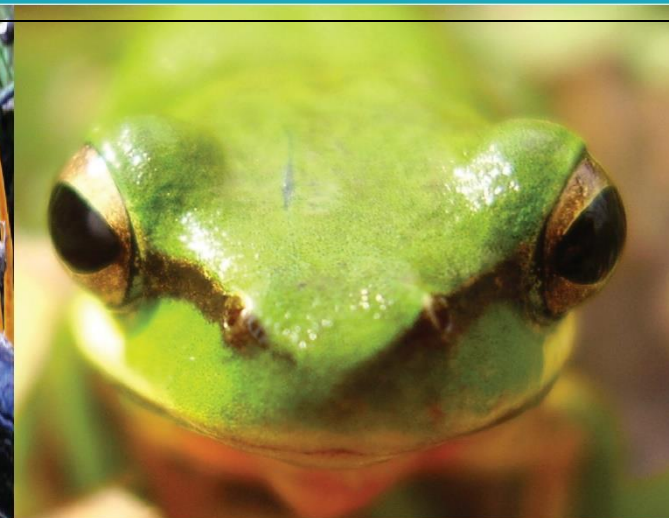




**TRAVERS
BUSHFIRE
& ECOLOGY**

A TBE ENVIRONMENTAL COMPANY



ARBORICULTURE IMPACT ASSESSMENT REPORT

Proposed Development
10-12 Boondah Road, Warriewood

Prepared for: Henroth Investments Pty Ltd

21 May 2024
(REF: HEN09AIA)

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Prepared for: Henroth Investments Pty Ltd
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Date: 21 May 2024

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Figure 1 – Surveyed area

PROPOSED WORKS

Travers bushfire & ecology (TBE) were engaged by, Henroth Investments Pty Ltd to conduct an Arboriculture Impact Assessment Report (AIA) for the properties located at 10-12 Boondah Road, Warriewood This assessment was conducted in support of a proposed subdivision and Development Application for the establishment of a Nursery. The primary objective of this assessment was to evaluate the potential impacts that the proposed development activities will have on the significant trees present within the site.

In total,99 trees were evaluated as part of this assessment, with a primary emphasis on the comprehensive identification and evaluation of all significant trees within the site.

SITE DESCRIPTION

The lands subject to assessment are located on 10 and 12 Boondah Road, Warriewood. The study area is situated within the Northern Beaches Council (LGA). The site is a rundown storage overgrown area on number 12 with number 10 having 2 rundown residential lots with collection of general scrap on the site. The southern most boundary of the site is known as Warriewood wetlands.



Figure 2-12 Boondah Road, Warriewood from middle of property.



Figure 3- 10 Boondah Road, Warriewood southeast of property.



Figure 4-10 Boondah Road, Warriewood looking toward EEC.



METHODOLOGY

The assessments conducted in this report adhere to the guidelines outlined in the Australian Standard AS4970-2009 – Protection of Trees on Development Sites, and the terminology used is consistent with the AS 4970-2009.

The survey and assessments were conducted on Monday 26 February. The assessment process considered the following aspects for each of 99 trees:

- Comprehensive site assessment
- Identification of all assessed trees on the property, including their species, size, overall condition, and location.

Structural integrity evaluation

- Careful examination of each tree from the ground to assess its structural integrity.
- Evaluation of the trunk, branches, and identification of any signs of decay or damage.
- Assessment of the tree's stability, considering factors that may affect its health and condition.

Measurement

Basel and diameter at breast height (DBH) using a DBH measuring tape. An assessment was undertaken to assess the determination of canopy spread, height and vigour.

Health and useful life expectancy assessment

An assessment was undertaken to evaluate each tree's health and a determination of its Useful Life Expectancy (ULE rating) was made.

Significance assessment

The Significance assessment was undertaken using the STARS methodology.

Tree retention and removal plans

Each tree was assessed to identify:

- Impact on the trees by the proposed development works.
- Development of plans for tree retention and removal.

Tree tagging and location plotting.

The method for tagging trees involves:

- Attachment of a metal tag embossed with a unique tree number (e.g., T001, T002, etc.) to each tree.
- Use of a handheld Trimble GPS unit to plot the location of each tree, considering GPS accuracy at the time of survey.

By following this methodology, a comprehensive Arboriculture Impact Assessment was conducted, providing detailed information about the trees on the property and their potential interactions with the proposed development.

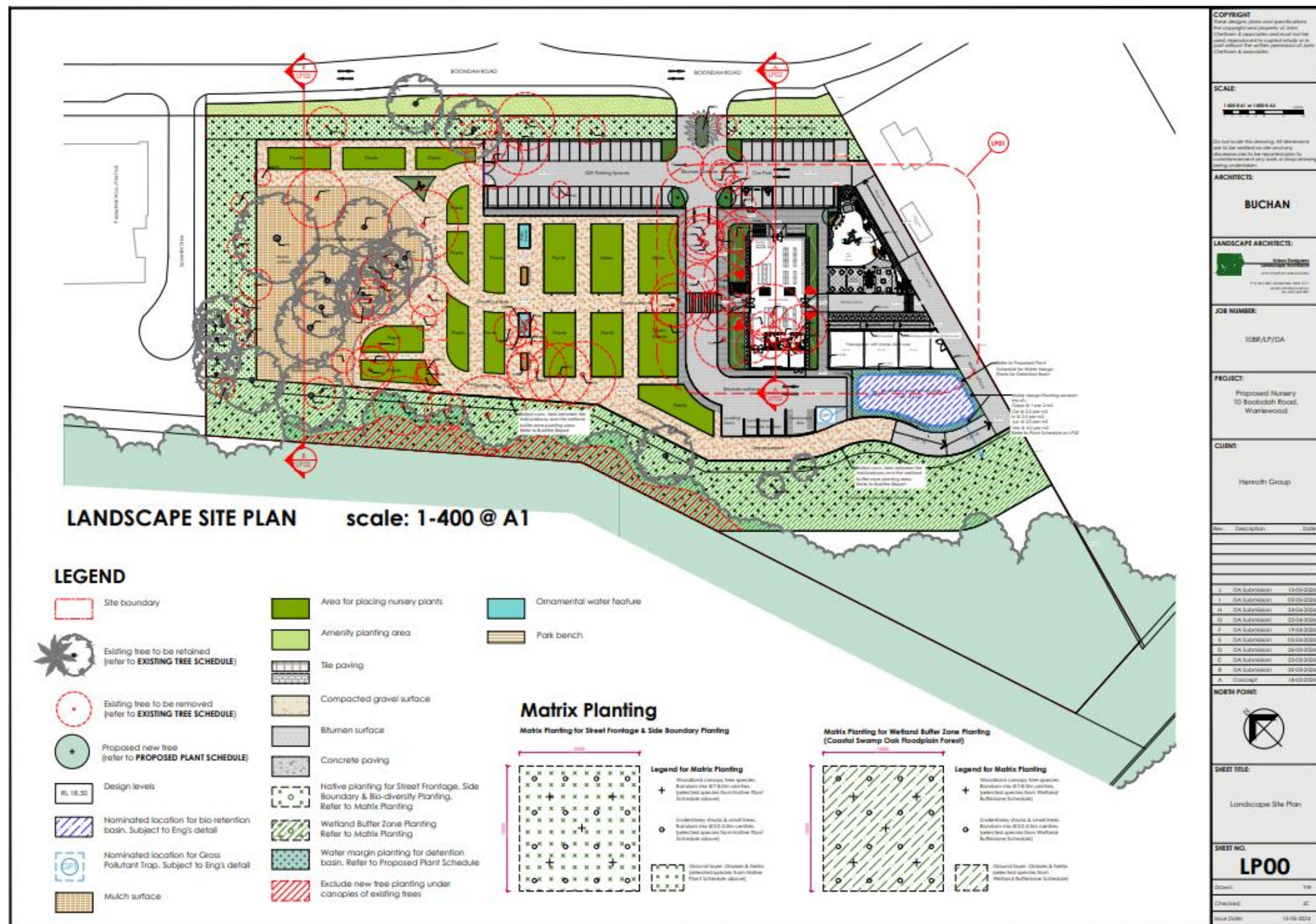


Figure 5 – Site landscape plan.

TREE CONDITION AND LIFE EXPECTENCY

Condition

Tree condition assessment entails a thorough visual examination of critical elements. This evaluation takes into account the well-being of the roots, trunk, branches, foliage, historical pruning practices, presence of pests and diseases, availability of nesting hollows, indications of fauna activity like scratching, past damage, and the influence of the surrounding environment on the tree's overall health. Each tree receives a vigour rating, ranging from 1 (indicating poor health) to 100 (representing a state of perfect condition), as documented in Attachment 2 - Tree Assessment Data Table.

Useful Life Expectancy (ULE)

The condition information is used to determine the Useful Life Expectancy (ULE) of each tree and considers the age of the tree, the life span of the species, local environmental conditions, recent climactic conditions, estimated life expectancy, the location of the tree and safety of persons and property.

The ULE methodology takes into account whether a tree can be retained with an acceptable level of risk based on the information available at the time of inspection. A ULE assessment is not static as it relates to the tree's health and the surrounding conditions. Whilst it is recognised that changes to the tree's condition will affect the assessment, changes to the surrounding environment may result in changes to the ULE assessment. Each trees ULE rating can be found in Table 1.

Table 1 – Useful Life Expectancy (ULE) (Barrell, 2009)

Category	Description
1	Long: Life span greater than 40 years
2	Medium: Life span from 15 to 40 years
3	Short: Life span from 5 to 15 years
4	Remove: Should be removed within 5 years

ENVIRONMENTAL SIGNIFICANCE

Trees need to be considered about the overall environment and are subject to specific legislation such as:

- Biodiversity Conservation Act (NSW) 2016,
- Environmental Protection and Biodiversity Conservation Act (Commonwealth) 1999,
- Biosecurity Act (NSW) 2015, and
- Environmental Pest Species.

Biodiversity Conservation Act (NSW) 2016

The Schedules of the BC Act list several species, populations and ecological communities that are classified as critically endangered, endangered, or vulnerable. Where a site is not Biodiversity Certified, the proposal typically needs to be assessed by a biodiversity development assessment report (BDAR) to accompany a development proposal. The proposal may require offsetting through the Biodiversity Offset Scheme if a) the proposal impacts biodiversity lands mapped by DPE, b) the proposal impacts above nominated threshold areas, or c) a test of significance identifies a significant impact. If parts of the subject site are not Biodiversity Certified and there are parts of the property that are, Biodiversity Certified meaning that those parts have been recognised for their efforts to conserve and protect the local biodiversity. Biodiversity certification is a process that evaluates a property's management practices and overall impact on the environment, and awards certification to those that meet specific criteria and standards. The Southern boundary of the site is Non Certerfied.



Figure 6 – Biodiversity map showing noncertified area in purple

Endangered Ecological Community

An ecological community is a naturally occurring group of native plants, animals and other organisms living in a unique location.

An ecological community may be listed as critically endangered if the TSSC determines it is facing an extremely high risk of extinction in Australia in the immediate future.

There are 2 endangered ecological community recognised on or around the site.

1.Swamp Oak Floodplain Forest

Coastal Swamp Oak Forests, also known as Swamp Oak Floodplain Forests and Estuarine swamp oak forests, are scattered riparian forests found in southeastern Queensland to southeastern New South Wales, Australia that would predominantly feature Casuarina glauca (swamp oaks). They occur within the Southeastern Queensland, NSW North Coast, Sydney Basin, or Southeast Corner bioregions.

2.Bangalay Sand Forest

Bangalay Sand Forest of the Sydney Basin and Southeast Corner bioregions is the name given to the ecological community associated with coastal sand plains of marine or aeolian origin.

This threatened community comprises Bangalay and smooth-barked apple (Eucalyptus botryoides) both found on the site Swamp mahogany (Eucalyptus robusta). The shrub layer comprises Banksia trees (Banksia serrata and Banksia integrifolia), sweet pittosporum (Pittosporum undulatum), Coast Teatree (Leptospermum laevigatum) and coffee bush (Breynia oblongifolia). Bracken fern (Pteridium esculentum) and spiny-headed matrush (Lomandra longifolia), Pratia purpurascens and Viola hederacea dominate the ground layer with grasses and sedges.

Environmental Protection and Biodiversity Conservation Act (Commonwealth) 1999

The Schedules of the EPBC Act list several species and ecological communities that are classified as critically endangered, endangered, or vulnerable. The EPBC Act requires the preparation of an impact assessment if an activity or development is likely to influence species or ecological communities listed in the schedules of the EPBC Act.

Biosecurity Act (NSW) 2015

There are several pest or exotic species that are listed within specific regions within the NSW Biosecurity Act. These listings contain detailed descriptions of each listed species, their habitat

and reproductive attributes and the recommended control or eradication methods as well as actions required regarding reporting, transport, or sale of each species.

Environmental Pest Species

There are several environmental pest species that are not listed in the BC Act (2016), the EPBC Act (1999), or the Biosecurity Act (2015). These species commonly cause problems within or adjacent to developed or urban areas. These species can have aggressive, fast growing, or fast reproduction attributes which replaces other species. They can have destructive root systems which cause damage to pipes, structures, foundations, and services. Some environmental pest species can be undesirable within natural bushland areas by degrading and / or dominating habitats and reducing natural biodiversity. Environmental pest species are not classified as noxious but are recognised by Councils and other authorities as pest species and in many cases are exempt from protection under Council's Tree Preservation Orders.

There are several pest or exotic species that are listed within specific regions within the NSW Biosecurity Act. These listings contain detailed descriptions of each listed species, their habitat and reproductive attributes and the recommended control or eradication methods as well as actions required about reporting, transport, or sale of each species.

17 of the trees assessed are classified as a weed species Camphora officinarum, Ligustrum lucidum, Erythrina spp and Syagrus romanzoffiana.

SIGNIFICANCE TREE ASSESSMENT RATING SYSTEM (STARS)

The Institute of Australian Consulting Arboriculturists (IACA) has introduced the Significance of a Tree Assessment Rating System (STARS) to evaluate the landscape significance of trees. This rating system employs structured qualitative criteria to aid in determining the retention value of a tree. The STARS Assessment consists of two phases. The initial phase involves assessing tree attributes categorized as High, Medium, or Low. Following this, Attachment 4 – Tree Retention Value – Priority Matrix is utilised to establish priorities for removal and retention.

For a comprehensive understanding of STARS, refer to Attachment 3 – Tree Assessment Rating System (STARS), which provides a detailed overview of the methodology. The integration of this system into the tree report underscores our commitment to a thorough and standardised assessment, ensuring that tree significance is comprehensively recognised and integrated into broader environmental and community considerations.

Landscape Significance

The significance of a tree regarding the landscape is generally assessed as one of the following:

- Significant – Prominent from a broad landscape perspective.
- High – Prominent from a neighbourhood perspective
- Medium – prominent from adjacent areas surrounding the site, and
- Low – prominent from a site perspective only.

Once the landscape significance of an individual tree has been assessed, its retention value can be determined. The landscape rating for each tree can be located in Attachment 2 – Tree Assessment Data Table.

Visual significance

Visual significance is evaluated by comparing specific tree attributes to the average values of other trees within the broader vicinity. A tree that surpasses the average measurements for attributes such as height, girth, or canopy spread



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is classified as 'of Visual Significance.' Additionally, the assessment of a particular tree's visual significance may consider other parameters, including girth, canopy spread, overall health, aesthetic appearance, or its location (e.g., atop a hill or serving as the centrepiece of a formal garden). These parameters can also be considered in combination, such as a tree exhibiting exceptional height, broad spread, and excellent form in a prominent location. However, in this assessment a

The criteria for categorising trees based on their visual significance are typically as follows:

- **Rating 3: High Significance Rating:** Typically native, however not limited to, trees with a height exceeding 20 meters, a canopy spread greater than 15 meters, and a diameter at breast height (DBH) exceeding 60 cm. These are often large, emergent trees that prominently stand out.
- **Rating 2: Moderate Significance:** Typically, but not limited to, trees with heights ranging from 10 to 20 meters, canopy spreads between 5 to 15 meters, and a DBH in the range of 20 to 50 cm. These trees are typically prominent, characterised by a substantial canopy spread.
- **Rating 1: Low Significance:** Typically, but not limited to, trees with heights up to 10 meters, canopy spreads exceeding 5 meters, and a DBH greater than 20 cm, but not meeting the criteria for high or moderate significance. This also may include all exotic species and or weed species.

This classification system helps in recognising and preserving trees that hold visual importance within their surroundings, contributing to the overall aesthetics and environmental quality of the area. Full detailed view is found in. Attachment 2 – Tree Assessment Data Table.

Habitat trees

A habitat tree assessment was not undertaken, however in general, if any hollows are observed in specific trees during the AIA, generally they are noted in the tree data table. In the AIA site assessment, no habitat trees could be identified.

Habitat trees play a vital role in fostering biodiversity and maintaining ecological balance within ecosystems. These trees, often characterised by the presence of cavities or hollows, provide essential shelter and nesting sites for a wide range of wildlife species. These hollows serve as a safe haven for birds, mammals, insects, and even reptiles, offering protection from predators and harsh environmental conditions. Old and mature trees are more likely to develop these hollows, making them invaluable reservoirs of life in various landscapes.

The importance of habitat trees extends beyond individual species, influencing entire ecosystems. The hollows within these trees create microhabitats that can support entire communities of organisms. Birds like owls, parrots, and kookaburras, along with possums, bats, and various insects, all rely on these hollows for nesting, roosting, and breeding. By providing these sanctuaries, habitat trees contribute to population stability and genetic diversity, which are critical factors in ensuring long-term species survival.

No Habitat observed whilst on site.

DEVELOPMENT PLANNING AND TREE PROTECTION ZONES

Retention and removal of trees

Preserving existing trees on a site is a complex undertaking that requires consideration of various factors, including the location and condition of the trees, as well as the potential impact of construction activities on the trees' root systems and canopies. Retaining existing trees can promote a more sustainable and environmentally friendly design that benefits both the local ecosystem and the community. However, in some cases, tree removal may be necessary. For example, trees that are diseased, damaged, or pose a safety or environmental risk to the community may need to be removed.

In addition, weed species can compete with trees for resources and may require removal to ensure the health and longevity of the endemic and habitat trees. In

cases where Structural Root Zone encroachment occurs, tree removal may also be necessary to comply with legal and regulatory requirements.

It is important to work with a certified arborist and other qualified professionals to assess the situation and determine the best course of action. The impact of tree removal on the surrounding environment and community should also be considered, such as the loss of shade, cooling benefits, and wildlife habitat.

Of the 99 trees assessed there are 73 that are recommended to be to be remove due to being weed species, health, or structure issues and or inside the envelope of building structures for excavated areas. There are 26 trees to be retained.

Tree protection setback

Development footprints which impact on more than 10% of a Tree Protection Zone (TPZ) will usually require the removal of that tree. Development footprints shall be located away from retained trees such that adequate clearances are provided for the Tree Protection Zone (TPZ) and there is nil encroachment upon the Structural Root Zone (SRZ).

Disturbance within the TPZ can be detrimental to the tree's root system and in turn affect the stability, health, and condition of the tree.

Major encroachments into tree protection zones

Where the proposed development activity is greater than the 10% loss of TPZ area (m2), the activity is a major encroachment into the TPZ.

Where major encroachments are to occur within the TPZ of trees intended to be retained, it must be demonstrated that the works or activities will not have any significant impact upon the health and condition of the tree. To demonstrate this, detailed root mapping investigation by non-invasive methods may be necessary. Other factors such as age class, health, vigour, trunk lean, disturbance tolerance of the species, and building design may need to be considered in the arboriculture assessment.

Where major encroachments are proposed to occur into the TPZ then the Structural Root Zone (SRZ) of the tree will also be considered and avoided if possible.

Where trees have multiple trunks, an assessment needs to consider the number and diameter of each trunk. Based upon the *Australian Standard for Protection of Trees on Development Sites, AS 4970-2009*, the Diameter at Breast Height (DBH) of multi-trunk trees is calculated by:

DBH = √(DBH₁)²+(DBH₂)²+(DBH₃)²

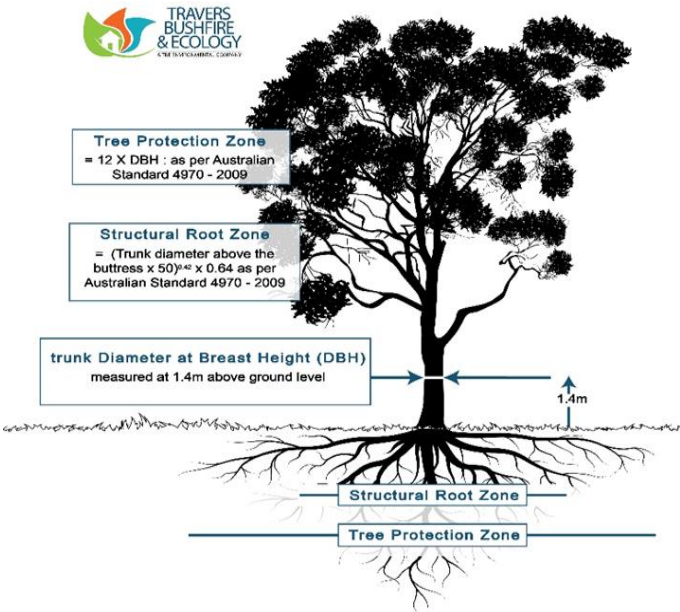


Figure 7 – Typical diagram of a tree protection zone and structural root zone of a tree

(Source: AS 4970-2009)



Development design and tree protection zones

Where trees are proposed for retention, the development footprint must avoid the TPZ around trees. This TPZ is set aside for the protection of the tree (or group of trees) as it is essential for the stability and longevity of the tree/s. Existing soil levels should be retained within the TPZ. The TPZ is often delineated by a temporary fence during the construction phase of the project.

Based upon the *Australian Standard for Protection of Trees on Development Sites (AS 4970-2009)*, the radius of the TPZ for a single tree is calculated as: TPZ = 12 x DBH.

DEVELOPMENTS WITHIN THE TREE PROTECTION ZONE

Based upon AS4970-2009 some minor development encroachments can occur within the calculated TPZ provided that:

- No more than 10% of the area (m²) of the TPZ is removed.
- The area to be removed is outside the SRZ.
The area (m²) to be removed or disturbed is compensated by increasing the TPZ radius in other directions so that there is no net loss in area (m²) of the original calculated Tree Protection Zone (TPZ).

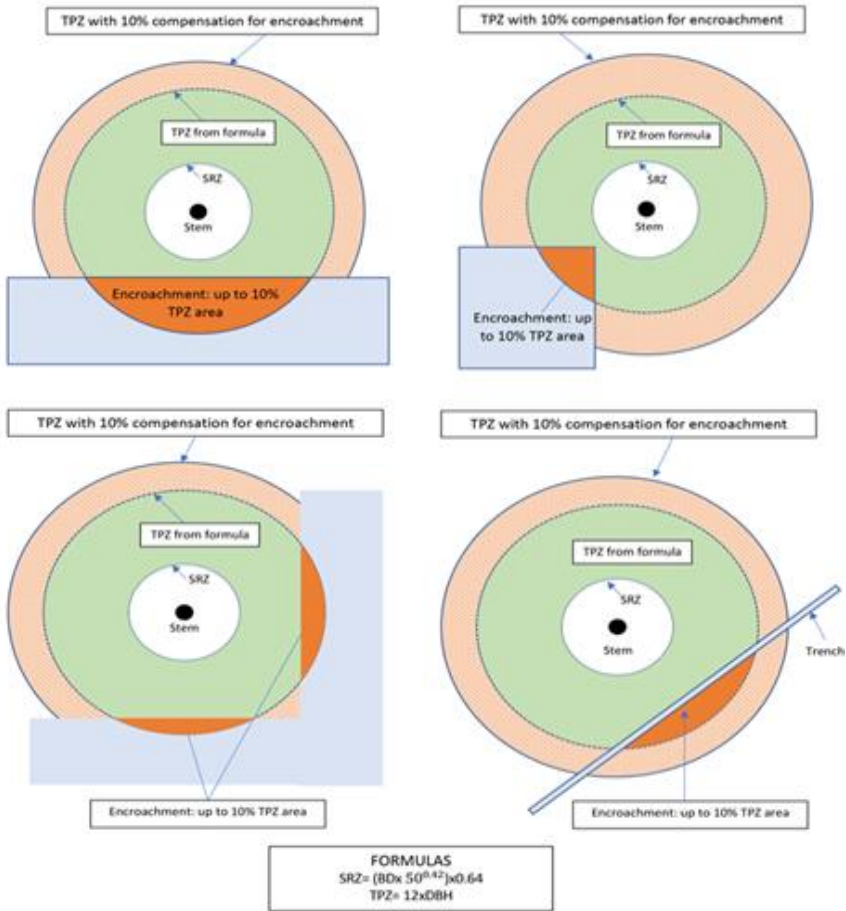


Figure 8 – Minor encroachment on TPZ and 10% compensation for encroachment

(Source AS 4970-2009)

TREE PROTECTION MEASURES

When working in proximity of any tree to be retained or the nominated TPZ located within or adjacent to potential development areas, the following general management principles should be adopted:

- earthworks around subject trees are to be undertaken in the presence of an AQ5-certified arborist who may provide additional on-site advice.
- machine digging within the root mass of the subject tree (or trees) is to be minimised and, where possible, replaced by hand digging.
- any exposed roots of the subject tree should be wrapped and protected during exposure and be replaced in a similar position prior to disturbance.
- inspection of retained trees by an AQ5-certified arborist should be conducted annually to 3 years after development completion.

Any retained tree on site will require protection both during and after development construction, applying the following.

Tree protection guidelines

The following guidelines are proposed in relation to any trees that may be retained within or adjacent to the proposed works area:

- i. Installation of a TPZ will be required surrounding any retained tree or group of trees. This TPZ can generally be provided by preserving an area equivalent to that shown in Attachment 1. A SRZ will apply to all retained trees near work areas. No more than 10% of the TPZ should be impacted by earthworks with no infiltration into the SRZ. The TPZ is to be compensated elsewhere on the impacted tree to compensate for the loss of small areas of the TPZ. This is achieved by increasing the TPZ to an equivalent area to the area of impacted TPZ (Figure 5).
- ii. Trees to be retained, and in close proximity to any works, are to be protected by temporary fencing. Such temporary fencing can be constructed from plastic mesh, post and wire or temporary chain link fence panels. All fence posts and supports are to be located clear of the roots and have sufficient strength to support the fence without bending or collapsing. TPZs in close proximity to proposed works are to be marked and sign posted. The protection fencing is not to be removed or altered without the approval an appointed arborist. TPZ fencing is to be inspected on a regular basis and maintained in good condition.
- iii. All trees nominated for removal are to be removed only after the temporary fencing of the trees to be retained has been completed and prior to any construction activity or bulk earthworks. Approved tree removal operations in the vicinity of retained trees are to be undertaken in a manner that avoids canopy or root damage and / or soil compaction to any TPZ associated with any retained tree. Such works should be supervised by a qualified arborist.
- iv. Stumps are to be ground not dozed or dug out unless they impact on the installation of services, roads or building works.
- v. All excavation including but not limited to trenches, footings and major earth movement are to be avoided within TPZs.
- vi. Stockpiling materials and soils within TPZs are to be avoided.
- vii. All machinery and vehicles are to be excluded from TPZs during all operations.
- viii. Where the proposed works are likely to cause excessive dust generation, the tree is to be protected with shade cloth on the tree protection fence to minimise dust collection on the leaves.
- ix. The following activities prohibited within TPZs includes but is not limited to:
 - machine excavation (including trenching)
 - excavation for silt fencing
 - cultivation
 - storage
 - preparation of chemicals, including cement products
 - parking of vehicles or plant
 - refuelling
 - dumping of waste
 - refuelling
 - wash down or cleaning of equipment
 - placement of fill
 - lighting of fires

- soil level changes
- temporary or permanent installation of signs
- Physical damage to trees.
- x. Any works undertaken within TPZs are to be supervised and certified (photographed and documented) by a qualified AQF5 arborist.
- xi. Where advised by the arborist, trunk, and branch protection (Figure 6) is to be installed to a minimum height of 2m using materials and positioning as advised by an appointed arborist.
- xii. Where advised by the arborist, other temporary root protection measures such as thick mulch (50-100mm deep) or crushed rock below rumble boards, are to be installed to prevent root damage and soil compaction within the TPZ.
- xiii. Scaffolding is to be erected outside of the TPZ, where unavoidable, protection measures are to be specified by the appointed arborist.
- xiv. All services are to be routed outside of the TPZ. Where not possible the arborist will specify directional drilling (at least 600mm deep) or manual excavation to avoid impacted on the in-situ roots subject to the works and potential root damage.
- xv. If pruning is required it is to be undertaken or supervised by a Qualified AQF3 arborist in accordance with Australian Standards AS4373-2007 Pruning of amenity trees, to help prevent structural damage, disease, and poor form.

General tree protection measures during construction

Before commencing earthworks or construction, the removal of identified trees should be carried out with meticulous attention to prevent any damage to the retained trees within and around the site. This includes safeguarding all aspects of retained trees, such as canopy foliage, branches, trunk, and the Tree Protection Zone (TPZ).

Prior to demolition or earthworks, secure protective fencing is to be erected around individual trees or groups of trees that have been identified as being retained. This fencing shall be located no closer than the extent of the TPZ of each retained tree (refer to the Tree Retention and Removal Plan). Where the structure to be demolished is within the TPZ the protective fencing shall be aligned to be a maximum of 0.5m away from the structure to be demolished.

Where the approved construction footprints encroach into the TPZ, protective fencing must be aligned no further than 0.5 metre away from the proposed structure or footprint.

The purpose of the fencing is to protect the tree roots, trunk, and branches, and to minimise detrimental impacts on the trees during demolition and construction.

The site supervisor shall always ensure that during site works that no activities, stockpiles, storage, disposal of materials, vehicle access or vehicle and machinery parking shall take place within the areas encompassed by the tree protection fencing. The site supervisor shall also ensure that the protective fences remain secure throughout the development work period.

Construction scaffolding can be erected within the tree protection fencing if each of the weight distribution points are spread over a minimum of 2m² and these points are over existing soil levels to avoid soil compaction.

Trees shall be inspected at regular intervals by the project arborist or at critical stages during the demolition and construction stages to identify signs of stress and recommend remedial action such as mulching and irrigation.

Specific excavation for services that require critical fall (e.g., sewer, stormwater) may be undertaken within the tree protection fencing if trenching is dug using hand tools, thrust or directional boring or vacuum excavation, and tree roots are not severed unless they spatially conflict with the installed pipes. This work within the tree protection fencing must be carried out under the instructions from an experienced and suitably qualified AQF5 project arborist.

All access within the tree protection fencing for temporary and permanent works must be carried out under the instruction of an experienced and suitably qualified AQF5 project arborist.



Tree protection fencing must remain in a functional condition throughout the demolition and construction works and can only be removed to allow for works identified in the landscape plan.

Landscape works in the vicinity of retained trees must be sympathetic to tree retention and existing ground levels within the TPZ. The natural ground contours and depth within TPZs located outside of the construction or earthworks footprint must remain unchanged.

Any tree damage that occurs to trees or tree roots during site works is to be treated by an experienced and suitably qualified arborist. Where branch pruning works are required, all pruning works including the removal of deadwood are to be undertaken in accordance with Australian Standard AS 4373-1996 – Pruning of Amenity Trees and the work is to be undertaken or supervised by an experienced and suitably AQF3 qualified arborist.

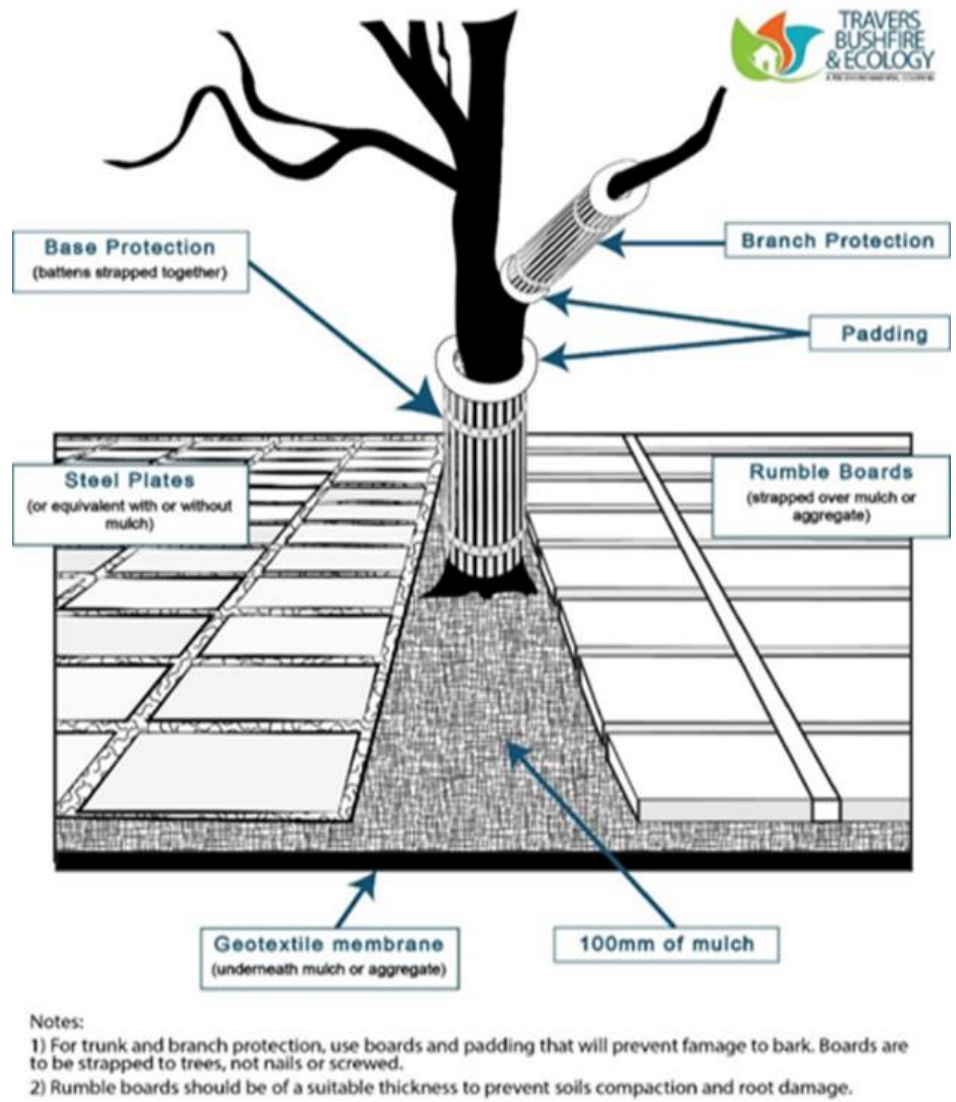


Figure 9 – Examples of trunk, branch, and ground protection as per AS 4970-2009

Tree protection fencing

Temporary tree protection fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works (including demolition and bulk earthworks). Once erected, protective fencing must not be removed or altered without approval by the project arborist. The fencing is to be fully secured to restrict access onto the protected root zone.

AS 4687 Temporary fencing and hoardings, specifies applicable fencing requirements. Installed construction fencing on the recommended alignment of the TPZ fencing can be installed as part of the protective fencing.

For construction crews, signage identifying the TPZ shall be placed at 10m intervals along the TPZ barrier fencing. These signs will face towards the development site and shall have lettering that complies with AS 1319 Safety signs for the occupational environment. These signs will also specify the severe penalties for harming the TPZ in any way.

TPZ barrier fencing is to be inspected on a regular basis and maintained in good condition. Any works within the mapped TPZs is to be supervised or under the direction of an AQ5 qualified arborist to limit damage to root zones and to install additional root, trunk, and branch protection measures if required.



Figure 11 – Tree protection fencing



Figure 10 – Example signage for tree protection



Figure 12 – Examples of tree protection fencing

CONCLUSIONS

The comprehensive evaluation of the 99 trees at the property known as 10-12 Boondah Road, Warriewood, conducted in line with Australian Standard AS 4970-2009, provides valuable insights into the ecological landscape. Efforts are actively underway to preserve high-significance trees, with close collaboration with landscape architects to ensure alignment with sustainable practices.

The site is predominantly characterised by poor-quality vegetation, with the majority consisting of low-quality or weed species trees scheduled for removal. Detailed charts elucidate the significance value of the trees on-site, while Chart 3 provides insight into the tree retention value.

Among the findings, it has been determined that 73 of the 99 trees will require removal. It is strongly emphasized that all retained trees deemed viable for the long term will require protection during construction. This underscores a steadfast commitment to safeguarding their health and longevity, thereby ensuring their viability for the future.

Particular emphasis has been placed on retaining trees that are part of two Ecological Endangered Communities (EECs) on the site: the Swamp Oak Floodplain Forest and the Bangalay Sand Forest. These communities play a crucial role in the local ecosystem and their preservation is paramount.

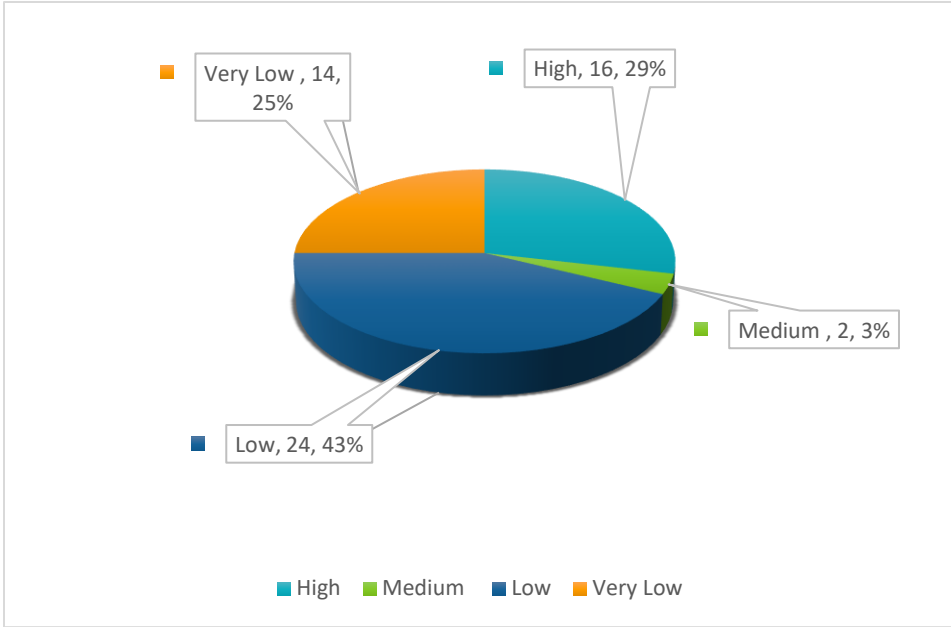
The assessment rigorously adheres to AS 4970-2009 standards, demonstrating a meticulous approach toward tree preservation. The focus remains on retaining council-managed trees and minimising the impact on significant species within the proposed development site.

In conclusion, the assessment underscores the commitment to preserving trees within the development zone, thereby minimising environmental impact, and promoting the long-term health of retained trees. This commitment is realised through strict adherence to standards and the implementation of sustainable practices, ensuring the protection of valuable ecological communities like the Swamp Oak Floodplain Forest and the Bangalay Sand Forest.

Table 2 – Tree significance chart, 99 trees

Condition	SULE Rating	Low Landscape Significance.	Medium Landscape Significance	High Landscape Significance
	SULE 1	2	28	18
	SULE 2	18	9	0
	SULE 3	2	0	0
	SULE 4	16	6	0

Table 3 – Tree retention chart 99 trees



RECOMMENDATIONS

In light of the comprehensive evaluation conducted for the property at 10-12 Boondah Road, Warriewood, and considering the commitment to preserving trees and ecological communities, the following recommendations are proposed:

Introduce Indigenous Species: Aim to replace at least 60% of the trees scheduled for removal with indigenous species native to the Warriewood region. This initiative will not only enhance biodiversity but also contribute to the resilience and sustainability of the local ecosystem.

Species Selection: Prioritise the selection of indigenous tree species that are well-suited to the local climate, soil conditions, and ecological requirements. Consult with local experts or indigenous plant nurseries to ensure the suitability and appropriateness of chosen species.

Ecological Restoration: Consider incorporating ecological restoration practices into the tree replacement process. This may involve planting species that support native wildlife, such as birds and pollinators, or restoring habitat connectivity for fauna within the area.

Long-Term Management: Implement a long-term management plan for the newly planted indigenous trees, including regular monitoring, maintenance, and adaptive management practices. This will ensure the establishment and success of the indigenous species over time.

Adherence to Guidelines: Ensure that the replacement of trees with indigenous species aligns with relevant guidelines, regulations, and best practices for tree planting and ecological restoration. Adhere to Australian standards and guidelines for biodiversity conservation and habitat restoration.

By implementing these recommendations, we can enhance the ecological value of the site, promote biodiversity, and contribute to the conservation of indigenous flora and fauna in the Warriewood area.

In addition to the recommendations outlined above, it is crucial to address the protection of retained trees during the construction phase. To ensure the long-term viability of these trees, a comprehensive protection plan must be developed and implemented.

Firstly, it is essential to establish designated Tree Protection Zones (TPZ) around retained trees. These zones should be clearly marked and fenced off to prevent access by machinery and personnel. By restricting construction activities within these zones, damage to the root systems and branches of retained trees can be minimised.

Qualified arborists should be employed to oversee the implementation of the protection plan. Arborists can assess the health of retained trees, identify potential risks, and recommend measures to mitigate impacts. Their expertise will be invaluable in ensuring the proper care and preservation of trees during construction.

A construction protocol should be developed to outline specific measures for minimising disturbance to retained trees. This may include limiting excavation within the root zone, avoiding compaction of soil around tree roots, and using alternative construction methods where feasible. By adhering to this protocol, the risk of damage to retained trees can be significantly reduced.

Regular monitoring of retained trees throughout the construction process is essential. This will involve assessing the condition of trees for signs of stress, damage, or disease. Any issues that arise should be addressed promptly to prevent further damage and ensure the continued health of the trees.

Routine tree maintenance activities, such as pruning and watering, should be implemented to support the health and vitality of retained trees during construction. Consideration should be given to the specific needs of each tree species, and maintenance practices should be adjusted accordingly.

An emergency response plan should be developed to address unforeseen events that may impact retained trees. This plan should outline procedures for immediate response, tree preservation, and restoration efforts in the event of severe weather or accidental damage.

Open communication with stakeholders, including project developers, contractors, local authorities, and community members, is essential throughout the construction process. Regular updates on progress, challenges, and mitigation measures should be provided to ensure transparency and collaboration in protecting retained trees.



ATTACHMENT 1 – TREE DATA TABLE

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T1	Canary Island date palm	Phoenix canariensis	70	8	5	20	4a	Z4	1	5-15yrs	L	L	7.8	2.8	Remove	Development	In decline
T2	Canary Island date palm	Phoenix canariensis	92	10	8	50	1b	A2	2	>40yrs	M	M	9.8	3.2	Retain		Covered in vine tree may have significance due to age
T3	Canary Island date palm	Phoenix canariensis	65	6	9	50	1b	Z8	1	>40yrs	L	L	2.0	2.8	Remove	Development	Not tagged couldn't get to it full of spikes covered in vine
T4	Poplar	Populus spp	45	17	12	55	1b	Z3	1	>40yrs	L	L	2.0	2.4	Remove	Development	Exotic species
T5	Poplar	Populus spp	32	18	6	40	3b	Z3	1	15-40yrs	L	L	3.4	2.1	Remove	Development	Exotic not a good specimen
T6	Cocos palm	Syagrus romanzoffiana	36	14	6	60	2c	Z3	1	>40yrs	L	L	3.8	2.2	Remove	Development	Exotic
T7	Cocos palm	Syagrus romanzoffiana	35	9	4	50	2c	Z3	1	>40yrs	L	L	2.6	2.1	Remove	Development	Exotic
T8	Cocos palm	Syagrus romanzoffiana	35	18	6	55	2c	Z3	1	>40yrs	L	L	3.0	2.1	Remove	Development	Exotic
T9	Poplar	Populus spp	63	21	15	50	2c	A2	2	15-40yrs	M	L	7.4	2.7	Remove	Development	Exotic
T10	Cocos palm	Syagrus romanzoffiana	45	15	8	50	2c	Z3	1	>40yrs	L	L	4.3	2.4	Remove	Development	Exotic

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T11	Umbrella tree	Schefflera actinophylla	42	12	8	50	3b	A2	1	15-40yrs	L	L	3.8	2.3	Remove	Development	Exotic
T12	Cocos palm	Syagrus romanzoffiana	38	0	19	55	2c	Z3	1	>40yrs	L	L	2.9	2.2	Remove	Development	Exotic
T13	Cocos palm	Syagrus romanzoffiana	39	21	10	55	2c	Z3	1	>40yrs	L	L	3.7	2.2	Remove	Development	Exotic
T14	Cocos palm	Syagrus romanzoffiana	48	19	10	55	2c	Z3	1	>40yrs	L	L	3.5	2.4	Remove	Development	Exotic
T15	Poplar	Populus spp	38	19	12	50	2c	A2	2		M	L	4.6	2.2	Remove	Development	Exotic
T16	Poplar	Populus spp	32	17	8	50	2c	A2	2	>40yrs	M	L	3.0	2.1	Remove	Development	Exotic
T17	Tallowwood	Eucalyptus microcorys	82	23	14	65	1b	A2	3	>40yrs	H	H	8.6	3.0	Remove	Development	Estimated couldn't get to base not tagged
T18	Tallowwood	Eucalyptus microcorys	58	21	11	60	1a	A2	2	>40yrs	M	H	2.0	2.6	Remove	Development	Covered in vine not tagged
T19	Tallowwood	Eucalyptus microcorys	43	17	8	60	1b	A1	2		M	M	3.8	2.3	Remove	Development	Covered in vine not tagged
T20	Poplar	Populus spp	52	21	10	50	2c	Z4	1	>40yrs	L	L	5.0	2.5	Remove	Development	Exotic decay offset 3m south
T21	Poplar	Populus spp	52	22	12	50	2c	A2	1	>40yrs	L	L	5.6	2.5	Remove	Development	Exotic, swelling at junction

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T22	Poplar	Populus spp	75	21	10	0	4a	Z4		<5yrs	L	VL	10.0	2.9	Remove	Development	Dead
T23	Poplar	Populus spp	35	10	3	0	4a	Z4		<5yrs	L	VL	4.0	2.1	Remove	Development	Dead
T24	Poplar	Populus spp	85	23	15	50	2c	A2	2	>40yrs	M	L	10.4	3.1	Remove	Development	Exotic, \section failure
T25	Poplar	Populus spp	35	24	8	50	2c	A2	2	>40yrs	M	L	4.6	2.1	Remove	Development	Failed branches
T26	Poplar	Populus spp	35	25	6	0	4a	Z4		<5yrs	L	VL	4.2	2.1	Remove	Development	Dead
T27	Poplar	Populus spp	65	23	15	50	2c	A2	2		M	L	7.3	2.8	Remove	Development	Exotic failed limbs.
T28	Poplar	Populus spp	43	20	8	55	2c	A2	2	>40yrs	M	L	5.8	2.3	Remove	Development	Exotic
T29	Poplar	Populus spp	51	19	8	55	2c	A2	2	>40yrs	M	L	6.6	2.5	Remove	Development	Exotic
T30	Poplar	Populus spp	25	15	3	0	4a	Z4		<5yrs	L	VL	2.9	1.8	Remove	Development	Dead
T31	Poplar	Populus spp	25	8	6	45	4a	A2	1	>40yrs	M	L	3.6	1.8	Remove	Development	Suppressed
T32	Poplar	Populus spp	85	23	12	45	2c	Z4	2	>40yrs	L	L	3.0	3.1	Remove	Development	Decay
T33	Norfolk Island hibiscus	Lagunaria patersonii	45	15	15	55	1a	A1	2	>40yrs	M	M	5.4	2.4	Remove	Development	In compound not tagged 1m offset south

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T34	Smooth-barked Apple	Angophora costata,	56	19	15	30	4a	Z4	2	5-15yrs	M	L	7.0	2.6	Remove	Development	In decline 100% epicormic not tagged.
T35	Tallowwood	Eucalyptus microcorys	65	23	17	65	1a	A2	3	>40yrs	H	H	7.2	2.8	Remove	Development	Good tree covered in vine
T36	Tallowwood	Eucalyptus microcorys	65	25	16	65	1a	A2	3	>40yrs	H	H	7.2	2.8	Remove	Development	Good tree covered in vine
T37	Coral	Erythrina spp	100	18	15	55	2b	Z3	0	>40yrs	L	VL	7.8	3.3	Remove	Development	Weed species
T38	Tallowwood	Eucalyptus microcorys	35	19	8	55	4a	Z4	2	15-40yrs	M	M	4.0	2.1	Remove	Development	Appears to have termite damage
T39	Wattle	Acacia spp	31	15	8	40	1b	A2	2		M	M	3.4	2.0	Remove	Development	Covered in vine
T40	Swamp she-oak	Casuarina glauca	19	10	3	55	1b	A2	2	>40yrs	M	M	2.0	1.6	Remove	Development	Vine minor deadwood young tree
T41	Swamp she-oak	Casuarina glauca	21	12	4	55	1b	A2	2	>40yrs	M	M	2.0	1.7	Remove	Development	Young tree vine.
T42	Swamp she-oak	Casuarina glauca	23	15	5	55	1b	A2	2	>40yrs	M	M	2.8	1.8	Remove	Development	Vine deadwood not tagged
T43	Gum	Eucalyptus spp	29	15	8	50	1b	A2	2	>40yrs	M	M	5.0	2.0	Remove	Development	On bank
T44	Exotic	Exotic	28	5	6	50	1a	A2	1	15-40yrs	M	L	2.9	1.9	Remove	Development	Exotic

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T45	Swamp she-oak	Casuarina glauca	35	19	6	55	1a	A2	2	>40yrs	M	M	3.2	2.1	Remove	Development	Vine
T46	Swamp she-oak	Casuarina glauca	39	18	5	55	1b	A2	2	>40yrs	M	M	3.4	2.2	Remove	Development	Vine
T47	Swamp she-oak	Casuarina glauca	32	18	5	55	1b	A1	2		M	M	3.4	2.1	Remove	Development	
T48	Coral	Erythrina spp	120	20	20	50	2c	Z3	0	>40yrs	L	VL	14.4	3.6	Remove	Development	Weed
T49	Coral	Erythrina spp	60	8	10	50	2c	Z3	0	>40yrs	L	VL	6.1	2.7	Remove	Development	Weed
T53	Coral	Erythrina spp	65	18	15	50	2c	Z3		>40yrs	L	VL	7.2	2.8	Remove	Development	Weed
T50	Swamp she-oak	Casuarina glauca	52	19	8	50	1b	A2	2	>40yrs	M	M	5.8	2.5	Remove	Development	Covered in vine not tagged
T51	Swamp she-oak	Casuarina glauca	45	18	12	50	1b	A2	2	>40yrs	M	M	5.4	2.4	Remove	Development	Vine
T52	Broad-leaf privet	Ligustrum lucidum	43	12	10	55	2c	Z3	1	>40yrs	L	VI	4.7	2.3	Remove	Development	Weed
T54	Broad-leaf privet	Ligustrum lucidum	15	8	10	50	2b	Z3	0	>40yrs	L	L	2.0	1.5	Remove	Development	Weed
T55	Broad-leaf privet	Ligustrum lucidum	18	10	5	50	2b	Z3		>40yrs	L	L	2.2	1.6	Remove	Development	Weed not tagged
T56	Bangalay	Eucalyptus botryoides	48	22	12	60	1b	A2	2		M	H	6.6	2.4	Retain		Good tree weed near by

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T57	Camphor laurel	Camphora officinarum	45	15	10	50	2b	Z3	1	>40yrs	L	L	2.4	2.4	Remove	Weed	Weed
T58	Bangalay	Eucalyptus botryoides	55	21	12	60	1b	A2	2	>40yrs	M	M	4.2	2.6	Retain		
T59	Smooth-barked Apple	Angophora costata,	55	18	15	50	1b	A2	2		M	M	6.1	2.6	Retain		Deadwood
T60	Bangalay	Eucalyptus botryoides	102	25	16	60	1b	A2	3	>40yrs	H	H	12.0	3.3	Retain		Good tree
T61	Gum	Eucalyptus spp	65	24	9	45	2d	Z4	2	15-40yrs	M	L	6.6	2.8	Remove	Health	Straggled by vine epicormic growth decay at base
T62	Smooth-barked Apple	Angophora costata	41	18	8	55	1b	A2	2	>40yrs	M	M	4.2	2.3	Retain		Deadwood under stress
T63	Flame tree	Brachychiton acerifolius	26	21	8	55	1a	A1	2	>40yrs	M	M	4.2	1.9	Retain		
T64	Bangalay	Eucalyptus botryoides	92	25	15	65	1a	A1	3	>40yrs	H	H	10.2	3.2	Retain		Good tree
T65	Bangalay	Eucalyptus botryoides	95	23	15	60	1b	A2	3	>40yrs	H	H	11.8	3.2	Retain		Deadwood
T66	Bangalay	Eucalyptus botryoides	95	25	18	65	1b	A1	3		H	H	11.4	3.2	Remove	Development	Good tree covered in vine
T69	Cheese tree	Glochidion ferdinandi	45	15	17	60	1a	A2	2	>40yrs	M	M	4.8	2.4	Retain		

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T67	Bangalay	Eucalyptus botryoides	65	21	15	55	1b	A2	2	>40yrs	M	M	7.7	2.8	Retain		Vine, deadwood
T68	Sydney blue gum	Eucalyptus saligna	35	17	6	60	4a	Z1	2	>40yrs	M	M	2.8	2.1	Remove	Development	Young tree covered in vine
T70	Tallowwood	Eucalyptus microcorys	35	17	8	10	4a	Z4	1	<5yrs	L	L	4.2	2.1	Remove	Health	In decline
T71	Bangalay	Eucalyptus botryoides	82	25	18	60	1b	A2	3		H	H	10.4	3.0	Retain		Deadwood
T72	Bangalay	Eucalyptus botryoides	75	25	18	65	1b	A2	3	>40yrs	H	H	9.8	2.9	Retain		Good tree
T73	Bangalay	Eucalyptus botryoides	72	18	16	60	1b	A2	3	>40yrs	H	H	8.9	2.9	Retain		Good tree wound I'm from base good growth
T74	Stag	Stag	46	16	5	0	4a	Z4	0	<5yrs	L	VI	4.6	2.4	Remove	Development	Dead
T75	Tallowwood	Eucalyptus microcorys	45	21	10	50	1b	A2	2	>40yrs	M	M	5.2	2.4	Retain		
T76	Tallowwood	Eucalyptus microcorys	55	22	12	55	1b	A2	2	>40yrs	H	H	8.6	2.6	Retain		
T77	Tallowwood	Eucalyptus microcorys	68	21	10	60	1b	A2	2	>40yrs	M	M	4.6	2.8	Retain		Suppressed
T78	Gum	Eucalyptus spp	21	12	4	55	1a	Z1	2	>40yrs	M	M	2.0	1.7	Remove	Development	Young tree not tagged

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T79	Tallowwood	Eucalyptus microcorys	35	15	8	50	4a	A2	2	>40yrs	M	M	3.6	2.1	Retain		Suppressed by larger
T80	Bangalay	Eucalyptus botryoides	69	25	15	55	1b	A2	3	>40yrs	H	H	8.2	2.8	Retain		Good tree on boundary
T81	Bangalay	Eucalyptus botryoides	33	15	4	30	4a	Z4	1	5-15yrs	L	L	3.7	2.1	Remove	Development	In decline.
T82	Swamp she-oak	Casuarina glauca	24	15	5	0	4a	Z4	0	<5yrs	L	L	2.4	1.8	Remove	Development	Dead
T83	Swamp she-oak	Casuarina glauca	52	18	5	20	4a	Z4	1	5-15yrs	L	L	4.2	2.5	Remove	Development	Poor condition
T84	Tallowwood	Eucalyptus microcorys	35	17	8	10	4a	Z4	1	<5yrs	L	L	4.2	2.1	Remove	Development	Near dead
T85	Tallowwood	Eucalyptus microcorys	38	18	5	30	4a	Z4	2	15-40yrs	M	L	5.2	2.2	Remove	Health	In decline
T86	Bangalay	Eucalyptus botryoides	100	25	22	65	1b	A2	3	>40yrs	H	H	14.4	3.3	Retain		Good tree not tagged
T87	Stag	Stag	0	17	4	0	4a	Z4		<5yrs	L	VI	2.0	2.0	Remove	Health	Dead stag
T88	Stag	Stag	0	10	4	0	4a	Z4	0	<5yrs	L	VI	2.0	2.0	Remove	Health	Dead
T89	Bangalay	Eucalyptus botryoides	77	22	15	65	1b	A2	3	>40yrs	H	H	9.0	3.0	Retain		Good tree
T90	Stag	Stag	0	17	10	0	4a	Z4	0	<5yrs	L	VI	2.0	2.0	Remove	Health	Dead

Tag No	Common Name	Scientific Name	Basel Diameter (cm)	Height (m)	Spread	Vigour	Short ULE	Short AZ	Visual Significance	STARS Life	STARS Significance	STARS Retention Significance	TPZ Radius (m)	SRZ Radius (m)	Retain Remove	Reason for Removal	Comments
T91	Bangalay	Eucalyptus botryoides	85	17	15	55	1b	A2	2	>40yrs	M	H	6.6	3.1	Retain		Over road on nature strip
T92	Stag	Stag	0	17	15	0	4a	Z4	0	<5yrs	L	VI	2.0	2.0	Remove	Health	Dead
T93	Bangalay	Eucalyptus botryoides	65	21	15	30	1b	A2	2	>40yrs	M	M	5.4	2.8	Retain		Sparse canopy
T94	Tallowwood	Eucalyptus microcorys	25	15	7	60	1a	A1	2	>40yrs	M	M	2.8	1.8	Remove	Development	Vine not tagged on compound boundary
T95	Bangalay	Eucalyptus botryoides	40	18	12	25	4a	Z4	1	5-15yrs	L	L	4.2	2.3	Remove	Development	In decline.
T96	Bangalay	Eucalyptus botryoides	82	22	15	60	1b	A2	3	>40yrs	H	H	9.0	3.0	Remove	Development	Minor deadwood.
T97	Bangalay	Eucalyptus botryoides	72	24	15	60	1b	A2	3	>40yrs	H	H	7.8	2.9	Retain		Good tree minor dead wood
T98	Swamp she-oak	Casuarina glauca	55	16	9	60		A2	2	>40yrs	H	M	4.9	2.6	Retain		Start of EEC
T99	Swamp she-oak	Casuarina glauca	38	15	6	60		A2	2	>40yrs	H	M	3.8	2.2	Retain		Start of EEC

Legend for table

AZ Categories - Attachment 5

Tree ULE Categories - Attachment 6

Tree Retention Value - Attachment 4

Significance Value - Attachment 3

ATTACHMENT 2 – TREE PLANS



Legend

- | | |
|---|--|
|  Site boundary |  Structural Root Zone (SRZ) |
|  Retain (26) |  Tree Protection Zone (TPZ) |
|  Remove (73) | |

Aerial source: Nearmap



PROJECT & MXD REFERENCE
10 Boondah Road, Warriewood
HEN09_T003

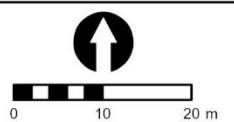
DATE & ISSUE NUMBER
21/05/2024
Issue 1

SC

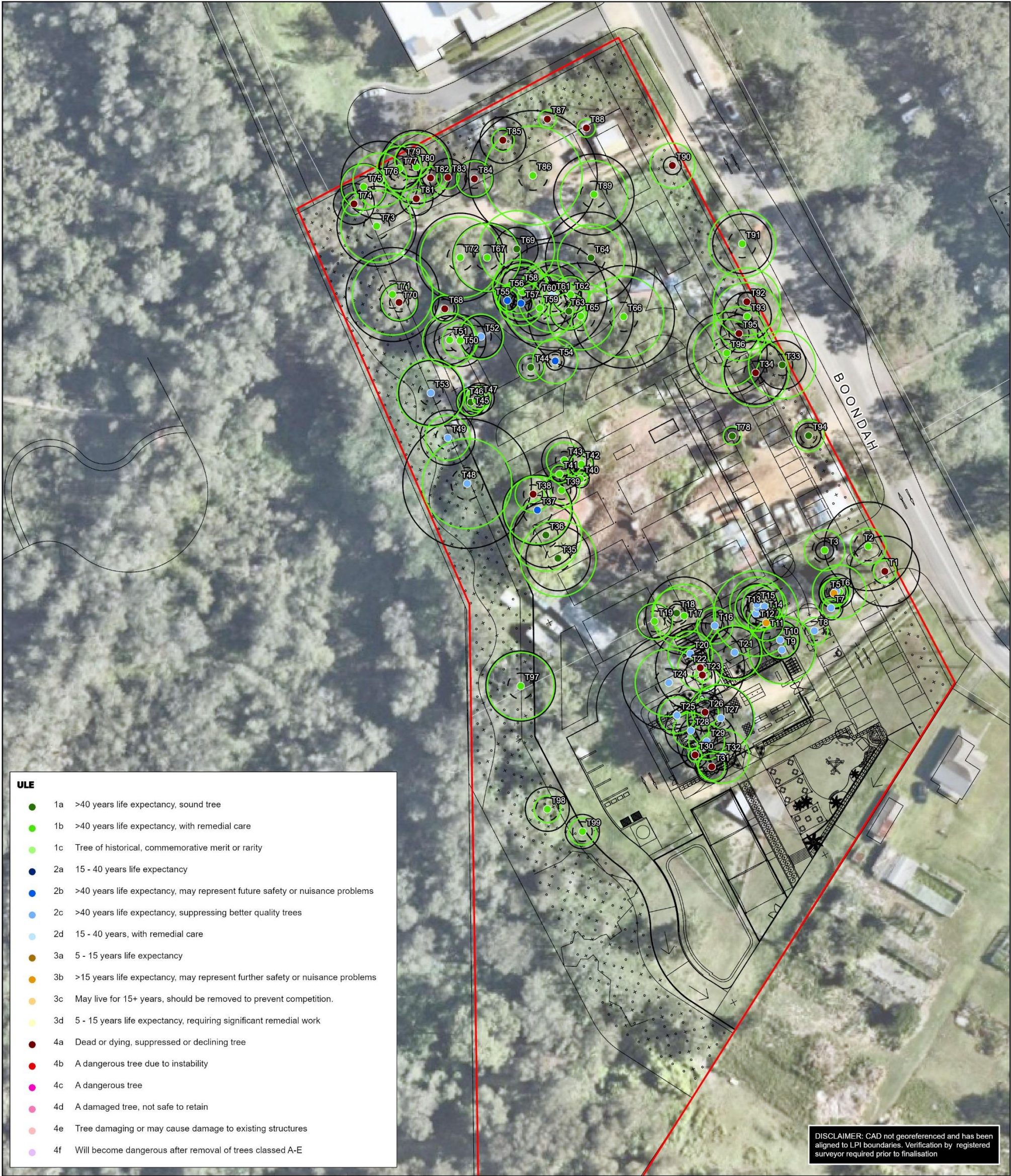
SCALE & COORDINATE SYSTEM
1:1000 @ A3
GDA 1994 MGA Zone 56

TITLE
Retention & Removal Plan

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Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.



- ULE**
- 1a >40 years life expectancy, sound tree
 - 1b >40 years life expectancy, with remedial care
 - 1c Tree of historical, commemorative merit or rarity
 - 2a 15 - 40 years life expectancy
 - 2b >40 years life expectancy, may represent future safety or nuisance problems
 - 2c >40 years life expectancy, suppressing better quality trees
 - 2d 15 - 40 years, with remedial care
 - 3a 5 - 15 years life expectancy
 - 3b >15 years life expectancy, may represent further safety or nuisance problems
 - 3c May live for 15+ years, should be removed to prevent competition.
 - 3d 5 - 15 years life expectancy, requiring significant remedial work
 - 4a Dead or dying, suppressed or declining tree
 - 4b A dangerous tree due to instability
 - 4c A dangerous tree
 - 4d A damaged tree, not safe to retain
 - 4e Tree damaging or may cause damage to existing structures
 - 4f Will become dangerous after removal of trees classed A-E

DISCLAIMER: CAD not georeferenced and has been aligned to LPI boundaries. Verification by registered surveyor required prior to finalisation

Legend

- Site boundary
- Canopy
- Tree Protection Zone (TPZ)
- Structural Root Zone (SRZ)

Aerial source: Nearmap



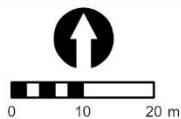
PROJECT & MXD REFERENCE
10 Boondah Road, Warriewood
HEN09_T001

DATE & ISSUE NUMBER
20/05/2024
Issue 1

SCALE & COORDINATE SYSTEM
1:1,000 @ A3
GDA 1994 MGA Zone 56

TITLE
ULE Plan

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Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.



Legend

- Site boundary
- A tree
- Z tree
- Canopy
- Root Structural Zone (SRZ)
- Tree Protection Zone (TPZ)

Aerial source: Nearmap

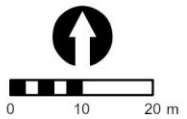


PROJECT & MXD REFERENCE
10 Boondah Road, Warriewood
HEN09_T002

DATE & ISSUE NUMBER
21/05/2024
Issue 1

SC

SCALE & COORDINATE SYSTEM
1:1,000 @ A3
GDA 1994 MGA Zone 56



TITLE
AZ Plan

Document Path: N:\GIS STORAGE\N Drive\1_GDA2020_MappingProjects\HEN09_Boondah_Rd_Warriewood\MXDs\HEN09_T002.aprx

Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

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- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

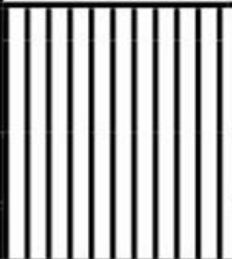
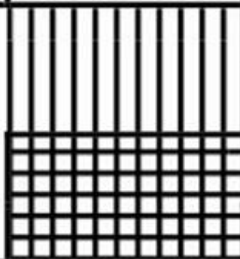
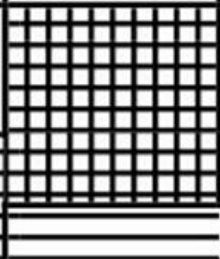
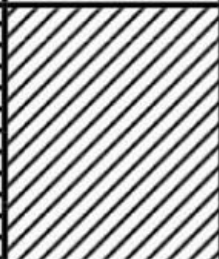
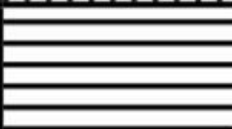
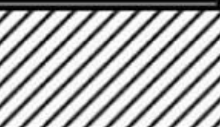
- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties.

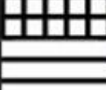
Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					

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	Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.
	Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
	Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

ATTACHMENT 5 – TREE AZ CATEGORIES

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

Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species

- Z1** Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
- Z2** Too close to a building, i.e. exempt from legal protection because of proximity, etc
- Z3** Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure

- Z4** Dead, dying, diseased or declining
- Z5** Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
- Z6** Instability, i.e. poor anchorage, increased exposure, etc

Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people

- Z7** Excessive, severe and intolerable inconvenience to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. dominance, debris, interference, etc
- Z8** Excessive, severe and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. severe structural damage to surfacing and buildings, etc

Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population

- Z9** Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
- Z10** Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
- Z11** Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
- Z12** Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorization hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

- A1** No significant defects and could be retained with minimal remedial care
- A2** Minor defects that could be addressed by remedial care and/or work to adjacent trees
- A3** Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
- A4** Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorization hierarchy and should be given the most weight in any selection process.

TreeAZ is designed by Barrell Tree Consultancy (www.barrelltreecare.co.uk) and is reproduced with their permission

ATTACHMENT 6 – TREE ULE CATEGORIES

	1 – Long	2 – Medium	3 – Short	4 – Removal	5 – Moved or Replaced
A	Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk	Trees that appeared to be retainable at the time of assessment for 15 – 40 years with an acceptable level of risk	Trees that appeared to be retainable at the time of assessment for 5 – 15 years with an acceptable level of risk	Trees that should be removed within the next 5 years	Trees which can be reliably removed or replaced
B	Structurally sound trees located in positions that can accommodate future growth	Trees that may only live between 15 and 40 years	Trees that may only live between 5 and 15 years	Dead, dying, suppressed or declining trees through disease or inhospitable conditions	Small trees less than 5m in height
C	Trees that could be made suitable for retention in the long term by remedial care	Trees that may live for more than 40 years but would be removed for safety or nuisance reasons	Trees that may live for more than 15 years but would be removed for safety or nuisance reasons	Damaged trees through structural defects including cavities, decay, included bark, wounds or poor form	Trees that have been pruned to artificially control growth
D		Trees that could be made suitable for retention in the medium term by remedial care	Trees that require substantial remedial tree care and are only suitable for retention in the short term	Damaged trees that are clearly not safe to retain	
E				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings	
F				Trees that are damaging or may cause damage to existing structures within 5 years	
G				Trees that will become dangerous after removal of other trees for reasons given in (A) to (F)	



10-12 Boondah Road,
Warriewood

21 May 2024
(REF:HEN09AIA)

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