



Quality
Endorsed
Company
Lic: 20608
ISO 9001 Lic20608
Standards Australia

Registered Practicing Arborists
Professional Member ISA & ArbAus
Quantified Tree Risk Assessment Licence # 1949
Tree Risk Assessment & Reports
Urban Tree Management
Tree Felling & Removal
Shaping & Pruning
Stump Removal

ABN: 88 146 901 313
P O Box 237
NOONAMAH NT 0837
Tel: (08) 89329199
Mobile: 0419 189 592
Fax: (08) 89329077
Fully Insured

VISUAL TREE INSPECTION

TREE RISK & HEALTH ASSESSMENT REPORT

1. INTRODUCTION

The following report was prepared by Bill Sullivan, Senior Arborist and Managing Director of *The Stump Man (NT) Pty Ltd* for the **Darwin Sailing Club**

On the 31st. October 2011, I carried out a detailed Visual Tree Assessment (VTA) and Risk Assessment on all trees at the above address. The purpose of this was to ascertain the health and structural integrity of the trees and any current risk factor.

Risk management is a well established concept in the management of public space but identifying and managing risk associated with trees is still a subjective process although the scientific understanding of trees and how they grow and fail has increased dramatically in recent times. Experienced and suitably qualified Arborists are now adopting a systematic and documented approach to rating hazardous trees and assessing the risk associated with those trees.

The Visual Tree Assessment also details the health of the subject trees. The current health of a tree and it's susceptibility to fungal and/or insect attack is also a factor in ascertaining any future risk that may be posed by the tree.

The following report addresses the Terms of Reference provided by the client.

- **assess the general health of the trees**
- **Tree Risk Assessment**
- **Provide a written report with recommendations.**

The report was prepared using the following methods as recommended by the International Society of Arboriculture (ISA)

- a. Visual Tree Assessment including;
 - position, location and ownership of each tree
 - genus, species and common name
 - height, age, clear stem height
 - crown spread
 - live crown ratio
- b. Current health status of each tree including;
 - fungal infections such as *ganaderma fungi*
 - termite infestations
 - trunk and/or branch decay

- root diseases and/or damage
- c. Growth characteristics and tree development including;
 - overall strength and structural stability
 - branch attachment
 - stem defects – cracks, hollows, deformities
 - degree of lean
 - canopy development
 - previous pruning history
 - root development
- d. Risk Assessment
 - site characteristics
 - identification of defects
 - defining the significance of individual defects
 - assesses the potential for failure of a defective part
 - evaluation of potential targets
 - develop a risk assessment rating
 - develop risk abatement options

2. ABSTRACT: The Tree as a living System:

This section has been included is to provide important information as to how a tree actually functions and the environment and elements which are needed for the tree to develop and grow to its' full potential.

Photosynthesis: The process by which trees use energy from sunlight to produce carbohydrates (for food) from carbon dioxide and water. Sunlight energy is captured in the leaves by molecules of chlorophyll in organelles called chloroplasts. An important part of photosynthesis is how trees absorb carbon dioxide from the atmosphere, store it as carbon (for food) and release oxygen back into the atmosphere.

Respiration: The process by which cells release energy stored in carbohydrates in order to drive the chemical reactions of metabolism in which substances are broken down to yield energy for vital processes while other substances are synthesized for other uses within the tree.

Absorption: This is the process in which one substance permeates another. In trees this involves osmosis, diffusion, water potential and pressure potential and is how a tree obtains water and soil-borne elements essential for growth.

Compartmentalisation: The trees dynamic defence process that forms boundaries that resist the spread of pathogens.

Translocation: The movement of substances (water & nutrients) in the vascular system (phloem & xylem) from roots to leaves and leaves to roots.

Optimisation: Trees are self optimising structures that discern load bearing stress via the cambium and strengthen themselves by the growth of reaction wood and wound wood.

Storage: Trees have the capacity to store energy in living cells in 8 or more growth increments, energy can also be stored in sapwood in the crown and in the roots.

Transpiration: the process of upward movement of sap in the xylem due to the water potential gradient caused by evaporation of water from the leaves.

Vigour: The capacity to resist strain; a genetic factor, a potential force against any threats to survival.

Vitality: The ability to grow under the conditions present; dynamic action.

The root system: Contrary to popular belief, trees generally have their root systems in the first 40cm of soil although in the monsoon tropics many trees only have roots within the top 15cm of soil and in many cases on top of the ground. The way in which trees anchor themselves and obtain nutrients from the soil is in

many cases dependent on soil types but the most important factor is that roots do not suffer continual or large scale damage. In an urban environment the most usual causes of root damage are digging, trenching, lawn mowers and soil compaction. Soil compaction over the root zone will cut off the oxygen supply to the roots and the translocation process will decline.

Each of the above components are like pieces of a jig-saw with each playing a vital role and together with a compatible growing environment will produce a healthy tree. It is worth noting that trees evolved in a forest system where trees interconnected with each other and with many other organisms so as to ensure the survival of all members of the forest. The genetic codes for tree survival came from trees growing in a forest. When a forest-coded tree is brought into an urban environment it loses the group protection and group defence and the factors that affect the trees' vitality become extremely important.

Trees can survive and flourish in a built environment but only if the system by which the tree lives is not impaired by the development that is supposed to enhance.

3. METHODOLOGY; RISK ASSESSMENT

As currently practiced by Arborists world wide, tree evaluation involves examining a tree for structural defects, tree health problems such as *ganoderma fungi*, termite infestation, galls and/or cankers and associating those defects/problems with a known pattern of failure and rating the degree of risk.

Tree Risk Assessment requires three components;

1. a tree with the potential to fail
2. an environment that may contribute to that failure
3. a person or object that would be injured or damaged (ie the target).

By definition a dangerous situation requires the presence of both a defective tree and a target.

Danger is defined as "exposure to harm"; Risk is defined as the "statistical odds of danger"; If a tree is assessed as dangerous it is the degree of risk that increases or decreases, depending on the potential number of targets.

As a result, risk assessment is not limited to evaluating the failure potential of a tree. Risk Assessment must consider the potential presence of a target. If there is no target, there is no risk and therefore a dangerous situation cannot exist.

All trees have a risk of failure and every tree will eventually fail. As trees increase in size, mass and maturity, the risk of failure increases. Trees with serious defects are unpredictable and can fail at any time. Evolved traits play a significant role in defect profiles. Unpredictable branch sheds are an example as trees which evolved in dense forests learned to shed their branches.

Trees in the monsoonal tropics, including the Top End, generally have short life spans, shallow root systems and irregular growth patterns with significant increases in weight during the wet season due to the rapid uptake of water and flushing of the canopy. Many amenity trees are planted in inappropriate locations causing abnormal growth patterns and in areas of high human density often suffer numerous wounds which cause the degeneration of plant tissue resulting in serious decay within the tree. Inappropriate and/or careless use of machinery eg. lawn mowers, whipper snippers and trenchers are major causes of tree damage. Compaction of soil around the root system during construction often leads to the deterioration in the health of a tree. Termites (*Mastodermes darwinienses*) are also a major cause of structural deterioration of trees.

Knowledge of the growth and failure patterns of individual species is critical to effective Risk Analysis, but assessment of variations in typical patterns of development can only be made when species-specific growth characteristics are fully understood by the Arborist (Clark et al 1990).

Evaluation of both trees and targets form the basis for most of the currently employed Risk Assessment systems. (Mills & Russell 1981, Robbins 1986, Sharon 1989, Smiley & Fraedrich 1990, Matthey & Clark 1994) This methodology is recommended by the International Society of Arboriculture (ISA) in its' publication "Evaluation of Hazard Trees in Urban Areas".

Targets include people, buildings and other property; the evaluation of targets is essential because if there is no target there is no risk.

To some degree risk can be controlled. There are 3 ways in which to control risk.

- Risk avoidance. Avoid all activity in the vicinity of the risk, ie. remove the target
- Risk prevention. Remove the cause of the risk
- Risk reduction. Minimise the risk by an ongoing program of risk management

In identifying the hazard or risk factor the following important aspects are considered

- Site conditions including soil depth, prevailing winds, previous excavating or construction etc.
- Tree size and species
- Identification and assessment of structural and/or health defects in the roots, root plate, trunk and canopy
- Evaluation of the most likely and significant failure
- Assessment of the significance of the target

The Risk Assessment Rating of 10 points is compiled using the following formula;

Failure potential 3 points

1. Low: defects are minor and not likely to cause major failure
2. Medium: numerous and/or significant defects present
3. High: defects that could cause imminent structural failure. eg cavity in excess of 50% of trunk, major bark inclusions, weak junction on large limbs, dead limbs, leaning with lifting root plate, termite infestation, previously topped tree, roots and/or trunk damaged/decayed, etc.

Size of defective part/s 3 points

1. Most likely failure less than 10cm in diameter
2. Most likely failure 10-35 cm in diameter
3. Most likely failure greater than 35cm in diameter

Target Rating 4 points (Target rating rates the use and occupancy of the area that would be struck by the defective part)

1. Occasional use – park or quiet street etc
2. Intermittent use - parking lot etc
3. Frequent use - busy street, picnic area, bus stop, play area in park etc
4. Constant use - school yard, residence, occupied building, CBD, High Voltage Power Lines, etc

Failure potential + Size of part + Target Rating = Risk Assessment Rating.

A healthy tree with no obvious defects and no target is rated at one. A level of zero risk does not exist unless the tree is removed

Any tree with a Risk Assessment Rating above 5 may be considered life threatening and should have the recommended remedial work performed or the tree and target area cordoned off and closed.

The higher the Risk Assessment Rating the more critical the situation as in most cases it is the Target Rating that increases the risk.

Example: Two similar trees, both with a dead limb of the same size.

- # 1 in a car park,
- # 2 in a school yard.

1 failure potential @ 3 points + size of limb @ 2 points + target rating @ 2 points = 7 Points

2 failure potential @ 3 points + size of limb @ 2 points + target rating @ 4 points = 9 points

4. SAFE USEFUL LIFE EXPECTANCY

The information derived from the visual tree inspection is used to determine the S U L E rating.

This rating gives an estimate of the expected life span of the tree taking into account age, tree health, normal life span of the species, local environment conditions, location and tree safety. The rating may change due to local environmental conditions or extreme changes such as storms etc.

S U L E – Categories and Sub-categories

	1	2	3	4
	Long S U L E	Medium S U L E	Short S U L E	Remove
	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 to 40 years with an acceptable level of risk	Trees that appeared to be retainable at the time of assessment for 5 to 15 years with an acceptable level of risk	Trees that should be removed within the next 5 years or the timeframe recommended by the assessing Arborist
A	Structurally sound trees that located in positions that can accommodate future growth	Trees that may only live for between 15 and 40 more years	Trees that may only live for between 5 and 15 years	Dead, dying, suppressed or declining trees through disease or inhospitable conditions
B	Trees that can be made suitable for retention in the long term by remedial care	Trees that may live for more than 40 years but would need to be removed for safety or nuisance reasons	Trees that may live for more than 15 years but would need to be removed for safety or nuisance reasons	Dangerous trees through instability or recent loss of adjacent trees
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention	Trees that may live for more than 40 years but should be removed to prevent interference with more suitable trees or to provide space for new plantings	Trees that may live for more than 15 years but should be removed to prevent interference with more suitable trees or to provide space for new plantings	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form
D		Trees that could be made suitable for retention in the medium term by remedial care	Trees that require substantial remedial care and are only suitable for retention in the short term	Damaged trees that 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 trees or to provide space for new plantings
F				Trees that may cause damage to existing within 5 years
G				Trees that will become dangerous after the removal of other trees.

References;

1. Barrel, Jeremy (1996)
2. International Society of Arboriculture

The following report documents the results of a Visual Tree Assessment and Risk Assessment but the Arborist can only recommend and it is the owner's decision of how much risk to accept and whether or not the hazard abatement and tree management recommendations are carried out.

5. TREE NUMBER, DESCRIPTION, HEALTH AND HAZARD RATING.

Tree # 1.

Casuarina equisetifolia

Common Name: Casuarina

Location: Atkins Drive/ Car Park

Height: 20 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 4
Leaf size: Normal

Live Crown Ratio: 20%
Vigour: Poor
Special Value: Native

Defects:

- Included bark
- Dead limbs/hangers
- Phototropism
- Exposed roots

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- limb
- dead wood

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category:3.

Summary: This is a tall tree that although it has some minor defects should be suitable for retention in the short term. However this species is not a really suitable as an urban amenity tree as they provide little shade, grow tall and spindly and are prone to limb failures in severe weather.

Recommendation: Retain in the short term. Remove dead wood.

Tree # 2.

Casuarina equisetifolia

Common Name: Casuarina

Location: Atkins Drive/ Car Park

Height: 12 m Age: Young
Form: Major Asymmetry
Foliage colour: Normal

Crown Class: Suppressed
Number of Trunks: 1
Leaf size: Normal

Live Crown Ratio: 10%
Vigour: Poor
Special Value: Native

Defects:

- Weak branch attachments
- Visible previous branch failures
- Excessive end weight
- Phototropism
- decay

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- whole tree

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 5

S U L E: Category:4 (D).

Summary: Poor specimen. Previous failure at 4 metres now with visible decay. Severe phototropism causing the tree to be unbalanced.

Recommendation: Complete removal.

Tree # 3.

Acacia auriculiformis

Common Name: Black wattle

Location: Atkins Drive/ Car Park

Height: 10 m Age: Post mature

Form: Major Asymmetry

Foliage colour: Chlorotic

Crown Class: Suppressed

Number of Trunks: 1

Leaf size: Normal

Live Crown Ratio: 15%

Vigour: Poor

Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Phototropism
- Decay in wounds
- Potential fro root failure
- Tree is dying

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- whole tree/limbs

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 6

S U L E: Category:4 (A) .

Summary: Poor specimen. Severe phototropism, visible previous failures, Previous failure at 4 metres now with visible decay. Tree is dying.

Recommendation: Complete removal.

Tree # 4.

Casuarina equisetifolia

Common Name: Casuarina

Location: Atkins Drive/ Car Park

Height: 12 m	Age: Mature	Crown Class: Suppressed	Live Crown Ratio: 10%
Form: Major Asymmetry		Number of Trunks: 1	Vigour: Poor
Foliage colour: Normal		Leaf size: Normal	Special Value: Native

Defects:

- Excessive end weight
- Phototropism

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- whole tree

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 5

S U L E: Category:4 (C) .

Summary: Poor specimen. Severe phototropism causing the tree to be unbalanced and is leaning 45° over car park

Recommendation: Complete removal.

Tree # 5.

Acacia auriculiformis

Common Name: Black wattle

Location: Atkins Drive/ Car Park

Height: 10 m	Age: Post mature	Crown Class: Suppressed	Live Crown Ratio: 15%
Form: Major Asymmetry		Number of Trunks: 2	Vigour: Poor
Foliage colour: Normal		Leaf size: Normal	Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Phototropism

- Decay in wounds
- fungi
- Potential for root failure
- Tree is dying

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Co-dominant trunk/limbs

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 3 Points
- Target rating: 2 Points
- Total Risk Rating = 7

S U L E: Category:4 (A) .

Summary: Visible *ganaderma* in trunk; tree is hollow at grade with visible decay. The tree is at the end of it's life span

Recommendation: Complete removal.

Tree # 6.

Casuarina equisetifolia

Common Name: Casuarina

Location: Atkins Drive/ Car Park

Height: 20 m Age: Post Mature

Form: Major symmetrical

Foliage colour: Normal

Crown Class: Co-dominant

Number of Trunks: 1

Leaf size: Normal

Live Crown Ratio: 10%

Vigour: Fair

Special Value: Native

Defects:

- Dead wood

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- dead wood

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category:3 .

Summary: This is a tall tree that although it has some minor defects should be suitable for retention in the short term. However this species is not a really suitable as an urban amenity tree as they provide little shade, grow tall and spindly and are prone to limb failures in severe weather

Recommendation: . Retain in the short term. Remove dead wood.

Tree # 7.

Acacia auriculiformis Common Name: Black wattle

Location: Atkins Drive/ Car Park

Height: 10 m	Age: Post mature	Crown Class: Suppressed	Live Crown Ratio: 15%
Form: Major Asymmetry		Number of Trunks: 2	Vigour: Poor
Foliage colour: Normal		Leaf size: Normal	Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Phototropism
- Decay

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Co-dominant trunk/limbs

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 6

S U L E: Category:4 (A).

Summary: The tree is at the end of it's life span. Major co-dominant overhangs car park

Recommendation: Complete removal.

Tree # 8.

Casuarina equisetifolia Common Name: Casuarina

Location: Atkins Drive/ Car Park

Height: 16 m	Age: Mature	Crown Class: Intermediate	Live Crown Ratio: 10%
Form: Asymmetrical		Number of Trunks: 1	Vigour: Poor
Foliage colour: Normal		Leaf size: Normal	Special Value: Native

Defects:

- Dead wood
- Included bark
- Weak branch attachment
- Decay in wounds

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Co-dominant

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 6

S U L E: Category:4 (C)

Summary: Serious decay in primary fork 4 metres above grade. Tree is unsafe

Recommendation: Complete removal

Tree # 9.

Acacia auriculiformis

Common Name: Black wattle

Location: Atkins Drive/ Car Park

Height: 10 m Age: Post mature
Form: Major Asymmetry
Foliage colour: Normal

Crown Class: Suppressed
Number of Trunks: 1
Leaf size: Normal

Live Crown Ratio: 30%
Vigour: Poor
Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Phototropism
- fungi

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Co-dominant limbs

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 6

S U L E: Category:4 (A)

Summary: The tree is at the end of it's life span. Visible ganaderma fungi. Major co-dominant limb overhangs Atkins Drive

Recommendation: Complete removal.

Tree # 10.

Acacia auriculiformis

Common Name: Black wattle

Location: Car Park East Point Road side

Height: 13 m Age: Post Mature

Crown Class: Co-dominant

Live Crown Ratio: 30%

Form: Major Asymmetry

Number of Trunks: 2

Vigour: Poor

Foliage colour: Normal

Leaf size: Normal

Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Dead branch/hanger
- Phototropism
- Wounds
- decay
- fungi

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Hanger
- Co-dominant limbs

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 6

S U L E: Category:4 (C).

Summary: The tree is at the end of it's life span. Visible ganaderma fungi. High potential for root failure. Dead branch/hanger over footpath/bicycle path.

Recommendation: Complete removal.

Tree # 11.

Acacia auriculiformis

Common Name: Black wattle

Location: Car Park East Point road side

Height: 14 m Age: Post mature

Crown Class: Co-dominant

Live Crown Ratio: 25%

Form: Asymmetrical

Number of Trunks: 1

Vigour: Poor

Foliage colour: Normal

Leaf size: Normal

Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Dead branch/hanger
- Phototropism

- Wounds
- decay
- fungi

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Whole tree

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 6

S U L E: Category:4 (C).

Summary: The tree is at the end of it's life span. Visible ganaderma fungi. High potential for root failure. Adjacent footpath/bicycle path.

Recommendation: Complete removal.

Tree # 12.

Ficus virens Common Name: Banyan

Location: Car Park East Point road side

Height: 14 m	Age: young	Crown Class: Co-dominant	Live Crown Ratio: 75%
Form: Asymmetrical		Number of Trunks: Multiple	Vigour: Good
Foliage colour: Normal		Leaf size: Normal	Special Value: Native

Defects:

- None visible

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- None

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 2 .

Summary: Suitable for long term retention Recommendation: Retain.

Tree # 13.

Pongamia pinnata

Common Name: Pongamia

Location: Car Park East Point road side

Height: 10 m Age: Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: Multiple
Leaf size: Normal

Live Crown Ratio: 75%
Vigour: poor
Special Value: Native

Defects:

- Included bark
- Phototropism
- Decay
- Fungi
- termites

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Whole tree

Risk assessment:

- Failure potential: 3 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 7

S U L E: Category: 2 .

Summary: Tree has severe and terminal termite damage

Recommendation: Complete removal

Tree # 14.

Ficus virens

Common Name: Banyan

Location: Car Park

Height: 6 m Age: Young
Form: Symmetrical for species
Foliage colour: Normal

Crown Class: intermediate
Number of Trunks: Multiple
Leaf size: Normal

Live Crown Ratio: 70%
Vigour: Good
Special Value: Native

Defects:

- Negligible

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- none at this stage of growth

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 2 .

Summary: Tree is suitable for retention. Grows to large spreading form. Slow growing but usually considered safe in most weather. This species is prone to attack by "Shotgun Borer".

Recommendation: Retain

Tree # 15.

Ficus virens Common Name: Banyan

Location: Car Park

Height: 6 m	Age: Young	Crown Class: intermediate	Live Crown Ratio: 70%
Form: Symmetrical for species		Number of Trunks: Multiple	Vigour: Good
Foliage colour: Normal		Leaf size: Normal	Special Value: Native

Defects:

- Negligible

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- none at this stage of growth

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 2 .

Summary: : Tree is suitable for retention. Grows to large spreading form. Slow growing but usually considered safe in most weather. This species is prone to attack by "Shotgun Borer".

Recommendation: Retain

Tree # 16.

Ficus virens Common Name: Banyan

Location: Car Park

Height: 8m	Age: Young	Crown Class: Intermediate	Live Crown Ratio: 70%
Form: Symmetrical for species		Number of Trunks: Multiple	Vigour: Good

Foliage colour: Normal

Leaf size: Normal

Special Value: Native

Defects:

- Negligible

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- none at this stage of growth

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 2 .

Summary: : Tree is suitable for retention. Grows to large spreading form. Slow growing but usually considered safe in most weather. This species is prone to attack by "Shotgun Borer".

Recommendation: Retain. Remove undergrowth and weeds

Tree # 23.

Ficus virens

Common Name: Banyan

Location: Car Park

Height: 6 m Age: Young

Form: Symmetrical for species

Foliage colour: Normal

Crown Class: intermediate

Number of Trunks: Multiple

Leaf size: Normal

Live Crown Ratio: 70%

Vigour: Good

Special Value: Native

Defects:

- Negligible

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- none at this stage of growth

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category:1.

Summary: Immature native tree with potential to grow into a major amenity and shade asset particularly if other dominant trees that will restrict it's growth are removed.

Recommendation: Suitable for long term retention. Removal of vine and understory weeds.

Tree # 24.

Casuarina equisetifolia

Common Name: Casuarina

Location: Boat Yard

Height: 20 m Age: Post Mature
Form: Symmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 1
Leaf size: Normal

Live Crown Ratio: 20%
Vigour: Fair
Special Value: Native

Defects:

- None critical

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- none

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category:3

Summary: This is a tall tree that although it has some minor defects should be suitable for retention in the short term. However this species is not really a suitable urban amenity tree as they provide little shade, grow tall and spindly and are prone to limb failures in severe weather

Recommendation: Retain and inspect quarterly

Tree # 25.

Casuarina equisetifolia

Common Name: Casuarina

Location: Boat Yard

Height: 20 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 1
Leaf size: Normal

Live Crown Ratio: 10%
Vigour: Poor
Special Value: Native

Defects:

- Included bark
- Weak branch attachment
- Wounds
- Fungi

- Decay
- Tree is dying

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- whole tree

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 6

S U L E: Category:4 (A)

Summary: This tree is dying

Recommendation: Complete removal

Tree # 26.

Acacia auriculiformis

Common Name: Black wattle

Location: Boat Yard

Height: 15 m Age: Post mature
Form: Major Asymmetry
Foliage colour: Chlorotic

Crown Class: Suppressed
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 10%
Vigour: Poor
Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Phototropism
- fungi
- decay
- cavity

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Co-dominant limbs

Risk assessment:

- Failure potential: 3 Points
- Size of defective part: 2 Points
- Target rating: 2 Points

o Total Risk Rating = 7

S U L E: Category:4 (A).

Summary: The tree is at the end of its life span and is dying. Visible ganoderma fungi and decay, bark lifting on 1 co-dominant

Recommendation: Complete removal.

Tree # 27.

Casuarina equisetifolia

Common Name: Casuarina

Location: Boat Yard

Height: 20 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Intermediate
Number of Trunks: 1
Leaf size: Normal

Live Crown Ratio: 10%
Vigour: Poor
Special Value: Native

Defects:

- Weak branch attachment
- Wounds
- Decay
- phototropism

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- whole tree

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- o Total Risk Rating = 6

S U L E: Category:4 (D)

Summary: 1 co-dominant has previously been removed at 5 metres above grade, this wound is now decaying and is a weak spot where failure could occur

Recommendation: Complete removal

Tree # 28.

Acacia auriculiformis

Common Name: Black wattle

Location: Boat Yard

Height: 15 m Age: Post mature
Form: Major Asymmetry
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 3
Leaf size: Normal

Live Crown Ratio: 15%
Vigour: Poor
Special Value: Native

Defects:

- Weak branch attachments
- Included bark
- Excessive end weight
- Phototropism
- fungi
- decay
- cavity
- tree is dying

Potential Targets:

- people
- cars
- infrastructure

Part most likely to fail:

- Co-dominant limbs

Risk assessment:

- Failure potential: 3 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 7

S U L E: Category:4 (A) .

Summary: The tree is at the end of it's life span and is dying. Visible ganaderma fungi and decay, bark lifting on 1 co-dominant

Recommendation: Complete removal.

Tree # 29, # 30, # 31, # 32

Unknown x 4

Common Name: Cork wood x 4

Location: Boat Yard

Height: 8 m Age: Post mature
Form: Asymmetrical
Foliage colour: Chlorotic

Crown Class: Suppressed
Number of Trunks: Multiple
Leaf size: Normal

Live Crown Ratio: 10%
Vigour: Poor
Special Value: None

Defects:

- Trees are dying
- Fungi
- Exposed roots
- Root plate lifting
- High potential for root failure

Potential Targets:

- people
- infrastructure

Part most likely to fail:

- whole tree

Risk assessment:

- Failure potential: 3 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 6
-

S U L E: Category:4 (A).

Summary: There are 4 trees in this group. All are poor specimens, are diseased, have exposed and/or lifting roots

Recommendation: Complete removal of all 4 trees.

Tree # 35

Tamarindus indica Common Name: Tamarind

Location: Playground in outdoor dining area

Height: 14 m	Age: Post mature	Crown Class: Dominant	Live Crown Ratio: 70%
Form: Asymmetrical		Number of Trunks: Multiple	Vigour: Fair
Foliage colour: Normal		Leaf size: Normal	Special Value: Naturalised Species

Defects:

- Included bark
- Dead limb/hangers
- Exposed wounds
- fungi

Potential Targets:

- people
- infrastructure
- children's playground

Part most likely to fail:

- dead wood

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4
-

S U L E: Category: 3.

Summary: Naturalised, long lived species introduced into North Australia by Macassan Traders in the 17-18th. Century. I am surprised that this tree is not on the list of Significant Trees as almost all other large Tamarinds in Darwin are on the list. The tree is healthy with some dead wood in the canopy. Some visible fungi on old pruning cuts but this is not a fungi that affects the health of the tree as it is surface fungi on already dead wood. Although it has multiple co-dominants there is no included bark and therefore little chance of tree failure under normal circumstances.

Recommendation: Crown clean and remove dead wood.

Tree # 36.

Eucalyptus camaldulensis

Common Name: Red Gum

Location: Beach front

Height: 12 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 10%
Vigour: Poor
Special Value: Native

Defects:

- Dead limb/hanger
- phototropism

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb/dead wood

Risk assessment:

- Failure potential: 2 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 5

S U L E: Category: 3

Summary: The tree is leaning over the beach but potential for root failure is low. Can be retained in the short term

Recommendation: Remove dead limb

Tree # 37.

Casuarina equisetifolia

Common Name: Casuarina

Location: Beach front

Height: 15 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 60%
Vigour: Fair
Special Value: Native

Defects:

- Weak branch attachment
- Wounds
- Decay
- phototropism

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb/dead wood

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category: 3

Summary: The tree has some decay at grade to 1 metre but is suitable for retention in the short term. Previous failure (storm damage) in upper crown

Recommendation: Crown Clean, remove dead wood

Tree # 38, # 41, # 42, # 45, # 46, # 48, # 50, # 51, # 52, # 53, # 54, # 55, # 57.

Cocos nucifera x 13

Common Name: Coconut

Location: Beach front

Height: 8 m Age: Mature

Crown Class: Intermediate

Live Crown Ratio: 90%

Form: Asymmetrical

Number of Trunks: 1

Vigour: good

Foliage colour: Normal

Leaf size: Normal

Special Value: Naturalised/tropical

Defects:

- Whipper snipper/lawn mower damage at grade

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- Coconuts

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 3

Summary: These trees have been grouped together for the sake of brevity as all are similar in height and form. There are no nuts on the trees at the time of inspection. Mechanical damage to the trunks at grade should be avoided in future.

Recommendation: De-nutting when required.

Tree # 39.

Casuarina equisetifolia

Common Name: Casuarina

Location: Beach front

Height: 14 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 60%
Vigour: Fair
Special Value: Native

Defects:

- Wounds
- Weak branch attachment

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category: 3

Summary: The tree has some decay at grade but this is not critical and is suitable for retention in the short term. Some whipper snipper/lawn mower damage

Recommendation: Crown Clean.

Tree # 40.

Casuarina equisetifolia

Common Name: Casuarina

Location: Beach front

Height: 14 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 60%
Vigour: Fair
Special Value: Native

Defects:

- Wounds
- Weak branch attachment

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category: 3

Summary: The tree has some decay at grade but this is not critical and is suitable for retention in the short term. Some whipper snipper/lawn mower damage

Recommendation: Crown Clean.

Tree # 43.

Casuarina equisetifolia

Common Name: Casuarina

Location: Beach front

Height: 14 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 60%
Vigour: Fair
Special Value: Native

Defects:

- Wounds
- Weak branch attachment

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category: 3

Summary: The tree has some decay at grade but this is not critical and is suitable for retention in the short term. Some whipper snipper/lawn mower damage

Recommendation: Crown Clean.

Tree # 46.

Casuarina equisetifolia

Common Name: Casuarina

Location: Beach front

Height: 14 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 60%
Vigour: Fair
Special Value: Native

Defects:

- Wounds
- Weak branch attachment

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category: 3

Summary: The tree has some decay at grade but this is not critical and is suitable for retention in the short term. Some whipper snipper/lawn mower damage

Recommendation: Crown Clean.

Tree # 39.

Casuarina equisetifolia

Common Name: Casuarina

Location: Beach front

Height: 14 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 60%
Vigour: Fair
Special Value: Native

Defects:

- Wounds
- Weak branch attachment

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category: 3

Summary: The tree has some decay at grade but this is not critical and is suitable for retention in the short term. Some whipper snipper/lawn mower damage

Recommendation: Crown Clean.

Tree # 49.

Casuarina equisetifolia

Common Name: Casuarina

Location: Beach front

Height: 14 m Age: Post Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 2
Leaf size: Normal

Live Crown Ratio: 60%
Vigour: Fair
Special Value: Native

Defects:

- Wounds
- Weak branch attachment

Potential Targets:

- people
- infrastructure
- dining area

Part most likely to fail:

- limb

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 1 Points
- Target rating: 2 Points
- Total Risk Rating = 4

S U L E: Category: 3

Summary: The tree has some decay in old pruning cut but this is not critical at this time and is suitable for retention in the short term. Some whipper snipper/lawn mower damage

Recommendation: Crown Clean.

Tree # 58.

Acacia auriculiformis

Common Name: Black wattle

Location: Beach front

Height: 12 m Age: Mature
Form: Asymmetrical
Foliage colour: Normal

Crown Class: Co-dominant
Number of Trunks: 1
Leaf size: Normal

Live Crown Ratio: 25%
Vigour: Fair
Special Value: Native

Defects:

- Included bark
- Phototropism
- Dead co-dominant

Potential Targets:

- people
- infrastructure

Part most likely to fail:

- Co-dominant limbs

Risk assessment:

- Failure potential: 1 Points
- Size of defective part: 2 Points
- Target rating: 2 Points
- Total Risk Rating = 5

S U L E: Category:3 (D).

Summary: The tree may be retained in the short term but is of little value. One co-dominant branch is dead from poor pruning cut.

Recommendation: Remove dead co-dominant

Bismarkia nobilis

Common Name: Bismarkia palm

Location: Dining area

Height: 6 m Age: Young
Form: Symmetrical
Foliage colour: Normal

Crown Class: Dominant
Number of Trunks: 1
Leaf size: Normal

Live Crown Ratio: 90%
Vigour: Good
Special Value: Decorative

Defects:

- None

Potential Targets:

- people
- infrastructure

Part most likely to fail:

- 0

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 2.

Summary: This is a young specimen with the potential to grow to 15 + metres high. Careful pruning of lower fronds periodically is required.

Recommendation: Retain as feature

Plumeria obtusa

Common Name: Frangipani

Location: Dining area

Height: 4 m	Age: post Mature	Crown Class: suppressed	Live Crown Ratio: 45%
Form: Asymmetrical		Number of Trunks: 1	Vigour: Good
Foliage colour: Normal		Leaf size: Normal	Special Value: Decorative

Defects:

- None

Potential Targets:

- people
- infrastructure

Part most likely to fail:

- 0

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 2.

Summary: This is an older specimen that has had constant pruning but continues to do well. Retain for decorative purposes.

Recommendation: Retain as feature

Tree # 60, # 61, # 62.

Cocos nucifera x 3

Common Name: Coconut

Location: Car park

Height: 10 m	Age: Mature	Crown Class: Intermediate	Live Crown Ratio: 90%
Form: Asymmetrical		Number of Trunks: 1	Vigour: good
Foliage colour: Normal		Leaf size: Normal	Special Value: Naturalised/tropical

Defects:

- None visible

Potential Targets:

- people
- infrastructure
- Cars

Part most likely to fail:

- Coconuts

Risk assessment:

- Failure potential: 0 Points
- Size of defective part: 0 Points
- Target rating: 2 Points
- Total Risk Rating = 2

S U L E: Category: 3

Summary: These trees have been grouped together for the sake of brevity as all are similar in height and form. There are no nuts on the trees at the time of inspection. Mechanical damage to the trunks at grade should be avoided in future.

Recommendation: De-nutting when required.

EXECUTIVE SUMMARY

All trees were inspected for general health and risk to public safety using accepted of assessing risk in trees.

Trees are numbered with white weather resistant tags. Numbers are not necessarily sequential.

Property boundaries were ascertained using DCC property maps. See attached.

There are numerous small trees and palms including Carpentaria Palms that are not numbered but were inspected and found to have no defects. Carpentarias will attract bats and pigeons and drop berries but pose not immediate threat to safety.

Generally the trees within the licenced area of the club were found to be in good health and suitable for retention in the short term although the Casuarina is not a good choice for an amenity tree as they provide little shade and are prone to limb failure in severe weather.

Most of the Black Wattle trees in the car park are past their use by date, have multiple defects and all pose some risk to people and property although target time is limited.

Budgetary concerns will no doubt play some part in decisions of what to remove but removal now rather than later and replanting with more suitable species in correctly designed planting pits will be an investment in the future.

Tree Management Issues:

The costs, financial and social, of not managing trees correctly can be high. Trees, just like any other infrastructure, need to be managed to maximise their benefits, minimise any adverse effects and control the costs. Biological assets such as trees do not behave evenly over their life span and are prone to many factors outside the control of the tree owner; eg drought, cyclones and disease. Their life cycle can vary enormously, is not easy to predict and requires ongoing re-evaluation.

Trees take many years to develop to maturity and provide maximum benefits to the community and the local ecology. They cannot be quickly replaced, therefore the retention and protection of trees is vital, especially

in an expanding and ever changing urban environment.

It is worth noting that trees evolved in a forest system where trees interconnected with each other and with many other organisms so as to ensure the survival of all members of the forest.

Therefore the genetic codes for tree survival came from trees growing in a forest. When a forest-coded tree is brought into an urban environment it loses the group protection and group defence and the factors that affect the trees' vitality become extremely important.

Trees can survive and flourish in a built environment but only if the system by which the tree lives is not impaired by the development that is supposed to enhance.

Regular inspections by Qualified Arborist above Level 5 should be done to both ensure that the trees are healthy and to avoid any risk to the general public.

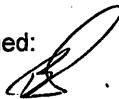
Disclaimer:

Unless expressed otherwise: (a) The information contained in this report covers only those trees that were examined and reflects the condition of those trees and the level of risk associated with those trees at the time of the inspection and (b) the inspection was limited to visual examination of each tree without dissection, excavating, probing or coring.

There is no warranty or guarantee, expressed or implied as the Arborist can only recommend and it is the owner's decision of how much risk to accept.

© This Risk Assessment Report format is Copyright to The Stump Man.

Signed:



8/11/2011.

Bill Sullivan

Adv.Dip. Arboriculture, PMISA, ArbAus, QTRA
Managing Director

Qualifications:

Bill Sullivan has an Advanced Diploma (Level 6) in Horticulture/Tropical Arboriculture from Charles Darwin University. He is a Professional Member of the International Society of Arboriculture (ISA) and the National Arborists Association of Australia (NAAA) He is an Internationally Accredited and Licensed User of the **Quantified Tree Risk Assessment System**. (QTRA Licence # 1949) and a Registered Practising Arborist with Arboriculture Australia.

He is a consulting Arborist to the Darwin City Council, the City of Palmerston, NTG Department of Planning & Infrastructure (Land Administration), Sterling Property Services, MacMahon, the Darwin Wharf Development & George Brown Darwin Botanic Gardens and others. In 2009 he was appointed as the Project Arborist for the Darwin CBD Re-vitalisation Project. His company, The Stump Man, has an Arboricultural Services contract with DCC from 2003 until 2011.

He has attended Seminars and Workshops on Visual Tree Assessment, Risk Assessment and Tree Risk Management in Australia and the USA. The most recent being at the ISA Conference in Honolulu in July 2007 and the Asia/Pacific Conference in Brisbane 2008 and the Asia/Pacific Conference in Newcastle in 2009 & Adelaide 2010. Workshops attended include:

1/ "Risk Assessment Strategies: Theory and Practice". 2/ "Trees in the Wind." 3/ "Branch Strength in Tropical Hardwoods" 4/ "Perceptions of Risk" 5/ "Pruning and Wind Loading of Shade Trees" 6/ "International Tree Failure Data Base", 7/ "Termites and wood destroying Insects", 8/ "Survey and Inspection of Trees for Hazard Evaluation", 9/ "Tree Risk Management", 10/ "Tree Risk Assessment – formulas to assess strength loss in trees"

Glossary of Terms:

Some terms and/or words used in this report may be unfamiliar to a person not experienced in Arboricultural Terminology and may be open to misinterpretation; therefore the definitions listed below are the literal meaning of those words and/or terms for the purposes of this Report.

Arborist: As defined by the Australian Standards an Arborist is a person who has attained (as a minimum), a Diploma of Horticulture (Arboriculture) AQF Level 5, from a recognized University and has several years practical experience in Arboriculture. (See Australian Standard 4970-2009).

AS 4373-2007: The Australian Standard for Pruning of Amenity Trees (Standards Australia 2007)

Bark Inclusion: Inwardly turned bark at the junction of branches or forks in co-dominant trunks. One of the major

causes of structural failure of trees.

DBH: Diameter at breast height; the nominal trunk diameter 1.4 metres above grade.

End weight; The concentration of foliage on the distal end of a branch. Usually caused by "lion tailing".

Friction Wound: A wound caused by two branches rubbing together.

Ganaderma: A fungi found all over the world, particularly in the tropics. It kills the host tree and there is no known cure. *Acacia spp.* is particularly vulnerable.

ISA. International Society of Arboriculture. Accepted as the major body representing Arborists and Arboricultural practices world wide.

Lion tailing: An incorrect method of pruning in which all foliage is removed except at the extreme end of a branch.

Lopping: The practice of indiscriminate cutting off of mature limbs of a tree. Listed in the Australian Standards 4373-2007 as an unacceptable practice. Allows decay causing pathogens to enter the tree resulting in whole or partial tree failure at a later date.

Occupancy Rating: Level of use of a potential target; the likelihood that people will be present when failure occurs.

Pathogen: Disease causing organism.

QTRA: Quantified Tree Risk Assessment. An internationally accepted method of quantifying risk associated with trees. Training and licensing is required for Arborists using this method.

Risk Assessment: Assessment of the risk associated with the potential failure of a tree or part thereof and the presence of an adjacent target.

Scaffold Limb: Primary structural branch of the crown.

Structural defect: Internal or external points of weakness which reduce the stability of the tree

Target: People or property potentially affected by tree failure

Vigour: Overall health; capacity to grow and resist physiological stress