Catherine McAuley Catholic College

ARBORICULTURE IMPACT ASSESSMENT

Aaron Bath
ASSURANCE TREES | 80 HORNS CROSSING ROAD, VACY, 2421

16 DECEMBER 2024

Contents

1. Executive Summary

1.1. The subject tree is a Smooth Bark Apple (Angophora costata) that is considered a Moderate Retention Value tree. It is an endemic species to the site.

1.2. The condition of the tree is fair with significant epicormic growth indicating stress.

1.3. The proposed overhead covered roof will be located approximately 1.8m from the tree centreline and would require an estimated 40% reduction in canopy volume to facilitate the design. This amount of pruning, with respect to the current state of the tree is not compatible.

1.4. I recommend that the tree be removed prior to the construction of the overhead structure and a tree of the same species be planted elsewhere on the site.

1.5. See *Tree Plan* in *Appendix B* for scaled visual representation of the tree in relation to the structure.

2. Overview

2.1. **Consultant Details**

Company: Assurance Trees Pty Ltd

ABN: 87 158 399 350

Consulting Arborist: Aaron Bath

Mobile: (+61) 434523566

Email: aaron@assurancetrees.com.au

2.2. **Client Details**

Client: Catholic Schools Office - Diocese of Maitland-Newcastle

Client Representative: Principal Project Management

Client Contact: Callan Denny

2.3. **Site Details**

Site Name: Catherine McAuley Catholic College

Site Address: 507 Medowie Road, Medowie, NSW

Deposited Plan: Lot 4123, DP1292242

Map of Site: *Appendix B*

2.4. **Scope of Report**

Assurance Trees have been engaged by the client to investigate the impacts of the proposed COLA structure on tree #36 at the above site address. We have been engaged to produce an Arboricultural Impact Assessment (AIA) to the standard required by local government legislation (Port Stephens Council) for lodgement with a modification package. The AIA includes:

- Tree data and calculations of Tree Protection Zones (TPZ) and Structural Root Zones (SRZ).
- Assess condition and Safe Useful Life Expectancy (SULE).
- Plot tree, scale and assess impacts of the proposed structure on the future health and amenity of the tree.
- Determine if the tree can be retained with tree protection measures or if it should be removed.
- Make recommendations after assessing all relevant factors and construction requirements.

3. Documentation and Legislation

3.1. Client Provided Documents

The client representative has provided the following documentation that has been used in the preparation of this report:

- *COLA Site Plan* by *Webber (Rev H)*
- *Arboricultural Impact Assessment by Joseph Pidutti (05/12/2017)*
- *Tree Assessment by Joseph Pidutti (13/02/2024)*

3.2. Applicable Legislation

- *Port Stephens Local Environmental Plan 2013 (LEP)*
- *Port Stephens Development Control Plan 2014 (DCP)*
  - *B1 Tree Management*
  - *Tree Technical Specification*

4. Methodology

4.1. Site Inspection

4.1.1. Site inspection was completed on 12th of December 2024 by Aaron Bath.

4.1.2. The subject tree (as defined by Port Stephens Council) onsite has been recorded. Relevant data has been captured for the tree such as species, height, Diameter at Breast Height (DBH), stem diameter at ground level, canopy spread, condition, landscape significance, sustainability, retention value, images, and any relevant comments.

4.1.3. Tree location will be plotted onto client supplied survey.

4.1.4. As the tree was fenced off, no tree tag was placed on the tree. The existing tree number of 36 has been adopted for this report.

4.1.5. DBH and stem diameter have been estimated with reference to a diameter tape. Heights and canopy spread have also been estimated and referenced with a clinometer and laser distance device.

4.1.6. Critical distances have been measured onsite with a tape measure or laser measure.

4.1.7. Visual inspection only conducted on all trees. No aerial inspections have been conducted.

5. Tree Assessment

5.1. **Tree**

5.1.1. Tree species is an *Angophora costata* (Smooth Bark Apple) which is endemic to the site.

5.1.2. The tree is in fair condition and has significant canopy dieback likely as a result from previous construction impacts. As a result, it is susceptible to secondary issues.

5.1.3. The tree has a wide spreading symmetrical canopy of 9m radius with a height of 14m.

5.1.4. The tree has a High Landscape value and a 5 – 15-year safe useful life expectancy based on current conditions.

5.1.5. The overhead COLA structure will come within 1.8m of the centre line of the tree.

5.1.6. For all tree data see *Appendix A*.

5.2. **Soil Conditions**

5.2.1. The COLA structure will not have any impact of the tree roots in the TPZ of the SRZ.

5.3. **Ecology, Hollows and Koala**

5.3.1. A Hollow Tree Assessment has been completed by during the site inspection and no hollows have been noticed by our arborist during our VTA.

5.4. **Heritage Links**

5.4.1. The tree is not listed as a heritage item in the State Heritage Register. Here is the link used for the search: https://www.hms.heritage.nsw.gov.au/App/Item/SearchHeritageItems

5.5. **Significant Trees**

5.5.1. The subject tree is not listed as a significant tree in Port Stephens LEP. Here is the link to the Register Online: http://www.portstephens.nsw.gov.au/trim/other?RecordNumber=PSC2015-03576%2F043

6. Recommendation

6.1. With the proposed modification to the COLA overhead roof location around the existing basketball courts, the tree would need to be pruned by approximately 40% to maintain clearance from the structure. The current condition of the tree (stressed) will likely result in the death of the tree in the short term. If the tree could survive the major pruning works, its form and amenity would be reduced significantly reduced. The pruning would increase the risk of secondary issues that would increase the likelihood of failures and the overall risk level.

6.2. With the proposed COLA structure coming to within 1.8m of the centreline of the tree, I recommend that the tree be removed to allow for adequate clearance to be obtained.

References

Bond, J., 2012. *Urban Tree Health.* s.l.:Urban Forest Analytics LLC.

Julian Dunster, T. S. N. M. S. L., 2013. *Tree Risk Assessment Manual.* Champaign, Illinois: International Society of Arboriculture.

Keane, P. J., Kile, G. A., Podger, F. D. & Brown, B. N., 2000. *Diseases and Pathogens of*

Standards Australia, 2009. *AS 4970 Protection of Trees on Development Sites,* Sydney: Standards Australia.

Trowbridge, P. & Bassuk, N., 2004. *Trees in the Urban Landscape.* Hoboken: John Wiley & Sons.

Watson, G. & Neely, D., 1995. *Trees and Building Sites.* Champaign: International Society of Arboriculture.

Port Stephens Local Environmental Plan 2013 (LEP)

Port Stephens Development Control Plan 2014 (DCP)

State Environmental Planning Policy 2017

Biodiversity Conservation Act 2016

Appendix A - Tree Data

Table 1 - Tree Data

Tree ID	Species	Common Name	Height m	Spread m	DBH mm	DRC mm	SRZ radius m	TPZ radius m	Condition	Landscape Significance	Sustainability	Retention Value	Result	Comments
36	*Angophora costata*	Smooth Bark Apple	14	18	850	850	3.1	10.2	Fair	High	5 – 15 years	Moderate	Remove	COLA structure would require significant pruning and continual management. The ability for the tree to adapt to the required pruning is doubtful given its current condition.

Appendix B – Maps

Figure 1 – Site Location (Six Maps 2024)

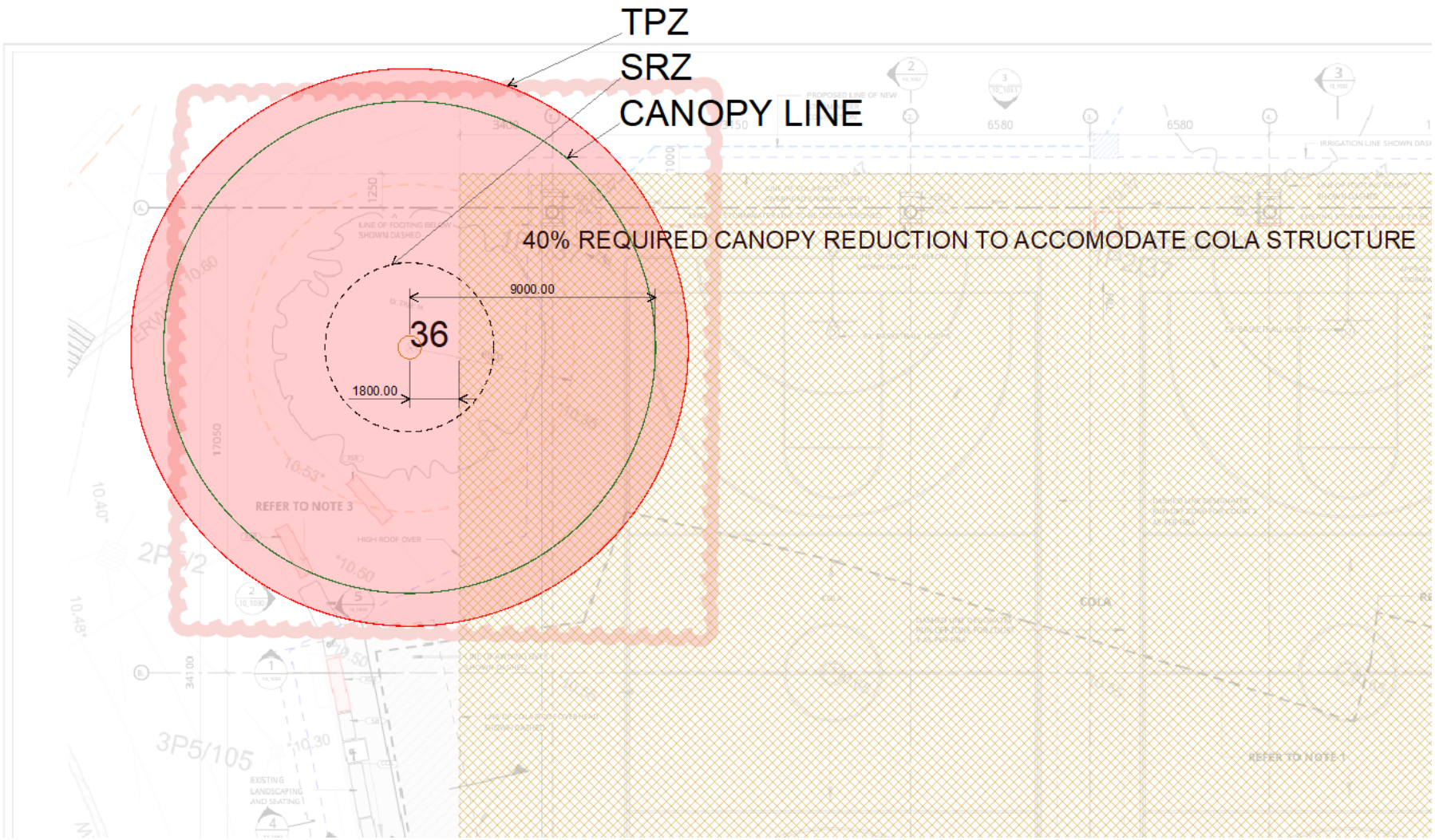

Figure 2 - Tree Plan

Appendix C – Site Images

Figure 3 - Context of the tree

Figure 4 - Canopy condition

Appendix D – Determining Tree Retention Values

The following steps are a standardised approach for assessing the retention values of trees. This approach is based on the *British Standard BS5837-2012: Trees in Relation to Design, Demolition and Construction*.

Step 1 – Assess tree sustainability

- Greater than 40 years
- From 15 to 40 years
- From 5 to 15 years
- Less than 5 years
- Dead or hazardous

IMPORTANT: Sustainability must only be assessed by a person with a minimum qualification of AQF 5 in Horticulture (Arboriculture).

Step 2 – Determine landscape significance rating

The level of landscape significance is determined using the following key criteria as a guide:

1. SIGNIFICANT
The tree is listed as a Heritage Item under the LEP with a local, state or national level of significance; or
The tree forms part of the curtilage of a heritage item (building /structure/artefact as defined in the LEP, and has a known or documented association with that item; or
Aboriginal cultural artefact, evidence by identifiable markings or other documentary evidence; or
The tree is a commemorative planting relating to an important historical event; or
The tree is scheduled as a Threatened Species, or is a key indicator species of an Endangered Ecological Community as defined under the *Threatened Species Conservation Act 1995 (NSW)* or the *Environmental Protection and Biodiversity Conservation Act 1999*; or
The tree is an endemic species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species; or
A remnant tree in existence prior to development of the local area; or
The tree has a very large live crown size* greater than 200m² with normal to dense foliage cover, is visually prominent in the landscape, exhibits good form and habit typical of the species and makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity; or
The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.
2. VERY HIGH
The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular style or era of landscape design associated with the original development of the site; or

The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a key wildlife corridor or has known wildlife habitat value; or is uncommon in cultivation; and
Visible from surrounding properties, the street or other thoroughfares (including waterways); and
The tree has a very large live crown size* exceeding 200m²; a crown density exceeding 70% Crown Cover (normal-dense), good form and branching habit, good representative of the species or is aesthetically distinctive and makes a positive contribution to the visual character and amenity of the area.
3. HIGH
The tree has a suspected historical association with a heritage item or landscape supported by anecdotal evidence or based on knowledge of similar sites, tree age, etc; or
The tree is a locally-indigenous species and representative of the original vegetation of the area; and
The tree is beneficial for native wildlife; or
The tree has a large live crown size* exceeding 100m²; and
The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% Crown Cover (normal); and
The subject tree is visible from surrounding properties and makes a fair/neutral contribution to the amenity of the property/visual character of the area.
4. MODERATE
The tree has a medium live crown size* exceeding 40m²; and
The tree is a fair representative of the species, exhibiting fair form and habit, moderate distortion or suppression with a crown density of more than 50% Crown Cover (thinning to normal); and
The tree makes a fair contribution to the visual character and amenity of the area; and
The tree is visible from surrounding properties. Not visually prominent – view may be partially obscured by other vegetation or built forms, or
The tree has no known or suspected historical value or association.
5. LOW
The tree has a small live crown size* of less than 40m² and can be replaced within the short term with new tree planting; or
The tree is a poor representative of the species, poor form and habit with significant distortion or canopy suppression, with a crown density of less than 50% Crown Cover (sparse); and
The tree is not visible from surrounding properties (obscured by other trees or built forms) and makes a negligible contribution to the amenity of the property/surrounding properties, or
detracts from the visual character of the area.
6. VERY LOW
The tree is listed as an undesirable species as listed by Council; and
The tree has no heritage importance or value, no known or suspected historical association.
7. INSIGNIFICANT
The tree is a declared noxious weed under the *Noxious Weeds Act (NSW) 1993* or is an undesirable species by the local Council.

Step 3 – Weigh sustainability and landscape significance

Weigh the sustainability and landscape significance to arrive at a retention value. These two independently assessed elements have a relationship with one another. The health, condition and longevity of a tree increases or diminishes depending on its level of intactness, quality, and potential longevity.

Once there is a measure of a tree's sustainability and landscape significance, these two factors can be weighed up using the Tree Retention Value Table which categorises the tree according to its suitability or desirability for retention.

	Landscape Significance Reading						
Tree Sustainability	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Greater than 40 years	**High Retention Value**						
15 to 40 years			**Moderate**				
5 to 15 years				**Low**			
Less than 5 years					**Very Low Retention Value**		
Dead or hazardous							

Modified by A. Morton from: Couston, Mark and Howden, Melanie (2001) Tree Retention Values Table Footprint Green Pty Ltd, Sydney Australia.

Appendix E - Calculating TPZ and SRZ Values

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).

Determining the TPZ

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

$$TPZ = DBH \times 12$$

Where DBH = trunk diameter measured at 1.4 m above ground

Radius is measured from the centre of the stem at ground level.
A TPZ should not be less than 2 m nor greater than 15 m (except where crown protection is required).
The TPZ of palms, other monocots, cycads and tree ferns should not be less than 1 m outside the crown projection.

Variations to the TPZ

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

Minor Encroachments

If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. Variations must be made by the project arborist considering relevant factors.

Major Encroachments

If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable.
The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors.

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 major encroachment into a TPZ is proposed. There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula. Root investigation may provide more information on the extent of these roots.

SRZ radius = (D × 50)0.42 × 0.64

Where D = trunk diameter, in m, measured above the root buttress

NOTE: The SRZ for trees with trunk diameters less than 0.15 m will be 1.5 m

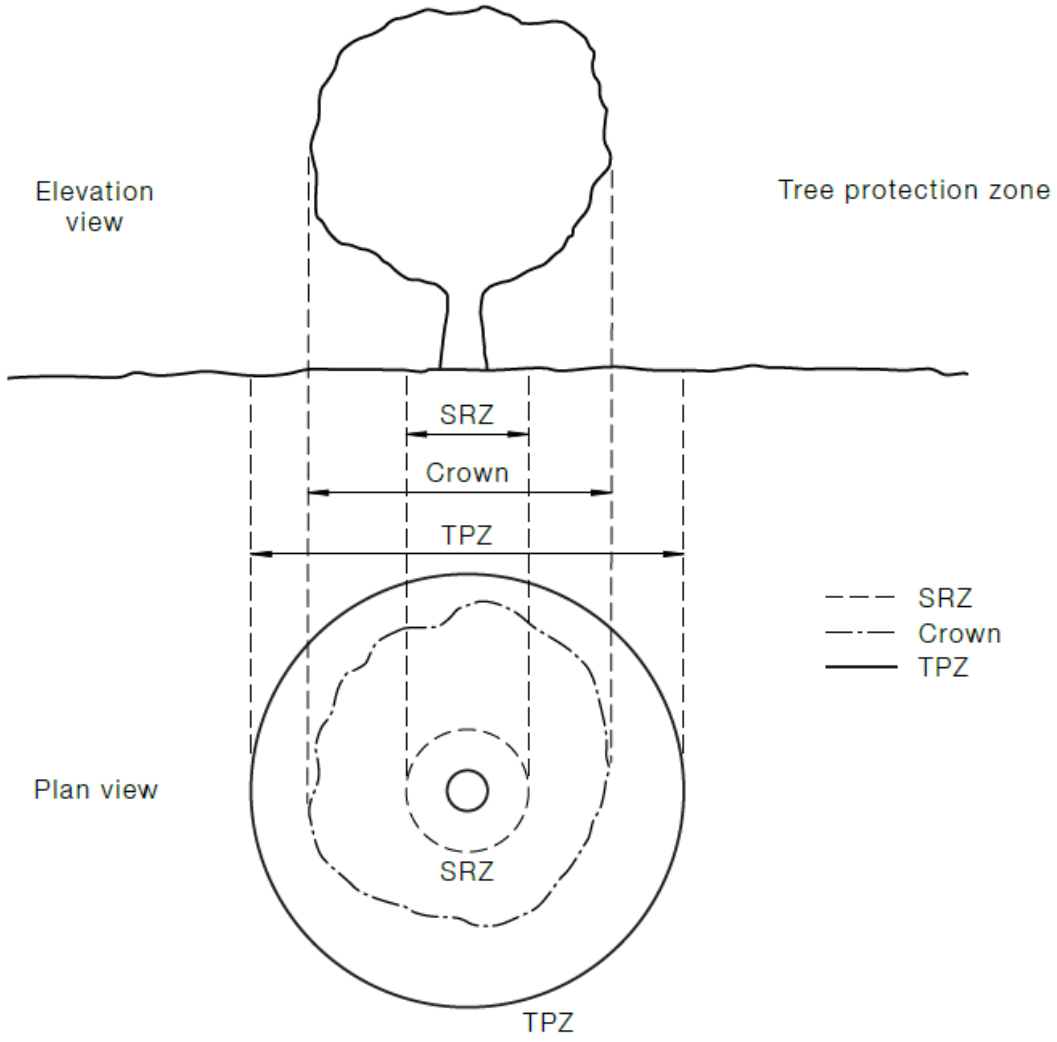

Figure 5 - TPZ and SRZ Diagram

Appendix F – Contractor Guidelines/Standards

Below is the recommended guidelines and standards for a Tree Service Provider that is engaged to conduct arboricultural works on a site, including tree removal, pruning, grinding and all other services relating to trees:

Supervisor Qualifications and Experience - All tree work must be supervised by a company/individual holding a minimum qualification level of AQF3 in Arboriculture. All work conducted on the site must be supervised by an individual holding this qualification, as a minimum, and they must remain onsite for the entire duration of the works.

Worker Qualifications – All tree pruning, and tree removal onsite must be conducted by workers holding a minimum qualification level of AQF2 in Arboriculture and supervised by the above supervisor. All workers feeding chippers, conducting stump grinding and operating machinery must be clearly competent to perform the task and supervised by the above supervisor.

SEQ Management System – The contractor must have a documented Safety Management Plan, Environmental Management Plan and it is recommended that they also have a Quality Management Plan.

Insurances – The contractor engaged should have public liability cover for a minimum value of $20 million and hold the appropriate workers compensation policy for any employees working on site, with WIC code 952520. Any company providing consulting services such as a project arborist, must have a Professional Indemnity Policy for over $2 million.

Minimum Industry Standards – The minimum Industry Standards published by Arboriculture Australia must be the minimum standards of the contractor in the way works are performed onsite and the safety procedures followed. The contractor must be able to demonstrate that they have access to these standards. These standards can be purchased at https://trees.org.au/education/minimum-industry-standards

Australian Standards – All pruning is to be in accordance with AS4373 *Pruning of Amenity Trees.*

Environmental Standards - Mulch from all native tree removal should be retained onsite for use within the school grounds if possible. If not possible, the mulch should be taken to an approved recycling facility to be solarised. This is a requirement under the *Mulch Order 2016* enforced by the EPA.

Appendix G – Limitations and Disclaimer

1. The conclusions and recommendations contained in this report, relate only to the trees that have been inspected, at the time of inspection.
2. The details of this report are specific to the site/tree(s) assessed and may not constitute general advice to be used in other applications.
3. This report and any attachments should be read in its entirety, and no individual part of the report or its attachments should be interpreted without reference to the entire report.
4. The consultant shall not be required to give testimony or attend court for matters pertaining to this report unless a separate contract is arranged to provide expert witness services or the like with a fee payable for these services.
5. Care has been taken when referencing supporting documents or the opinions of others in this report, however no responsibility can be taken for the accuracy or correctness of the information provided by others.
6. It is assumed that all legal information provided by the client pertaining to the ownership of property is correct. The consultant takes no responsibility for any legal matters.
7. This report and any values expressed herein represent the opinion of the consultant and the consultant's fee is not contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
8. Following significant weather events, the condition of a tree onsite may change.
9. Maps, images, and graphics are not necessarily to scale.

Appendix H – Glossary of Terms

Abatement - Reduction in hazard, either by remedial tree works and/or removal of target(s).

Abnormal Lean - Abnormal departure of trunk from the vertical or near vertical position.

Amenity Value - The environmental and landscape benefits of a tree as opposed to its commercial value for timber. Many of these benefits are intangible or difficult to measure.

Arboriculture - The care, cultivation and management of individual trees or groups of trees in the landscape primarily for their amenity value.

Arborist - A specialist in the cultivation and care of trees and shrubs, including tree surgery, tree identification, the diagnosis, treatment, and prevention of tree diseases, and the control of pests.

Basal Flare - The rapid increase in diameter that occurs at the confluence of the trunk and roots, associated with stem and root tissue.

Bifurcation - To divide or fork into two parts, usually equal in size and occurring at a narrow angle.

Bleeding/Sap flow - The exudation of sap/resin from wounds and/or other injuries, may be accompanied by a foul odour.

Bole - The central stem of the tree. Another meaning for trunk.

Bow - The gradual curve of a branch or stem.

Bracket Fungi/Fungal Fruiting Body - Fruiting of spore producing body of wood decay fungi, forming on the external surface of the stem or trunk.

Branch Attachment - The structural linkage of branch to stem.

Branch Collar Wood - which forms around branch attachments, frequently more pronounced below the branch.

Brash Wood Type - of reaction wood which is weaker than normal due to thin cell walls and decreased fibre content; presence increases the likelihood of failure.

Burl - More correctly identified as a Lignotuber (a mass of dormant, tightly arranged buds). It is a generally circular swelling on the main stem or branch; not considered a defect.

Buttress Support - of branch, stem or root; usually associated with exaggerated growth.

Buttress Root - A large woody root located at the base of the trunk (the root crown) which is important to the overall stability of the tree due to its contributions to basal flare.

Buttress Wood - Wood under tension, in a structurally critical portion of a trunk or branch.

Callus - Can be detected within weeks after cells on the edge of a wound die and is produced by the enlargement or increased division of cells adjacent to the edge of cell dieback. Often associated with wound wood development post pruning.

Cambium - A layer of delicate meristematic cells between the inner bark or phloem and the wood or xylem, which produces new phloem on the outside and new xylem on the inside in stems, roots,etc., originating all secondary growth in plants and forming the annual rings of wood.

Canker - A localised area of dead tissue on a stem or branch, caused by fungal or bacterial organisms, characterised by wound wood development on the periphery; may be perennial or annual.

Canopy - Parts of the tree above the trunk, including leaves, and lateral and scaffold branches.

Cavity - An open wound, often characterised by the presence of decay and resulting in a hollow.

CODIT - An acronym for Compartmentalisation of Decay in Trees, this scientific theory was developed by the late Dr. Alex Shigo which now forms the basis of our knowledge of how trees respond to wounding, infection and decay.

Co-dominant Stems - Equal in size and relative importance, usually associated with either the trunks/stems or scaffold limbs/branches in the crown. Not necessarily a structural defect.

Compartmentalisation - Physiological process which creates the chemical and mechanical boundaries that act to limit the spread of disease and decay organisms within trees (see also CODIT).

Compression Wood - Type of reaction wood produced on the underside of branches and leaning trunks.

Coppice - To cut a tree to ground level to stimulate regenerative growth.

Core Drill - A technique involving creating a series of vertical cores within a tree's root zone which can be filled with a variety of materials to stimulate root initiation and growth. Often used on ageing and/or stressed trees.

Crack - Breakage in the stem, involving bark, cambium, and xylem.

Crown - Parts of the tree above the trunk, including leaves, and lateral and scaffold branches (see also Canopy).

Crown Uplift - Pruning technique where lower limbs are removed, thereby raising the overall crown above the ground.

DBH - Diameter of the trunk, measured at breast height i.e. 1.4m from ground level.

Deadwood - Branch or stem wood bearing no live tissues. (Small deadwood <2cm, medium deadwood 2-10cm, large deadwood >10cm).

Deadwooding - The act of removing deadwood from the canopy.

Decay - Process of degradation of woody tissues by fungi and bacteria through decomposition of cellulose and lignin.

Decorticate - To remove bark, rind, or husk.

Decurrent - Referring to crowns which are made up of a system of co-dominant scaffold branches, lacking a central leader.

Defect - Any structural weakness or deformity.

Dehisce - (of a pod or seed vessel, or a cut or wound) Gape or burst open.

Dieback - Death of shoots and branches, generally from tip to base.

Disease/Pathogens - A malfunction in, or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms.

Dominant - In crown class, trees whose crowns extend above the general stand canopy and are not restricted by adjacent trees.

DRC (Diameter at Root Crown) - The diameter of the very lowest part of the trunk where root buttressing begins and often used to calculate a tree's structural root zone (SRZ).

End Weight - The concentration of excessive foliage toward the branch extremity.

Epicormic Growth - Shoots which result from adventitious or latent buds, generally initiated in times of distress, and are generally poorly attached.

EWP - Elevated Work Platform.

Excessive Thinning - Having relatively little extent from one side of the canopy to the opposite. In relation to pruning; excessive pruning of lateral branches at their point of origin, usually associated with removal of large amounts of live tissue.

Exclude Site Use - Implement control measures to prevent people from entering an area that has the capacity to cause harm or damage i.e. due to hazardous trees.

Fasciation - (or Cresting) Abnormal twig proliferation.

Flush Cut - Pruning technique where both branch and trunk tissue are removed behind the branch collar; considered poor practice.

Frass Bore Dust - Excrement and other debris left by wood boring insects.

Fungal Fruiting Body - (see Bracket Fungi)

Gall - In branches and stems, an abnormal, localised growth, generally seen as a large knob of undifferentiated woody tissues.

Girdling Root - A root or roots which circles and constricts the stem or roots causing death of phloem and/or cambial tissue.

Habitat Prune - (or King Prune) Reducing or removing the crown of a tree and retaining its trunk as a habitat for wildlife.

Hanger - A partially attached (but clearly broken) or unattached branch which remains lodged in the crown.

Hazard - A hazard is an action or item that has the capacity to cause harm or damage, which may be serious.

Hydrophobic - Used to describe a soil profile that is difficult to rehydrate as water either pools on it or runs off it. Generally associated with very dry, nutrient-poor soils.

Ilex - A tree or shrub of a genus that includes holly and its relatives.

Inappropriate Location - The tree's present growing environment is not suitable due to its surroundings, such as buildings, car parks etc. in relation to the inherent characteristics of the tree species.

Included Bark - Pattern of development at branch junctions where bark is turned inward rather than pushed out; contrasting with branch bark ridge. Also referred to as Embedded bark. Such a formation generally results in weakened attachment.

Infection - The establishment of parasitic micro-organism in the tissues of a tree.

Irrigation - The watering of land by artificial means to foster plant growth.

Kino - The resin which flows from Eucalypts and its relatives such as Corymbia sp. and

Angophora sp.

Leader - The primary terminal shoot or trunk of a tree.

Lean/Leaning - Departure of trunk from the vertical or near vertical position.

Lerp - A type of Psyllid that commonly predates on many species of Eucalypts and its relatives.

Loading - Refers to the mechanical stresses imposed by the weight, orientation etc. of trees and branches in relation to the site, the architecture of the tree and the weather. The amount of loading upon a tree can be directly influenced by its level of exposure to the prevailing winds.

Lopping - The removal of the crown of a tree, or a major proportion of it. Incorrect pruning method of removing branches to stubs, resulting in poor form and weak branch unions.

Mycorrhiza - A mutual association between certain fungi and the roots of vascular plants often resulting in an increased efficiency in the absorption of mineral nutrients.

Mulch - Material laid down over the rooting area to help conserve soil moisture, supress weeds and regulate soil temperature.

Nutrition - The elements and compounds required to support healthy plant growth, of which at least 17 are known.

Parasitic and semi parasitic plants - Vascular plants such as Mistletoes which infect host plants via the penetration of specialised roots called haustorium to gain access to the host's vascular system for water and mineral nutrients.

Pathogen - (See Disease/Pathogens).

Pests/Pest Insects - Pests such as Wood Borers, Termites, Leaf Beetles, Gumleaf Skeletoniser, Leafblister Sawfly, Lerps or Elm Leaf Beetle that cause tree decline. There are various methods of treatment to remove pests as well as prevent their return.

Phellinus sp. - A genus of bracket forming, wood decaying fungi which occurs in native and exotic species. Whilst the decay associated with this fungus is often localised it has a reputation for being quite destructive.

Phytotoxic - A substance which is toxic to plants.

Phloem - The part of a vascular bundle consisting of sieve tubes, companion cells, parenchyma, and fibres and forming the food-conducting tissue of a plant.

PICUS Sonic Tomograph - A specialised piece of diagnostic equipment generally used to determine the level of internal decay within a branch or trunk using sound waves.

Pollard - The removal of the tree canopy, back to the stem or primary branches. Pollarding may involve the removal of the entire canopy in one year, or may be phased over several years.

Poor Pruning - Pruning techniques (such as lopping) which are undertaken without regard for the tree's natural biology and which can cause decline, decay and potentially lead to part or whole tree failure.

Potenz Hydrogenous (pH) - The measure of soluble Hydrogen ions in a solution which is used to measure its acidity or alkalinity. Affects nutrient availability to plants.

Previous Failures - Denotes a tree has previously had a leader or branches fail. Previous failures can result in wounding if a required action is not attended to (see Wound).

Propagate/Propagation - To reproduce a plant, sexually by means of seed or asexually by cuttings, grafting or divisions, so that it is genetically identical to the parent (true to type).

Pruning - The removal or cutting back of twigs or branches.

Psyllid - A common and diverse group of sap-sucking insects related to whiteflies, aphids, and scales. They are regularly associated with native plants and most species appear to be host specific or confined to a group of closely related plants. Sustained infestations can lead to tree decline if untreated.

Reactive Growth/Reaction Wood - Production of woody tissue in response to altered mechanical loading, often in response to internal defect or decay and loss of strength.

Risk - The likelihood that a hazard will cause harm within a variable period of lime.

Root Collar/Root Crown - The transitional area between the stem/sand roots.

Saprophyte - An organism which obtains its nutrition from dead or decaying organic matter. This term is often associated with fungi and with some groups of vascular plants such as Orchids.

Scaffold Limb - Primary structural branch of the crown.

Senescence - The stage of a tree's life cycle between maturity and death, whereby a tree will naturally decline over several years.

Softfall - An impact absorbing layer that is laid beneath a finished surface

Soil Compaction - Area of compacted soil covering the root system. Affected soil becomes less able to absorb rainfall and water, thus increasing runoff and erosion. Trees have difficulty growing in compacted soil because soil particles are pressed together leaving little space for oxygen and water, which are essential for root growth.

Soil Problems - Soil problems such as compaction, salinity,erosion can cause tree decline and potentially lead to tree failure.

Split - Breakage in stem, affecting bark, cambium and xylem.

SRZ - Structural Root Zone.

Stress - In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, e.g. A lack of soil moisture, inadequate nutrition or extremes of temperature.

Structural Defect - Internal or external points of weakness which reduce the structural integrity of branches and/or stems or roots. Defects in roots may impact upon tree stability.

Structural Roots - Contribute significantly to the structural support, anchorage and stability of a tree, often found close to the base.

Sucker - A shoot which appears from an underground root.

Suppressed - In crown class, trees which have been heavily shaded by others from above or the side and whose crown development is wholly or partially restricted.

Symbiosis - A mutual association between two organisms whereby the presence of one is beneficial to the other.

Target - Persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.

Terminally Reduce - Cutting back/reducing branches from their extremity.

Thinning/Excessive Thinning - Having relatively little extent from one side of the canopy to the other. In relation to pruning; excessive pruning of lateral branches at their point of origin, usually associated with removal of large amounts of live tissue.

TLE - Tree Life Expectancy (see Useful Life Expectancy).

Topping - Synonymous with lopping it is the indiscriminate removal of the crown of a tree, or a major proportion of it. Incorrect pruning method of removing branches to stubs, resulting in poor form and weak branch unions.

TPZ - Tree Protection Zone.

ULE - Useful Life Expectancy refers to an expected period of years that a tree can be retained before its amenity values decline to a point where it may detract from the appearance of the landscape and/or becomes potentially hazardous to people and/or property.

Understorey - Vegetation beneath the main canopy.

VTA - An acronym for Visual Tree Assessment which is the process undertaken when systematically assessing trees for attributes such as their species, health, age, defects and pest or disease infestations.

Wall 4 - A chemical and anatomical barrier formed by the cambium present at the time of wounding, which inhibits the spread of decay into xylem tissue formed after the time

of wounding.

Weak Unions - A stem or branch union which is exhibiting signs of a potential structural weakness through its growth habit and/oras a result of pest and/or disease infestation.

Weed - A plant that is not valued where it is growing and is usually of vigorous growth; especially one that tends to overgrow or suppress desirable plants.

Whorl - The arrangement of foliage or flower parts around a stem whereby they radiate from a single point.

Windthrow - The blowing over of a tree at its roots.

Wound - Any injury which induces a compartmentalisation response.

Wound Wood - Develops from callus tissue or from uninjured vascular cambium at the margins of injuries/wounds that have damaged or exposed the phloem, vascular cambium, or sapwood.

Xylem - A compound tissue in vascular plants that helps provide support and that conducts water and nutrients upward from the roots, consisting of tracheids, vessels, parenchyma cells and woody fibres.

Appendix I – Qualifications and Experience

Between 2006 and 2012 Aaron completed a Carpentry apprenticeship, Certificate 3 in Joinery, Certificate 4 in Building and Construction and obtained a builder's licence in 2010 and started working as a contractor. Working full time in the construction industry on high end residential projects as a contracting site supervisor Aaron was managing teams up to 10 people onsite daily. In 2012 Aaron began training and going to TAFE to complete a Certificate 3 in Arboriculture after being exposed to the industry through Rope Access Work and recreational rock climbing. In 2012 Aaron established Assurance Trees Pty Ltd and continued to work across the Construction Industry and Arboricultural industry simultaneously. In 2016 Aaron completed a Diploma of Arboriculture allowing him to start to complete consulting arborist services to expand his growing company. Over the next few years Aaron continued to build Assurance Trees Pty Ltd and establish himself as a respected and knowledgeable arborist both practically and academically. Aaron led Assurance Trees Pty Ltd to obtain ISO triple certification for Quality (ISO9001), Environment (ISO14001) and Safety (AS4801) in 2018 and continues to improve and generate value.

Since 2016 Aaron has developed his consulting arborist skill set to become a leading provider in the industry throughout the Hunter Region. In combination with his practical experience and understanding of the construction industry Aaron has a reputation of providing excellent solutions for design and construction projects in the field of Arboriculture.

Qualifications:

- Diploma in Arboriculture (2016)
- ISA Tree Risk Assessment Qualification (2016)
- Certificate in Arboriculture (2014)
- NSW Builders Licence (2011) (Supervisor Cert #69092S)
- Certificate 4 in Building and Construction (2010)
- Certificate 3 in Joinery and Carpentry (2009)
- Many other certificates including Cert 3 in Chemical Application, Occupational First Aid, Powerlines Training, Rescue Training, Rail Corridor certificates, EWP tickets, Truck Licences and many other courses and training events.

Experience

- Consulting arborist – Arboriculture impact assessments, risk assessments, expert witness, project arborist, pruning specifications, planting specifications, health reports and many other specialised consulting jobs.
- Trade Arborist – 1000's of tree dismantles, crane work, pruning, shaping, large scale clearing, root investigations, cabling and bracing, injections, and treatments and many other specialised tree work operations.
- Building and Construction – Site supervisor, Carpentry and many other building skills and disciplines.

End of Report