Arboricultural Impact Assessment

TALC
TREE AND LANDSCAPE CONSULTANTS

Prepared 30th October 2025

Site Location

44 Lynwood Avenue
Cromer NSW 2099

Client

Champion Homes

DISCLAIMER

The author and Tree & Landscape Consultants take no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment, to mitigate or prevent hazards from arising, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent modification/s to its growing environment either above or below ground contrary to our advice.

Peter Richards
Tree & Landscape Consultants

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TREE & LANDSCAPE CONSULTANTS

Site Analysis, Arboricultural Assessments

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30th October 2025

Champion Homes

Our reference: AIA- 44 Lynwood Avenue Cromer NSW 2099

Arboricultural Impact Assessment:

1. INTRODUCTION

This report has been prepared by Tree & Landscape Consultants for Champion Homes. The site was inspected by Tree & Landscape Consultants and the subject trees, and their general growing environment evaluated on the 28th October 2025.

The site is subject to a Development Application and this report, and any works recommended herein, that require approval from the consenting authority are provided to form part of that development application and its consent conditions. The Tree Locations (Appendix C) and Tree Protection Plan (Appendix D) if required are to be included into and used in conjunction with the approval for *the site*.

The aims and objectives of this report are to detail and comply with the tree protection requirements specified in AS4970 (2009) *Protection of trees on development sites* to identify and assesses the condition of the subject tree/s; determine the impact of development on the subject tree/s; provide recommendations for retention or removal of the subject tree/s; provide specifications for protection of tree/s to be retained.

2. METHODOLOGY

2.1 The method of assessment of tree/s is applied from the ongoing knowledge and development of the author and considers but is not confined to:

- Tree health and subsequent stability, both long and short term
- Sustainable Retention Index Value (S.R.I.V.)© IACA 2009)
- Amenity values
- Significance – Rating System for Tree Significance - IACA (2009) ©
- TPZ (Tree Protection Zone) & SRZ (Structural Root Zone) – AS4970

2.2 This assessment is undertaken using a standard tree assessment criteria for each tree based on the values above and is implemented as a result of at least one comprehensive and detailed site inspection.

2.3 In this report the dimensions of the tree recorded by the author for the trunk *diameter at breast height* (DBH) measurement is calculated at 1.4m above ground from the base of the tree. Where a tree is trunkless or branches at or near ground such as a mallee formed tree, an average diameter is determined by recording the radial extent of the stem mass at its narrowest and widest dimensions, adding the two dimensions together and dividing them by 2 to record an average.

2.4 Crown spreads are expressed as length by breadth measurements to accurately record their dimensions. Where appropriate, *crown spread orientation* is described along the length of the crown spread e.g. North/South, or as *radial* if the crown is distributed at an approximately even radius from the trunk e.g. 6x6m.

2.5 ***Pruning/Removal Guidelines***

- Any pruning recommended in this report is to be to the Australian Standard® AS4373 'Pruning of amenity trees', and conducted in accordance with the NSW Work Cover Authority Code of Practice for the Amenity Tree Industry, 1998

- All pruning or removal works are to be in accordance with the appropriate Tree Management Policy where applicable, or Tree Management Order (TMO), or Tree Preservation Order (TPO), or applicable consent conditions.

- Tree maintenance work is specialised and in order to be undertaken safely and to ensure the works carried out are not detrimental to the survival of the tree or surrounding vegetation, all works should be undertaken by a qualified Arboriculturist with appropriate competencies recognised within the Australian Qualification Framework, with a minimum of 5 years of continual experience within the industry of operational amenity arboriculture, and covered by appropriate and current types of insurance to undertake such works.

- Any pruning near electricity wires should be undertaken in accordance with relative Electrical Safety Rules and be performed by persons individually \by Energy Australia

3. TREE ASSESSMENTS

3.1 Table 1

Tree No.	Genus &Species Common Name	Age Y – Yong M-Mature O- Overmature	Condition G- Good F- Fair P- Poor D- Dead	Branch Bark Included	Canopy Orientation Sy- Symmetrical Asy- Asymmetrical	Trunk Diameter (DBH- 1.4 m above ground level in mm & Trunk Base)	Height (Metres) X Spread (Metres) (N/S x E/W)	Tree Vigour L- Low G- Good D- Dormant	SRIV Sustainable Retention Index Value
1	**Bauhinia variegata** Orchid Tree	M	P	No	Asy-N	470-1.4 480-Base	Ht:4 Spread: 5x5	L	MLVP2
	Tree appears to be structurally declining with thinning crown. Extensive past lopping to clear utility wires has occurred. Tree malformed in habit. **NRZ:** 5.64 metres radius /**SRZ:** 2.43 metres radius 								
2	**Percea avocado** Avocado	M	F	No	Sy	320-1.4 180-Base	Ht:3 Spread:3x3	G	MGVF9
	Small tree appearing structurally sound. Foliage generally appeared free of insect predation and disease. **NRZ:** 3.84 metres radius /**SRZ:** 1.61 metres radius 								
3	**Citrus sp.** Lemon	M	F	No	Sy	100-1.4 120-Base	Ht:3 Spread:2x2	G	MGVF9
	Small fruit tree appearing structurally sound. Foliage generally appeared free of insect predation and disease. **NRZ:** 2 metres radius /**SRZ**: 1.5 metres radius. 								
4	**Plumeria sp.** Frangipanni	M	P	No	Sy	100-1.4 120-Base	Ht:.3 Spread:2x2	D	MGVP6
	Small suppressed tree in its dormant state. **NRZ:** 2 metres radius /**SRZ**: 1.5 metres radius. 								

5	**Lagerstroemia indica** Crepe Myrtle	M	P	No	Sy	100-1.4 120-Base	Ht:.3 Spread:2x2	D	MGVP6
		Small suppressed tree in its dormant state. **NRZ:** 2 metres radius /**SRZ**: 1.5 metres radius. 							
6	**Cupressus leylandii** Cupressus	M	F	No	Sy	240-1.4 260-Base	Ht:8 Spread:4x4	G	MGVF9
		Hedging conifer codominant with tree 7. **NRZ:** 2.88 metres radius /**SRZ**: 1.88 metres radius. 							
7	**Cupressus leylandii** Cupressus	M	F	No	Sy	240-1.4 260-Base	Ht:8 Spread:4x4	G	MGVF9
		Hedging conifer codominant with tree 6. **NRZ:** 4.2 metres radius /**SRZ**: 2.15 metres radius. 							

(NRZ) *Notational Root Zone &* ***(SRZ)****Structural Root Zone*

3.2 NRZ- Tree Protection Zone and SRZ Structural Root Zone - calculated in accordance with *AS4970- Protection of trees on development sites.*

NRZ- encroachment

General- It may be possible to encroach into or make variations to the standard NRZ. Encroachment includes excavation, compacted fill and machine trenching

Minor NRZ encroachment- Is less than or equal to 10% of the area of the TPZ and outside the SRZ.

Moderate NRZ encroachment- Is less greater than 10% and less then or equal to 20% of the area of the NRZ and outside the SRZ.

Major encroachment – Is greater than 20% of the area of the TPZ or inside the SRZ.

4. Discussion

4.1 :This discussion assesses the subject trees then considers their long-term retention or removal resulting in management options for trees. A tree is described within Northern Beaches Council as being over five metres in height **"Taken From Web 30th October 2025".**

The trees are further described as follows:

Tree 1

- A specimen of Orchid tree located at the property frontage within the street reserve.
- The tree is screened to the broader area by trees and the surrounding built form but can bee seen from the property frontage.
- Orchid tree is commonly found as a planted specimen within the Sydney area with specimens actively being currently marked for removal across the street.
- The tree has been subject to extensive lopping to clear utility wires.
- The tree is subject to LGA Controls .
- The tree is directly affected by the proposed vehicle entry and is to be removed and replaced with a new tree as part of final landscape works..

Tree 2

- A small specimen of Avocado located at the property frontage within the street reserve.
- The tree is screened to the broader area by trees and the surrounding built form but can be seen from the property frontage.
- Avocado tree is commonly found as a planted specimen within the Sydney area with the subject tree most likely planted by the public.
- The tree is subject to LGA Controls .
- The tree is directly affected by the proposed vehicle entry and is to be removed and replaced with a new tree as part of final landscape works.

Trees 3,4,5

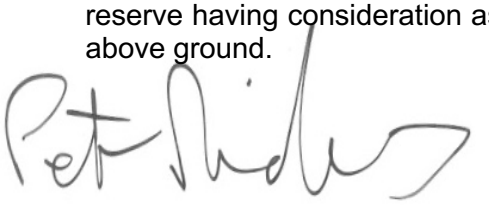
- Specimens of fruit and smaller ornamental trees .
- The trees/shrubs are screened to the broader area by trees and built form.
- All species are commonly found as planted specimens within the Sydney area.
- The trees is not subject to LGA Controls due to smaller dimensions.
- The trees/shrubs are supported for removal subject to replacement plantings being provided as part of final works.

Trees 6,7

- Planted specimens of Cupressus sp.
- The trees are screened to the broader area by nearby trees and built form.
- All species are commonly found as planted specimen within the Sydney area.
- The trees are not subject to LGA Controls (Exempt Species).
- The trees are supported for removal subject to a replacement planting being provided as part of final works.

5. RECOMMENDATIONS

a. That trees 1,2,3,4,5,6 & 7 be removed subject to the planting of new trees, shrubs and ground covers as part of final landscape works within the boundary of the land and within the street reserve having consideration as to the selected species spatial requirements both below and above ground.



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Appendix A
Matrix - Sustainable Retention Index Value (S.R.I.V.) ©

Developed by IACA – Institute of Australian Consulting Arboriculturists www.iaca.org.au (2009)

To be used with the values defined in the Glossary.
An Index value as indicated where ten (10) is the highest value.

Age Class	Vigour Class and Condition Class					
	Good Vigour & Good Condition (GVG)	Good Vigour & Fair Condition (GVF)	Good Vigour & Poor Condition (GVP)	Low Vigour & Good Condition (LVG)	Low Vigour & Fair Condition (LVF)	Low Vigour & Poor Condition (LVP)
	Able to be retained if sufficient space available above and below ground for future growth. No remedial work or improvement to growing environment required. May be subject to high vigour. Retention potential - Medium – Long Term.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work may be required or improvement to growing environment may assist. Retention potential - Medium Term. Potential for longer with remediation or favourable environmental conditions.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work unlikely to assist condition, improvement to growing environment may assist. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. No remedial work required, but improvement to growing environment may assist vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment may assist condition and vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Unlikely to be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment unlikely to assist condition or vigour. Retention potential - Likely to be removed immediately or retained for Short Term. Potential for longer with remediation or favourable environmental conditions.
Young (Y)	**Index Value 9** Retention potential - Long Term. Likely to provide minimal contribution to local amenity if height <5m. High potential for future growth and adaptability. Retain, move or replace.	**Index Value 8** Retention potential - Short – Medium Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Medium-high potential for future growth and adaptability. Retain, move or replace.	**Index Value 5** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	**Index Value 4** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Medium potential for future growth and adaptability. Retain, move or replace.	**Index Value 3** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	**Index Value 1** Retention potential - Likely to be removed immediately or retained for Short Term. Likely to provide minimal contribution to local amenity if height <5m. Low potential for future growth and adaptability.
Mature (M)	**Index Value 10** Retention potential - Medium - Long Term.	**Index Value 9** Retention potential - Medium Term. Potential for longer with improved growing conditions.	**Index Value 6** Retention potential - Short Term. Potential for longer with improved growing conditions.	**Index Value 5** Retention potential - Short Term. Potential for longer with improved growing conditions.	**Index Value 4** Retention potential - Short Term. Potential for longer with improved growing conditions.	**Index Value 2** Retention potential - Likely to be removed immediately or retained for Short Term.
Over-mature (O)	**Index Value 6** Retention potential - Medium - Long Term.	**Index Value 5** Retention potential - Medium Term.	**Index Value 4** Retention potential - Short Term.	**Index Value 3** Retention potential - Short Term. Potential for longer with improved growing conditions.	**Index Value 2** Retention potential - Short Term.	**Index Value 0** Retention potential - Likely to be removed immediately or retained for Short Term.

Appendix B

Definitions & Terminology

From

Dictionary for Managing Trees in Urban Environments

Institute of Australian Consulting Arboriculturists (IACA) 2009.

Condition of trees

Condition A tree's *crown form* and growth habit, as modified by its *environment* (aspect, suppression by other trees, soils), the *stability* and *viability* of the *root plate*, trunk and structural branches (first (1^{st}) and possibly second (2^{nd}) order branches), including structural defects such as wounds, cavities or hollows, *crooked* trunk or weak trunk/branch junctions and the effects of predation by pests and diseases. These may not be directly connected with *vigour* and it is possible for a tree to be of *normal vigour* but in *poor condition*. Condition can be categorized as *Good Condition*, *Fair Condition*, *Poor Condition* and *Dead*.

Good Condition Tree is of good habit, with *crown form* not severely restricted for space and light, physically free from the adverse effects of *predation* by pests and diseases, obvious instability or structural weaknesses, fungal, bacterial or insect infestation and is expected to continue to live in much the same condition as at the time of inspection provided conditions around it for its basic survival do not alter greatly. This may be independent from, or contributed to by vigour.

Fair Condition Tree is of good habit or *misshapen*, a form not severely restricted for space and light, has some physical indication of *decline* due to the early effects of *predation* by pests and diseases, fungal, bacterial, or insect infestation, or has suffered physical injury to itself that may be contributing to instability or structural weaknesses, or is faltering due to the modification of the *environment* essential for its basic survival. Such a tree may recover with remedial works where appropriate, or without intervention may stabilise or improve over time, or in response to the implementation of beneficial changes to its local environment. This may be independent from, or contributed to by vigour.

Poor Condition Tree is of good habit or *misshapen*, a form that may be severely restricted for space and light, exhibits symptoms of advanced and *irreversible decline* such as fungal, or bacterial infestation, major die-back in the branch and *foliage crown*, *structural deterioration* from insect damage e.g. termite infestation, or storm damage or lightning strike, ring barking from borer activity in the trunk, root damage or instability of the tree, or damage from physical wounding impacts or abrasion, or from altered local environmental conditions and has been unable to adapt to such changes and may decline further to death regardless of remedial works or other modifications to the local *environment* that would normally be sufficient to provide for its basic survival if in *good* to *fair* condition. Deterioration physically, often characterised by a gradual and continuous reduction in vigour but may be independent of a change in vigour, but characterised by a proportionate increase in susceptibility to, and *predation* by pests and diseases against which the tree cannot be sustained. Such conditions may also be evident in trees of advanced senescence due to normal phenological processes, without modifications to the growing environment or physical damage having been inflicted upon the tree. This may be independent from, or contributed to by vigour..

Dead Tree is no longer capable of performing any of the following processes or is exhibiting any of the following symptoms;

Processes

Photosynthesis via its foliage crown (as indicated by the presence of moist, green or other coloured leaves);

Osmosis (the ability of the root system to take up water);

Turgidity (the ability of the plant to sustain moisture pressure in its cells);

Epicormic shoots or *epicormic strands* in Eucalypts (the production of new shoots as a response to stress, generated from latent or adventitious buds or from a *lignotuber*);

Symptoms

Permanent leaf loss;

Permanent wilting (the loss of turgidity which is marked by desiccation of stems leaves and roots);

Abscission of the *epidermis* (bark desiccates and peels off to the beginning of the sapwood).

Removed No longer present, or tree not able to be located or having been cut down and retained on a site, or having been taken away from a site prior to site inspection.

Description of Tree Dimensions

Height The distance measured vertically between the horizontal plane at the lowest point at the base of a tree, which is immediately above ground, and the horizontal plane immediately above the uppermost point of a tree.

Spread The furthest expanse of the crown when measured horizontally from one side of the tree to the other, generally through the centre of the trunk. Where the crown is not circular a measurement should be an average of the narrowest and widest diameters and this is dependent upon crown form and to a lesser extent its symmetry.

Crown Cover Percent of the homogenous distribution of foliage across the entire crown based upon that expected for a specimen of that species in good condition and of normal vigour, depending on form in situ, e.g. this may be influenced by crown die-back, proximity to other trees or structures, moisture stress, or overshadowing.

Vigour

Vigour Ability of a tree to sustain its life processes. This is independent of the *condition* of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality) e.g. *dormant*, deciduous or semi-deciduous trees. Vigour can be categorized as *Normal Vigour, High Vigour*, *Low Vigour* and *Dormant Tree Vigour*.

Normal Vigour Ability of a tree to maintain and sustain its life processes. This may be evident by the typical growth of leaves, crown cover and crown density, branches, roots and trunk and resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

High Vigour *Accelerated growth* of a tree due to incidental or deliberate artificial changes to its growing *environment* that are seemingly beneficial, but may result in *premature aging* or failure if the favourable conditions cease, or promote *prolonged senescence* if the favourable conditions remain, e.g. water from a leaking pipe; water and nutrients from a leaking or disrupted sewer pipe; nutrients from animal waste, a tree growing next to a chicken coop, or a stock feed lot, or a regularly used stockyard; a tree subject to a stringent watering and fertilising program; or some trees may achieve an extended lifespan from continuous *pollarding* practices over the life of the tree.

Low Vigour Reduced ability of a tree to sustain its life processes. This may be evident by the atypical growth of leaves, reduced crown cover and reduced crown density, branches, roots and trunk, and a deterioration of their functions with reduced resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

Dormant Tree Vigour Determined by existing turgidity in lowest order branches in the outer extremity of the crown, with good bud set and formation, and where the last extension growth is distinct from those most recently preceding it, evident by bud scale scars. Normal vigour during dormancy is achieved when such growth is evident on a majority of branches throughout the crown.

Poor Vigour See low vigour

Good Vigour See Normal Vigour

Age of Trees

Age of Trees Most trees have a stable biomass for the major proportion of their life. The estimation of the age of a tree is based on the knowledge of the expected lifespan of the taxa in situ divided into three distinct stages of measurable biomass, when the exact age of the tree from its date of cultivation or planting is unknown. These increments are Young, Mature and Overmature.

Young Tree aged less than 20% of life expectancy.

Mature Tree aged 20-80% of life expectancy.

Over-mature Tree aged greater than 80% of life expectancy tending to senescent with or without reduced vigour, and declining gradually or rapidly but irreversibly to death.

Sapling A young tree, early in its development with small dimensions.

Senescent Advanced old age, over-mature.

General Terms

Significant Important, weighty or more than ordinary.

Significant Tree A tree considered important, weighty or more than ordinary. Example: due to prominence of location, or in situ, or contribution as a component of the overall landscape for *amenity* or aesthetic qualities, or *curtilage* to structures, or importance due to uniqueness of taxa for species, subspecies, variety, form, or as an historical or cultural planting, or for age, or substantial dimensions, or habit, or as remnant vegetation, or habitat potential, or a rare or threatened species, or uncommon in cultivation, or of aboriginal cultural importance, or is a commemorative planting.

Substantial A tree with large dimensions or proportions in relation to its place in the landscape.

Excurrent Tree where the crown is comprised of one (1) dominant first order structural branch which is usually an extension of the trunk, erect, straight and continuous, tapering gradually, with the main *axis* clear from base to apex, e.g. *Araucaria heterophylla* - Norfolk Island Pine. Note: some tree species of *typical* excurrent habit may be altered to deliquescent by physical damage of the *apical meristem*, or from top lopping, or from the propagation of inferior quality stock. However, *formative pruning* may be able to correct a *crown* to excurrent if undertaken when a tree is *young*.

Sustainable Retention Index Value (SRIV) A visual method of rating the viability of urban trees for development sites and management, based on general tree and landscape assessment criteria. SRIV© is for the professional manager of urban trees to consider the tree in situ with an assumed knowledge of the taxa and its growing environment and is based on the physical attributes of the tree and its response to its environment considering its age class, vigour class, condition class and its sustainable retention with regard to the safety of people or damage to property and the ability to retain the tree with remedial work or beneficial modifications to its growing environment or removal and replacement. (IACA 2005)

Diameter at Breast Height (DBH) Measurement of trunk width calculated at a given distance above ground from the base of the tree often measured at 1.4 m. The trunk of a tree is usually not a circle when viewed in cross section, due to the presence of *reaction wood* or *adaptive wood*, therefore an average diameter is determined with a *diameter tape* or by recording the trunk along its narrowest and widest axes, adding the two dimensions together and dividing them by 2 to record an average and allowing the orientation of the longest axis of the trunk to also be recorded. Where a tree is growing on a lean the distance along the top of the trunk is measured to 1.4m and the diameter then recorded from that point perpendicular to the edge of the trunk. Where a *leaning* trunk is *crooked* a vertical distance of 1.4m is measured from the ground. Where a tree branches from a trunk that is less than 1.4m above ground, the trunk diameter is recorded perpendicular to the length of the *trunk* from the point immediately below the base of the flange of the *branch collar* extending the furthest down the trunk, and the distance of this point above ground recorded as *trunk* length. Where a tree is located on sloping ground the DBH should be measured at half way along the side of the tree to average out the angle of slope. Where a tree is *acaulescent* or *trunkless* branching at or near ground an average diameter is determined by recording the radial extent of the trunk at or near ground and noting where the measurement was recorded e.g. at ground.

Tree Management Planned protection, conservation, maintenance and enhancement of a population of trees. Usually achieved by recognizing trees as a dynamic natural resource and, through professional arboricultural personnel and a multidisciplinary approach, gaining an ongoing understanding of diverse aspects of the population: age class; maintenance, removal/replacement cycles and costs; additional new planting opportunities and costs; sustainability; safety constraints; community concerns; budgetary constraints; ecological, *amenity* and utility values; suitability and appropriateness of tree maintenance, removal and replacement or retention. See also *Tree Preservation*, *Appropriate Tree Management* and *Inappropriate Tree Management*.

Appropriate Tree Management The management of trees as a resource based on sound professional judgement and a competent understanding of what tree to plant where and when, or when to remove or retain a tree. Examples: 1. The planting or retention of a tree in a position that causes minimal or no conflict with people or property or disturbance of the built environment, or services or infrastructure, due to such a decision having been founded upon a competent knowledge of the characteristics of the trees growth pattern and ultimate dimensions above and below ground at maturity, and the suitability of the space available into which it will develop. 2.The removal of a tree that will grow to be in conflict with the constraints of its growing *environment* either above or below ground at its ultimate dimensions at maturity, and especially where replanting could be undertaken with an advanced specimen of a species of more suitable growth characteristics and mature dimensions. 3. The removal of a vigorous tree in a *poor* condition, in a prominent position where its potential failure in full or part poses a risk of hazard to the safety of people, or damage to property. See also *Inappropriate Tree Management* and *Tree Management.*

Inappropriate Tree Management The planting or retention of a tree where it is known that the tree will outgrow the space available for its growth above or below ground before or at maturity, and is likely to cause disruption or damage to built structures, or retention of a tree when it is known to be potentially hazardous to people or property. See also *Appropriate Tree Management*, *Tree Preservation* and *Tree Management*.

Mud / Mudguts Of termites, soil and excrement from digested wood.

Blowholes A slightly raised area of *wound wood* tissue that forms after a longitudinal slit is cut along the trunk from the inner termite nest to allow the alates (winged reproductives) to leave to form a new colony. After the departure of the alates the holes are sealed by workers assisting the growth of *callus wood* and then *wound wood* until *occlusion* occurs, leaving a small narrow scar characteristically 80-100x<5mm indicative of the termite nest within the tree.

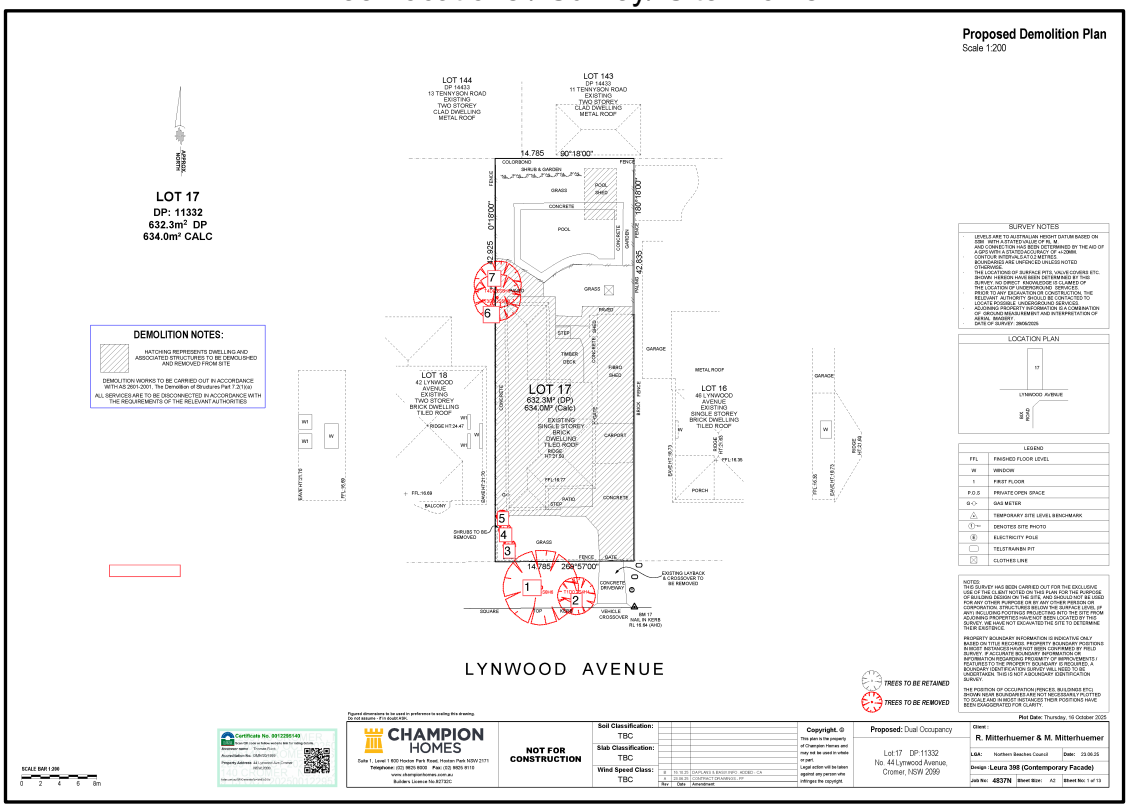
Termite Leads Tunnels of *mud* on the stem and between bark created by termites that may be active or inactive.

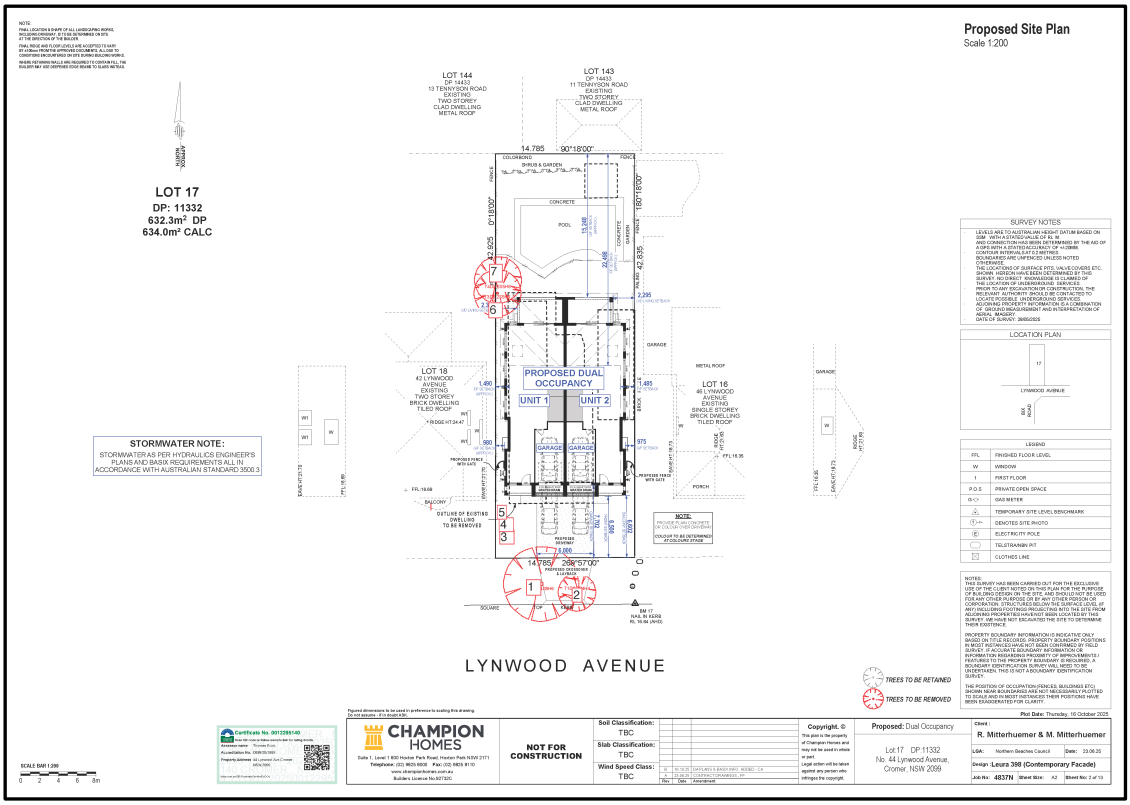
Insect Wound Wounding to any part of a tree caused by insect activity, e.g. borers and termites

Hollow A large void initiated by a *wound* forming a *cavity* in the trunk, branches or roots and usually increased over time by *decay* or other contributing factors, e.g. fire, or fauna such as birds or insects e.g. ants or termites. A hollow can be categorized as an *Ascending Hollow* or a *Descending Hollow*

Appendix C

Tree Locations / Survey/ Site Works





Appendix D

Tree Protection Plan

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PLAN REMOVED AS TREES/SHRUBS ASSESSED PROPOSED FOR REMOVAL AND REPLACEMENT

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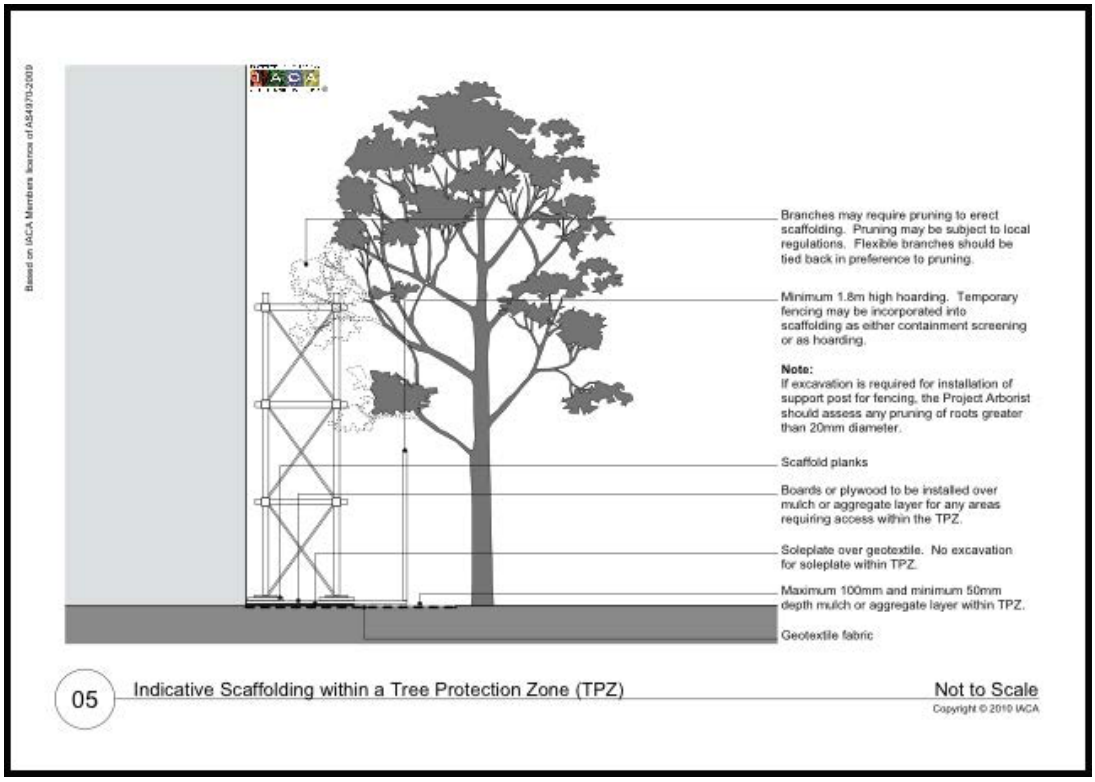
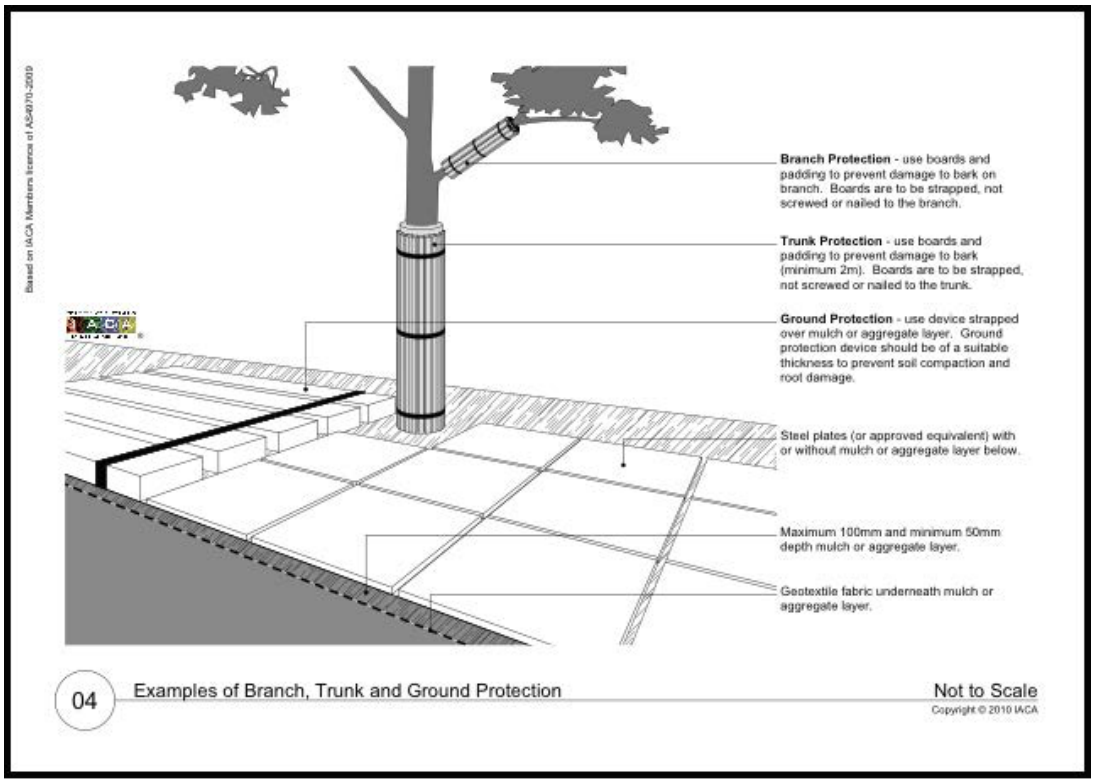
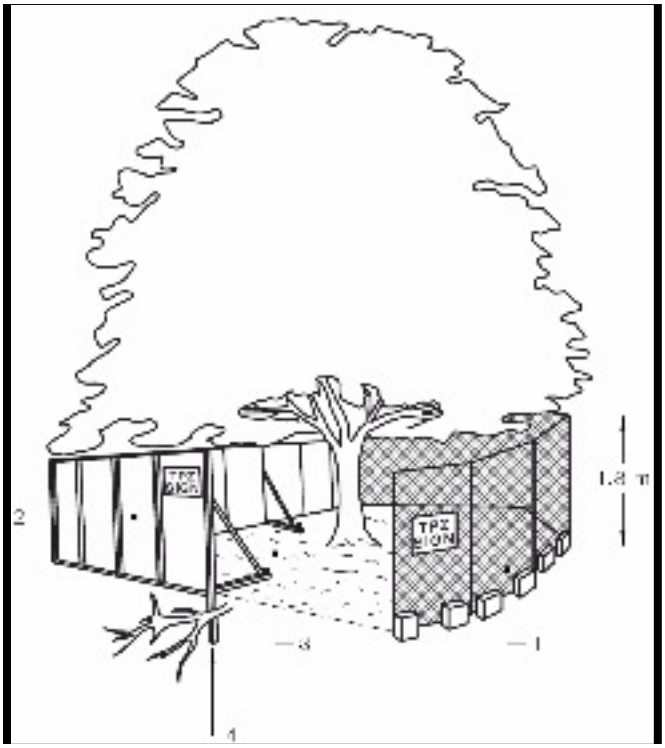


Drawing #2 - Branch, Trunk and Ground Protection



Drawing #3 - Example of TPZ Fencing



Drawing #4 - Example of TPZ Signage

Appendix E

Extract from Australian Standard AS4970 2009 Protection of trees on development sites

Section 3, Determining the tree protection zones of the selected trees

3.1 Tree protection zone (TPZ)

"The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The TPZ incorporates the structural root zone (SRZ) (refer to Clause 3.3.5)."

3.2 Determining the TPZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

TPZ = DBH x 12

where

DBH = trunk diameter measured at 1.4 m above ground

Radius is measured from the centre of the stem at ground level.

Appendix F

Extract from Australian Standard AS4970 2009 Protection of trees on development sites

Section 3, Determining the protection zones of the selected trees

3.3.5 Structural root zone (SRZ)

"The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. Root investigation may provide more information on the extent of these roots."

Determining the SRZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

SRZ radius expressed by the curve is calculated by the following formula,

$$R_{SRZ} = (D \times 50)^{0.42} \times 0.64$$

where

D = trunk diameter, in metres measured immediately above the root buttress.

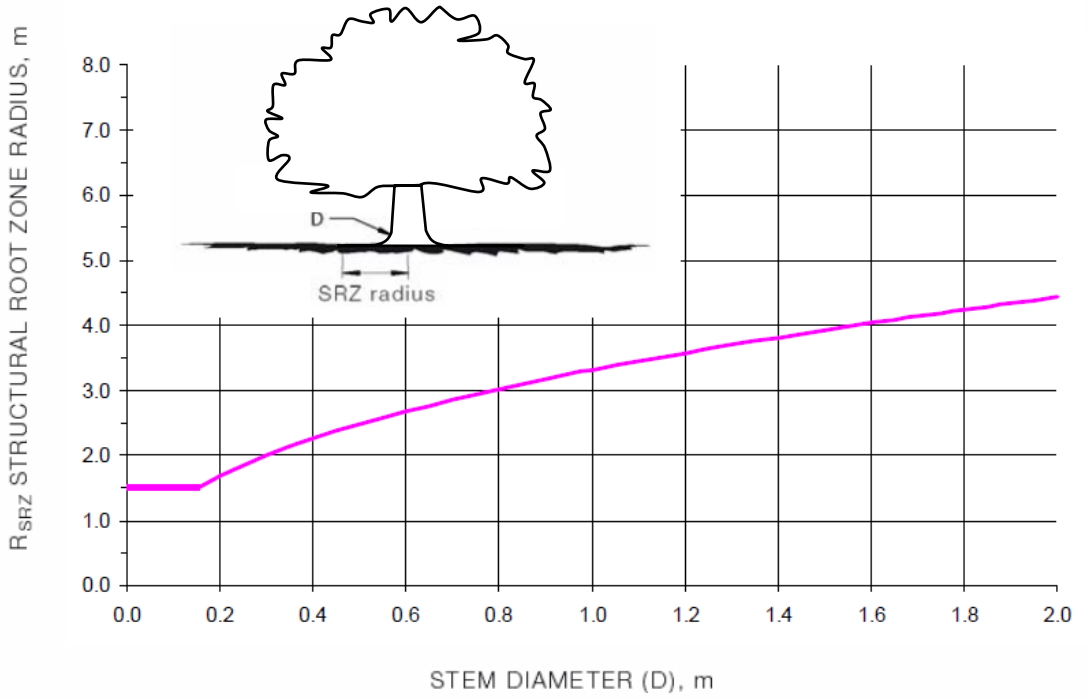


FIGURE 1 STRUCTURAL ROOT ZONE CALCULATION

(AS 4970 – 2009, Amendment No. 1 March 2010)

NOTES:

1 R_{SRZ} is the calculated structural root zone radius (SRZ radius).

2 D is the stem diameter measured immediately above root buttress.

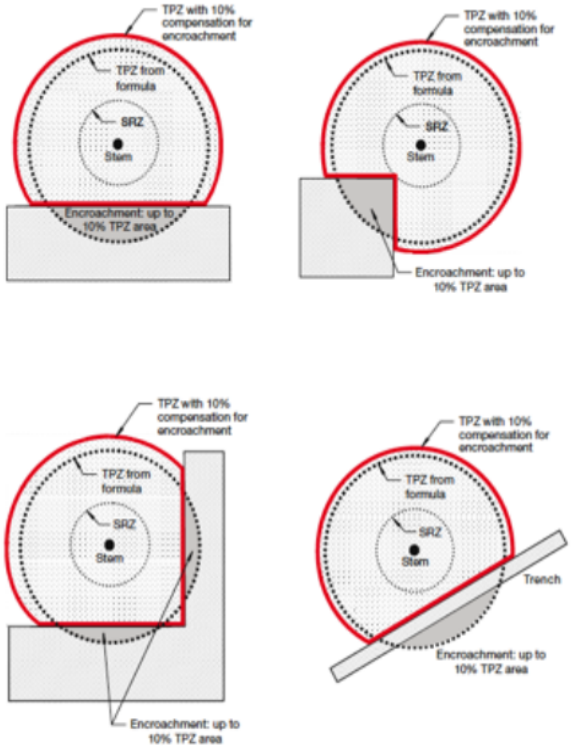
3 The R_{SRZ} for trees less than 0.15 m diameter is 1.5 m.

4 The R_{SRZ} formula and graph do not apply to palms, other monocots, cycads and tree ferns.

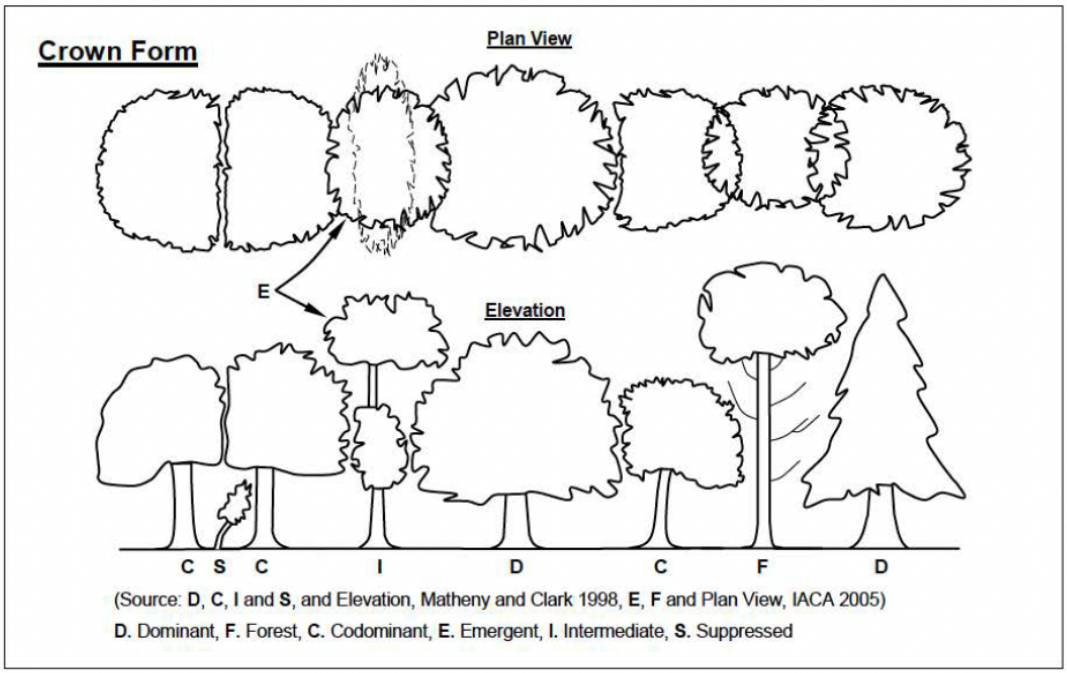
5 This does not apply to trees with an asymmetrical root plate.

Appendix G

Extract from Australian Standard AS4970 2009 Protection of trees on development sites Encroachment into TPZ (Tree Protection Zone)



Appendix H
Crown Form



(Source: **D**, **C**, **I** and **S**, and Elevation, Matheny and Clark 1998, **E**, **F** and Plan View, IACA 2005)
D. Dominant, **F.** Forest, **C.** Codominant, **E.** Emergent, **I.** Intermediate, **S.** Suppressed

Symmetry Balance within a crown, or root plate, above or below the axis of the trunk of branch and foliage, and root distribution respectively and can be
categorized as Asymmetrical and Symmetrical.

Asymmetrical Imbalance within a crown, where there is an uneven distribution of branches and the foliage crown or root plate around the vertical axis of the trunk. This may be due to Crown Form Codominant or Crown From Suppressed as a result of natural restrictions e.g. from buildings, or from competition for space and light with other trees, or from exposure to wind, or artificially caused by pruning for clearance of roads, buildings or power lines. An example of an expression of this may be, crown asymmetrical, bias to west.

Symmetrical Balance within a crown, where there is an even distribution of branches and the foliage crown around the vertical axis of the trunk. This usually applies to trees of Crown Form Dominant or Crown Form Forest. An example of an expression of this may be crown symmetrical.

Appendix I
References

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