens, one larger specimen and one smaller sapling to the north. Only fair condition. Considered small and replaceable. Large specimens dimensions given. Smaller tree DBH 0.08m, DGL 0.09m

ID # 018
Species: Pittosporum undulatum
Common: Sweet Pittosporum
Height: 6.0
No. in grp 1
DBH: 0.15 DGL: 0.24
TPZ: 2 SRZ: 1.82
Current Form: Poor
Current Vigour: Poor
Age Class: Mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**

Comments

Multi-trunked with major butt sweep at base and asymmertic form to north.

ID # **019**
Species: Tibouchina lepidota
Common: Lasiandra
Height: 6.0
No. in grp 1
DBH: 0.20 DGL: 0.31
TPZ: 2.4 SRZ: 2.02
Current Form: Poor
Current Vigour: Fair
Age Class: Over-mature
SULE: Short (5-15 years)
Retention Value: **Low**

Comments

Over-mature, multi-trunked specimen.

ID # **020**
Species: Archontophoenix cunninghamiana
Common: Bangalow Palm
Height: 8.50
No. in grp 1
DBH: 0.23 DGL: 0.26
TPZ: 2.76 SRZ: 1.88
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

ID # **021**
Species: Archontophoenix cunninghamiana
Common: Bangalow Palm
Height: 7.0
No. in grp 1
DBH: 0.21 DGL: 0.24
TPZ: 2.52 SRZ: 1.82
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

ID # **022**
Species: Glochidion ferdinandi
Common: Cheese Tree
Height: 9.0
No. in grp 1
DBH: 0.65 DGL: 0.67
TPZ: 7.8 SRZ: 2.8
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

Prominent native tree on Harbour Drive street frontage. Some minor tip dieback but otherwise in good condition. Small Cupaniopsis sampling growing next to trunk and through canopy. Extensive exposed surface roots emanating around tree. Single street lighting power line passing through canopy.

ID # **023**
Species: Ceratopetalum gummiferum
Common: New South Wales Christmas Bush
Height: 9.0
No. in grp 1
DBH: 0.29 DGL: 0.39
TPZ: 3.48 SRZ: 2.23
Current Form: Average
Current Vigour: Poor
Age Class: Over-mature
SULE: Short (5-15 years)
Retention Value: **Low**

Comments

Overmature specimen with extensive dieback. Tall Celtis sinensis sapling also growing under and along side tree.

ID # **024**
Species: Mangifera indica
Common: Mango
Height: 9.0
No. in grp 1
DBH: 0.62 DGL: 0.65
TPZ: 7.44 SRZ: 2.76
Current Form: Excellent
Current Vigour: Excellent
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

DBH taken at 0.6m due to branching habit. Good specimen with no observable defects. Exotic species but good tree worthy of retention.

ID # 025
Species: Archontophoenix cunninghamiana
Common: Bangalow Palm
Height: 8.5
No. in grp 1
DBH: 0.21 DGL: 0.26
TPZ: 2.52 SRZ: 1.88
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**
Comments

ID # 026
Species: Cinnamomum camphora
Common: Camphor Laurel
Height: 9.0
No. in grp 4
DBH: 0.10 DGL: 0.25
TPZ: 2 SRZ: 1.85
Current Form: Average
Current Vigour: Fair
Age Class: Semi-mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**
Comments

Group of four self sown, saplings. Invasive and undesirable species, should be removed.

ID # 027
Species: Schefflera actinophylla
Common: Umbrella Tree
Height: 8.0
No. in grp 3
DBH: 0.30 DGL: 0.63
TPZ: 3.6 SRZ: 2.73
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**
Comments

Also includes smaller self sown sapling coming through nearby Mango. Generally invasive and undesirable exotic species. Larger specimens dimensions given.

ID # 028
Species: Albizia julibrissin
Common: Persian Silk Tree
Height: 7.0
No. in grp 1
DBH: 0.17 DGL: 0.24
TPZ: 2.04 SRZ: 1.82
Current Form: Poor
Current Vigour: Fair
Age Class: Semi-mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**
Comments

Somewhat invasive species. Liklely self sown. Very poor form.

ID # 029
Species: Thuja orientalis cv.
Common: Chinese Arborvitae
Height: 5.0
No. in grp 1
DBH: 0.20 DGL: 0.32
TPZ: 2.4 SRZ: 2.05
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Replaceable
Retention Value: **Low**
Comments

Multi-trunked from base.

ID # 030
Species: Archontophoenix cunninghamiana
Common: Bangalow Palm
Height: 7.0
No. in grp 2
DBH: 0.22 DGL: 0.25
TPZ: 2.64 SRZ: 1.85
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Low**
Comments

ID # 031
Species: Thuja orientalis cv.
Common: Chinese Arborvitae
Height: 5.0
No. in grp 1
DBH: 0.20 DGL: 0.40
TPZ: 2.4 SRZ: 2.25
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Replaceable
Retention Value: **Low**

Comments
Multi-trunked from base.

ID # 032
Species: Celtis sinensis
Common: Chinese Hackberry
Height: 9.0
No. in grp 3
DBH: 0.13 DGL: 0.23
TPZ: 2 SRZ: 1.79
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**

Comments
Multiple saplings and stems. Invasive exotic species, should be removed.

ID # 033
Species: Cinnamomum camphora
Common: Camphor Laurel
Height: 8.0
No. in grp 2
DBH: 0.23 DGL: 0.25
TPZ: 2.76 SRZ: 1.85
Current Form: Average
Current Vigour: Fair
Age Class: Semi-mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**

Comments
Multiple saplings and stems. Invasive exotic species, should be removed.

ID # 034
Species: Archontophoenix cunninghamiana
Common: Bangalow Palm
Height: 9.0
No. in grp 1
DBH: 0.21 DGL: 0.30
TPZ: 2.52 SRZ: 2
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

ID # 035
Species: Schefflera actinophylla
Common: Umbrella Tree
Height: 7.50
No. in grp 1
DBH: 0.29 DGL: 0.50
TPZ: 3.48 SRZ: 2.47
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Remove (<5 years)
Retention Value: **Nil / Remove**

Comments
Generally invasive and undesirable exotic species.

ID # 036
Species: Glochidion ferdinandi
Common: Cheese Tree
Height: 8.0
No. in grp 1
DBH: 0.38 DGL: 0.48
TPZ: 4.56 SRZ: 2.43
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments
Large neighbouring property tree. Southern side of tree appears in better condition to northern side. Overhanging boundary fence.

ID # 037
Species: Mangifera indica
Common: Mango
Height: 7.50
No. in grp 1
DBH: 0.48 DGL: 0.52
TPZ: 5.76 SRZ: 2.51
Current Form: Average
Current Vigour: Excellent
Age Class: Mature
SULE: Long (>40 years)
Retention Value: **Moderate**

Comments

Large neighbouring property tree. DBH taken at 0.6m due to branching habit.

ID # 038
Species: Citrus x latifolia
Common: Persian (Common) Lime
Height: 4.0
No. in grp 1
DBH: 0.07 DGL: 0.10
TPZ: 2 SRZ: 1.5
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments

Neighbouring property fruit tree. Overhanging fence.

ID # 039
Species: Litchi chinensis
Common: Lychee
Height: 4.0
No. in grp 1
DBH: 0.18 DGL: 0.22
TPZ: 2.16 SRZ: 1.75
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments

Neighbouring property fruit tree. Overhanging fence.

ID # 040
Species: Citrus x latifolia
Common: Persian (Common) Lime
Height: 4.0
No. in grp 1
DBH: 0.12 DGL: 0.15
TPZ: 2 SRZ: 1.5
Current Form: Average
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments

Neighbouring property fruit tree. Overhanging fence.

ID # 041
Species: Spathodea campanulata
Common: African Tulip Tree
Height: 9.0
No. in grp 1
DBH: 0.24 DGL: 0.37
TPZ: 2.88 SRZ: 2.18
Current Form: Average
Current Vigour: Fair
Age Class: Mature
SULE: Remove (<5 years)
Retention Value: **Low**

Comments

Undesirable invasive species.

ID # 042
Species: ***Syzygium luehmannii***
Common: Small Leaf Lilly Pilly
Height: 5.0
No. in grp 1
DBH: 0.31 DGL: 0.38
TPZ: 3.72 SRZ: 2.2
Current Form: Poor
Current Vigour: Good
Age Class: Mature
SULE: Medium (15-40 years)
Retention Value: **Moderate**

Comments

Neighbouring property tree, very close to fenceline.

ID #	**043**
Species:	***Callistemon viminalis cv.***
Common:	Weeping Bottlebrush
Height:	4.0
No. in grp	1
DBH: 0.12	DGL: 0.16
TPZ: 2	SRZ: 1.53
Current Form:	Poor
Current Vigour:	Fair
Age Class:	Mature
SULE:	Medium (15-40 years)
Retention Value:	**Moderate**

Comments

Neighbouring property tree, very close to fenceline.

ID #	**044**
Species:	***Ceratopetalum gummiferum***
Common:	New South Wales Christmas Bush
Height:	10.0
No. in grp	1
DBH: 0.17	DGL: 0.19
TPZ: 2.04	SRZ: 1.65
Current Form:	Poor
Current Vigour:	Fair
Age Class:	Mature
SULE:	Medium (15-40 years)
Retention Value:	**Low**

Comments