WESTWORKS
CONSULTANCY

Tree Protection Report

Location: Lathlain Oval

42 Bishopsgate Street, Lathlain, WA, 6700

Report Prepared for: BMM Group

Date: 1 April 2025

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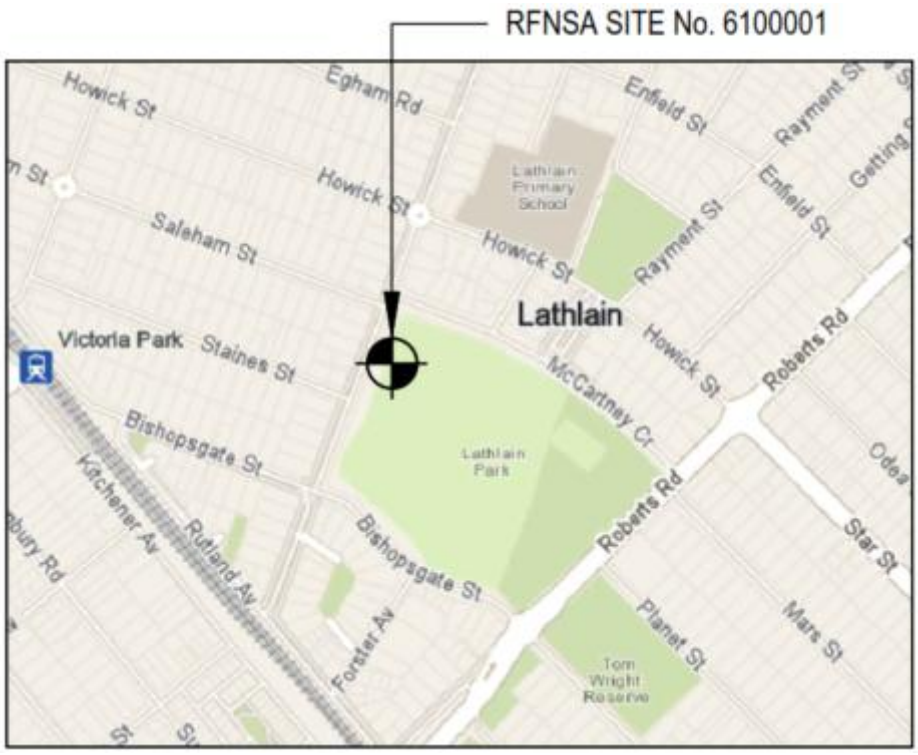
Table of Contents

1.0 Introduction

An assessment was undertaken on 9 trees located within the BBM Group subject area at Lathlain Oval on the 1 April 2025, to provide advice trees within and adjacent to an area designates for a new monopole to support telecommunications infrastructure.

This report follows the on-site assessment of all trees within the project area to provide advice on what the species are, their size, Useful Life Expectancy, Origin of the species



2.0 Methodology

This tree assessment consisted of a ground based basic tree assessment utilising the principals of Visual Tree Assessment (VTA) as outlined by Mattheck and Breloer (1994) and Lonsdale's approach (1999) and methods as per The Australian Standard for Protection of Trees on Development Sites (AS 4970- 2009)

This assessment also included the following:

- Collecting details of the Protections zone for the whole tree and Structural Root Zone
- Careful consideration of each tree's requirements in conjunction with the client's limitations to produce recommendations to best protect and work around each tree as required

The trees were assessed against the following areas: using the following tools.

- Acoustic hammer.
- Clinometer.
- Forestry Workers Measuring Tape.
- Camera.
- Probing tools

Please note: an aerial assessment, PiCUS sonic tomograph and soil or tissue sampling was not undertaken during this assessment, however, each are an available option for an additional assessment should the results of this investigation deem it appropriate.

2.1 Species Identification.

This consultant and associates have a combined over 20 years' experience working with Western Australian tree species, with key proficiency identifying those which are endemic and native to the local Perth regions. Additionally, there are resources to the disposal of Westworks Consultancy to assist in tree species identification including, but not limited to, peer reviewed books and journals, outsourced associates with particular expertise and access to the Western Australian Herbarium (Department of Biodiversity, Conservation and Attractions).

2.2 Tree Measurements

- The height of the tree is an approximate height taken in meters (m)
- The canopy spread gives an indication of the general spread of the canopy in meters.
- The diameter of the trunk (DBH) is measured at 1.4m above ground level.
- The diameter of the root flare (DRF) is measured as low to the ground as possible.

2.3 Methodology – Tree Health

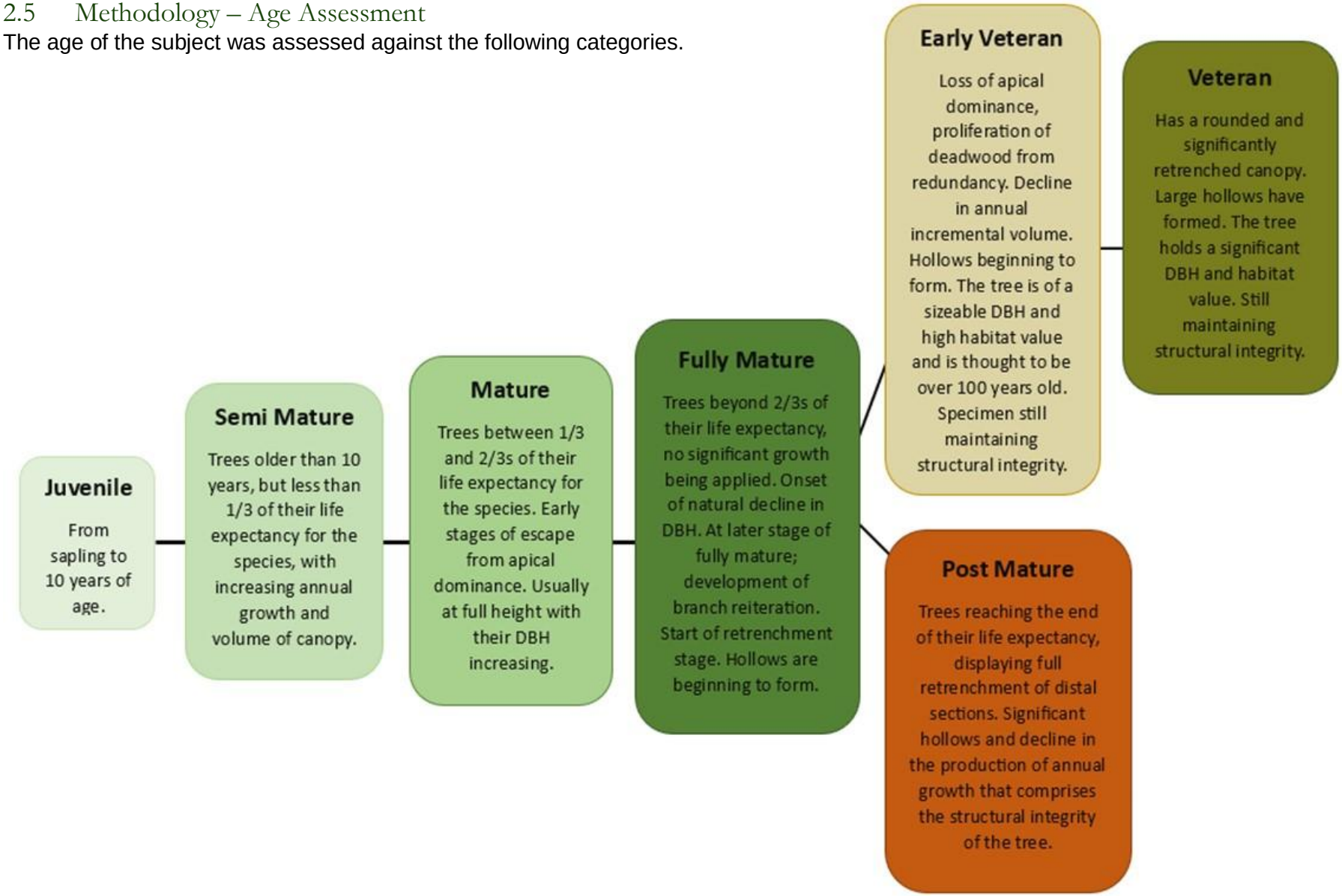
- **Good:** The tree will show good to excellent vigour throughout the tree for the species. The tree will exhibit a full and healthy canopy of foliage with only minimal pest or diseases evident.
- **Fair:** The tree is growing in a reasonable condition and shape with adequate canopy foliage for the species. Minor dead wood may be present throughout the crown, with reasonable colour and density when compared to a typical healthy specimen of that species.
- **Poor:** The tree appears stunted and not growing to its full capability with the canopy potentially visibly showing signs of openness and thinning with excessive amounts of dead or dying limbs. Evidence of established pest and disease issues will be evident or symptoms of stress indicating the tree is in decline.
- **Very poor:** The tree is in a state of decline with the canopy visibly open with considerable deadwood with pest and diseases being present throughout the tree as it enters the final stages of senescing.
- **Dead:** No more living tissue evident.

2.4 Methodology - Structure

- **Good:** The tree will have optimum spacings of first order branches, with open angles of attachment and no inclusions, the trunk is applying very visible signs of annualised response growth. There are no observable defects. This is a high-quality specimen for the species.
- **Fair:** The tree is displaying evenly spaced first order branches, with structurally sound unions, the trunk is applying annualised wood to maintain optimum structural integrity. There may be some minor defects, yet the tree is managing these appropriately. This is a “normal” specimen for the species.
- **Poor:** Minor structural defects observed, there may be damage to the cambium, included bark, which reduces the structural integrity of a union, and/or the tree may have been lopped, which has significantly altered its form.
- **Very poor:** The tree is in a state of decline with poor branch spacings and attachment. Major structural defects have been observed.
- **Has Failed:** The tree is of a significantly poor structural integrity to the point where A failure event was observed to have occurred.

2.5 Methodology – Age Assessment

The age of the subject was assessed against the following categories.



2.6 Useful Life Expectancy

- **Very Long** (Greater than 40 + years)

  Very high quality and high value, these trees would hold such a condition that make them a valuable part of the environment/ landscape, would be considered to hold a Useful Life Expectancy (ULE) of greater than 40 years, thus allowing them to make a substantial contribution for a long period of time.

- **Long** (Greater than 20 to 40 years)

  High quality and high value, these trees would hold such a condition that make them a valuable part of the environment/ landscape, would be considered to hold a Useful Life Expectancy (ULE) of 40 years of greater, thus allowing them to make a substantial contribution.

- **Medium** (Between 11 and 20 years)

  Medium quality and medium value, trees of this category are thought of as making a significant contribution to the area they dwell in and would be considered to hold a ULE of a minimum of 20 years.

- **Short** (Between 6 and 10 years)

  Low quality and low value. These trees would be regarded as being in an adequate condition that would see them being retained for a period that would allow new plantings to establish. They would be considered as having a ULE of 5 to 10 years.

- **Transient** (Less than 5 years)

  Very Low quality and very low value, these trees would be regarded as having a poor form, displaying a low vitality, and may be exhibiting initial signs of structural decline. They would be considered to have a ULE of less than 5 years and are to be included in a plan for replacement.

- **Dead or hazardous** (no remaining ULE).

  Trees in this category would be considered to hold such a condition that would potentially hold no value or in their current state it would be reasonable to undertake their removal for reasons of sound Arboricultural management, due to a high level of risk.

2.7 Origin of species

The definition of Native Vegetation is as stipulated in the Environmental Protections Act 1986, 3(1) & 51(A).

- **Native** – Part 5 - Division 2 – Clearing of native vegetation 51(A)
  native vegetation has the meaning given by section 3(1) but does not include vegetation that was intentionally sown, planted or propagated unless —
  (a) that vegetation was sown, planted or propagated as required under this Act or another written law; or
  (b) that vegetation is of a class declared by regulation to be included in this definition.

  Part 1 - Preliminary - Terms used (3(1)

  native vegetation means indigenous aquatic or terrestrial vegetation and includes dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition but does not include vegetation in a plantation.

- **Introduced** – A species not Native as defined by section 3(1) & 51(A) of the Environmental Protections Act 1986, to the survey area. Introduced species may originate from other areas of Australia, or from outside Australia.

3.0 Tree Information Required for Protection

The Australian standard for Protection of trees on development sites, AS 4970 – 2009, serves to set out protection measures for trees throughout the period of construction and is comprised of two zones (Diagram 1).

Tree Protection Zone

The Tree Protection Zone (TPZ) considers protection of both the canopy and roots. For this protection zone to be effective, it is ideal that no plant or equipment intrude throughout the duration of excavation or construction.

The Tree Protection Zone should be the primary consideration during the design process, and only when absolutely necessary should it fall to the second zone.

Structural Root Zone

The second zone is the Structural Root Zone (SRZ). This area considers the larger roots, those which function primarily as anchor support for the tree, keeping it upright and in the ground. Disturbance and damage to these roots can have long lasting effects on the tree's overall condition, for this reason it is generally considered to be the 'No Dig Zone.'

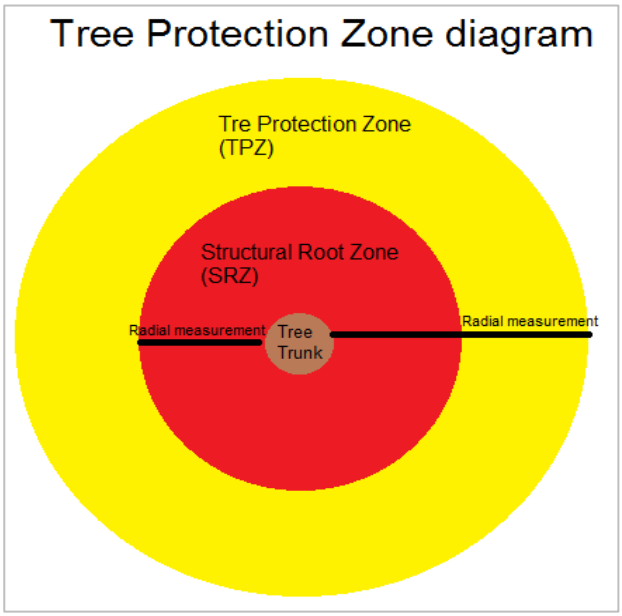
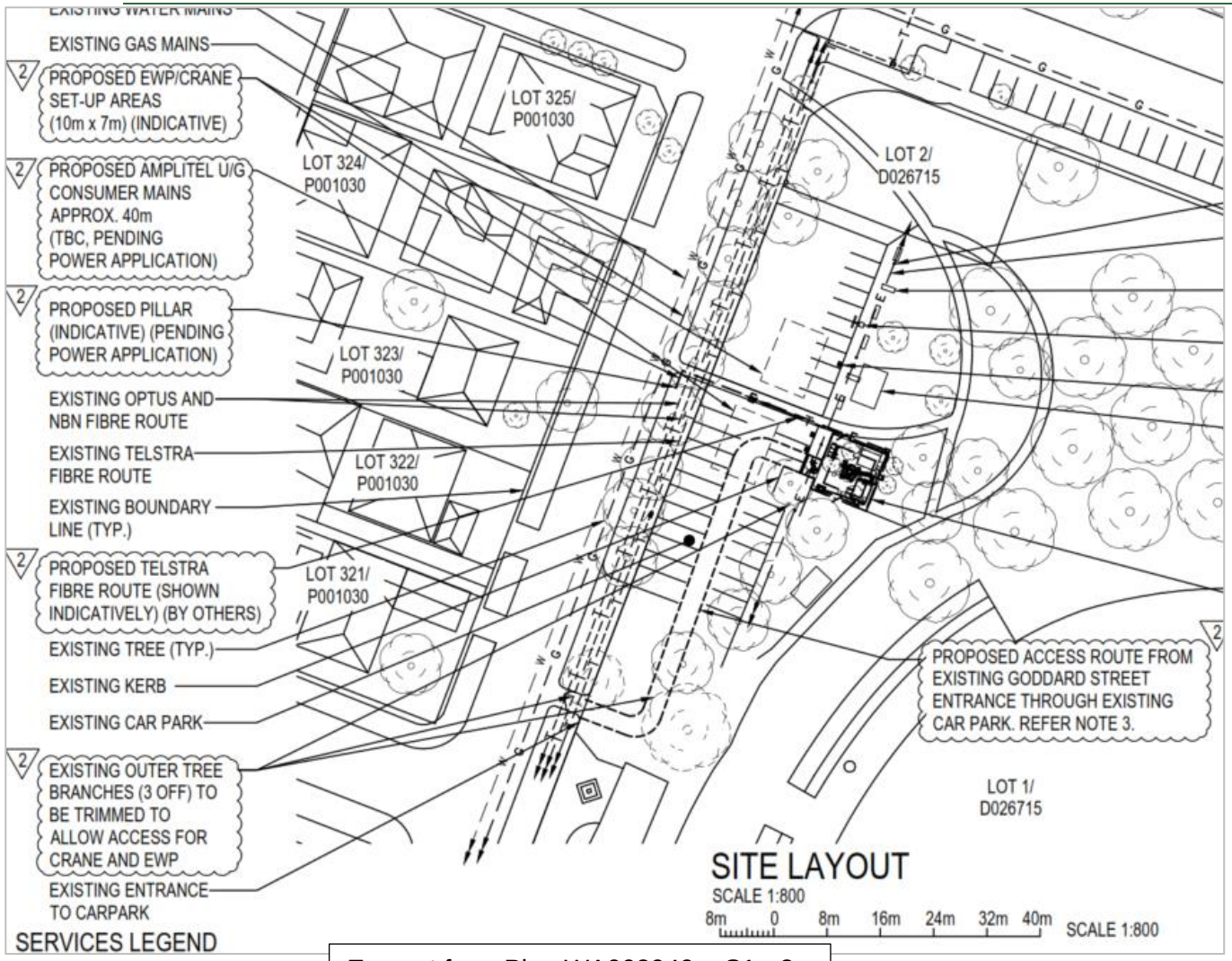


Diagram 1. Order and size of the Tree Protection Zone (TPZ) and the Structural Root Zone (SRZ).

However, consultation with a Project Arborist during the planning and design stage can allow encroachment into these zones up to a maximum area threshold of 10%. It is essential that this work be discussed with the Project Arborist to ensure a tree is in suitable condition to handle the stress, as well as to ensure the encroachment is minimal – variations of this threshold may exist for individual trees depending on the existing status of the root zone. Any work carried out in these zones must be supervised by a qualified Project Arborist until encroachment has ceased.

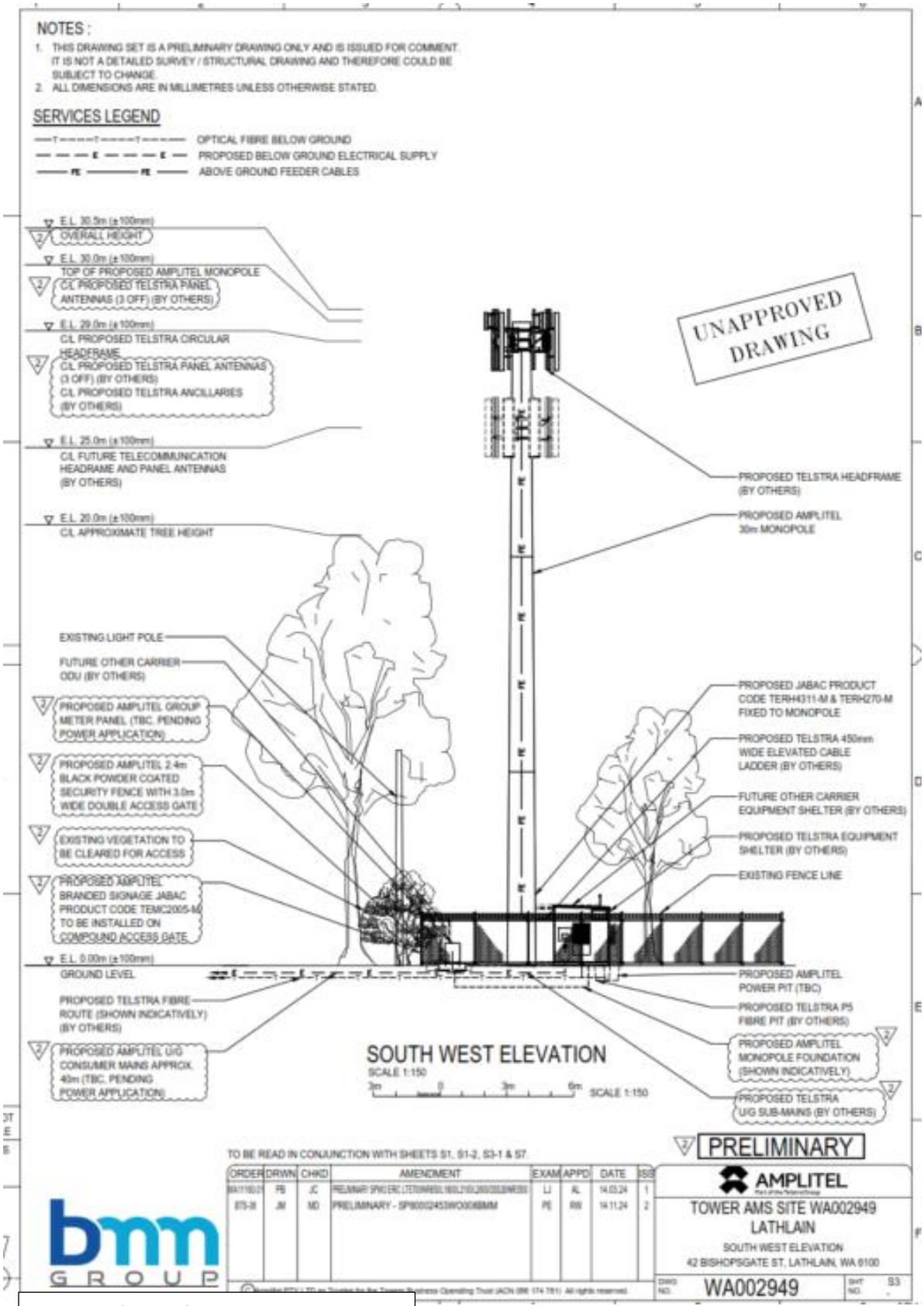
Information regarding method requirements for this work can be provided following consultation with this consultant when more information regarding the design and work requirements are available.

4.0 Concept Plan



Excerpt from Plan WA002949 – S1 - 2

4.1 Concept Plan



Excerpt from Plan WA002949 – S3

5.0 Location of Subject Tree(s)

Subject trees are marked with coloured dots, correlating to their species name in the legend provided.

The orange box indicates the project area boundary.

6.0 Tree Assessment

Each of the 9 subject trees collected in the subject area is allotted a single page summary report, produced using an arborist specific GIS software.

All observations presented in this report are true for the date of assessment (31 March 2025).

Details include:

- Descriptions of the subject trees' health and structure
- The measurements for the TPZ and the SRZ
- Any works recommended to improve the health and structural integrity of the tree.
- The latitude & longitude of the trees' location within the grounds, &
- A photo of the whole tree.

Summary reports are on the following pages.

Coolibah Tree ID #1

Tree Details

Latin Name:	Eucalyptus victrix
Common Name:	Coolibah
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	5
Canopy Spread [m]:	2
DBH [cm]:	10
DBH Range:	8-16cm
Diameter at Root Flare (DRF) [cm]:	0.135
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	1.43
Useful Life Expectancy:	20-40 years
Observations-Structural Issues:	None observed
Species origin:	Introduced
Work Requirements:	No Action Required
Observation Comments:	Tree has been planted

Tree Location

Longitude:	115.906874
Latitude:	-31.971502

Photos | Street View | Map View

image.jpg
31/03/2025

Coolibah Tree ID #2

Tree Details

Latin Name:	Eucalyptus victrix
Common Name:	Coolibah
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	5
Canopy Spread [m]:	2
DBH [cm]:	11
DBH Range:	8-16cm
Diameter at Root Flare (DRF) [cm]:	0.15
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	1.49
Useful Life Expectancy:	20-40 years
Observations-Structural Issues:	None observed
Species origin:	Introduced
Work Requirements:	No Action Required
Observation Comments:	Tree has been planted

Tree Location

Longitude:	115.906899
Latitude:	-31.971493

Photos | Street View | Map View

image.jpg
31/03/2025

Coolibah Tree ID #3

Tree Details

Latin Name:	Eucalyptus victrix
Common Name:	Coolibah
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	5
Canopy Spread [m]:	2
DBH [cm]:	7
DBH Range:	0-8cm
Diameter at Root Flare (DRF) [cm]:	0.1
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	1.26
Useful Life Expectancy:	20-40 years
Observations-Structural Issues:	None observed
Species origin:	Introduced
Work Requirements:	No Action Required
Observation Comments:	Tree has been planted

Tree Location

Longitude:	115.906893
Latitude:	-31.971504

Photos | Street View | Map View

image.jpg
31/03/2025

Coolibah Tree ID #4

Tree Details

Latin Name:	Eucalyptus victrix
Common Name:	Coolibah
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	5
Canopy Spread [m]:	4
DBH [cm]:	7
DBH Range:	0-8cm
Diameter at Root Flare (DRF) [cm]:	0.12
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	1.36
Useful Life Expectancy:	20-40 years
Observations-Structural Issues:	None observed
Species origin:	Introduced
Work Requirements:	No Action Required
Observation Comments:	Tree has been planted

Tree Location

Longitude:	115.906961
Latitude:	-31.971497

Photos | Street View | Map View

image.jpg
31/03/2025

Coolibah Tree ID #5

Tree Details

Latin Name:	Eucalyptus victrix
Common Name:	Coolibah
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	5
Canopy Spread [m]:	3
DBH [cm]:	7
DBH Range:	0-8cm
Diameter at Root Flare (DRF) [cm]:	0.1
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	1.26
Useful Life Expectancy:	20-40 years
Observations-Structural Issues:	None observed
Species origin:	Introduced
Work Requirements:	
Observation Comments:	Tree has been planted

Tree Location

Longitude:	115.906950
Latitude:	-31.971526

Photos | Street View | Map View

image.jpg
31/03/2025

Prickly Bark Tree ID #6

Tree Details

Latin Name:	Eucalyptus todtiana
Common Name:	Prickly Bark
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	3
Canopy Spread [m]:	2
DBH [cm]:	6
DBH Range:	0-8cm
Diameter at Root Flare (DRF) [cm]:	0.1
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	1.26
Useful Life Expectancy:	40+ years
Observations-Structural Issues:	None observed
Species origin:	Native
Work Requirements:	Protect as per AS4373 - 2007
Observation Comments:	All works are outside of the SRZ. Tree has been planted

Tree Location

Longitude:	115.906971
Latitude:	-31.971568

Photos | Street View | Map View

image.jpg
31/03/2025

Prickly Bark Tree ID #7

Tree Details

Latin Name:	Eucalyptus todtiana
Common Name:	Prickly Bark
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	4
Canopy Spread [m]:	5
DBH [cm]:	6
DBH Range:	0-8cm
Diameter at Root Flare (DRF) [cm]:	0.1
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	1.26
Useful Life Expectancy:	40+ years
Observations-Structural Issues:	Leaning trunk
Species origin:	Native
Work Requirements:	No Action Required
Observation Comments:	Tree has been planted

Tree Location

Longitude:	115.906914
Latitude:	-31.971552

Photos | Street View | Map View

image.jpg
31/03/2025

Prickly Bark Tree ID #8

Tree Details

Latin Name:	Eucalyptus todtiana
Common Name:	Prickly Bark
Tree Age:	Juvenile
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	2
Canopy Spread [m]:	2
DBH [cm]:	2
DBH Range:	0-8cm
Diameter at Root Flare (DRF) [cm]:	0.04
Tree Protection Zone (TPZ) [m]:	2
Structural Root Zone (SRZ) [m]:	0.86
Useful Life Expectancy:	40+ years
Observations-Structural Issues:	None observed
Species origin:	Native
Work Requirements:	No Action Required
Observation Comments:	Tree has been planted

Tree Location

Longitude:	115.906875
Latitude:	-31.971545

Photos | Street View | Map View

image.jpg
31/03/2025

Lemon-scented Gum Tree ID #9

Tree Details

Latin Name:	Corymbia citriodora
Common Name:	Lemon-scented Gum
Tree Age:	Semi mature
Health:	Fair
Structure:	Fair
Tree Height (Estimated) [m]:	18
Canopy Spread [m]:	14
DBH [cm]:	60.5
DBH Range:	60-75cm
Diameter at Root Flare (DRF) [cm]:	0.725
Tree Protection Zone (TPZ) [m]:	7.26
Structural Root Zone (SRZ) [m]:	2.89
Useful Life Expectancy:	40+ years
Observations-Structural Issues:	None observed
Species origin:	Exotic
Work Requirements:	No Action Required, Protect as per AS4373 - 2007
Observation Comments:	All works are outside of the SRZ

Tree Location

Longitude:	115.906799
Latitude:	-31.971513

Photos Street View Map View

image.jpg
31/03/2025

7.0 Discussion

Trees affected by this project include 1 to 3 and 7 and 8.

There is minor encroachment (Less than 10%) into the TPZ of trees 4, 5 and 9, but no encroachment into the SRZ, which is most important. Meaning that these trees could remain in situ and likely be worked around.

Trees 1 to 5 and 9 are Australian Natives, but are not endemic to this region, and have been planted as part of tree planting activities.

Trees 8, 7 and 8 are Native species to this region, but have also been planted.

This conclusion is based upon the age of the Garden beds and age of the trees and their location, being in a row. Adjacent the fence.

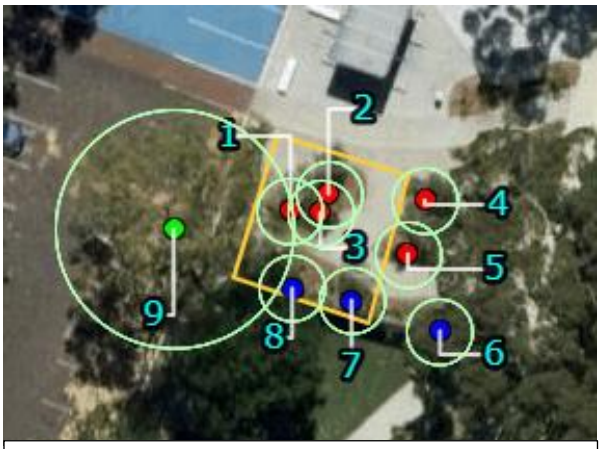


Diagram 1 – Tree Protection Zones, represented by the green circles for each tree

Diagram 2 – Structural Root Zones, represented by the green circles for each tree

8.0 Conclusion

Trees 1 to 3 and 7 and 8. Would likely need to be removed to facilitate installation of the Monopole and pad.

There is approximately 3m between the structural root zones of trees 2 and 3 to 4 and 5. Design efforts could focus on this available space in the detailed design of the footing, moving forward.

There is also a similar distance to tree 7 to the west.

This would allow for approximately 20sqmof available space between the trees.

Should tree retention be possible, a protection plan can then be developed, quidding how to work around the trees on site.

However, it is most likely that trees 1 to 3 would need to be removed at the least to facilitate placement of services to the pole.

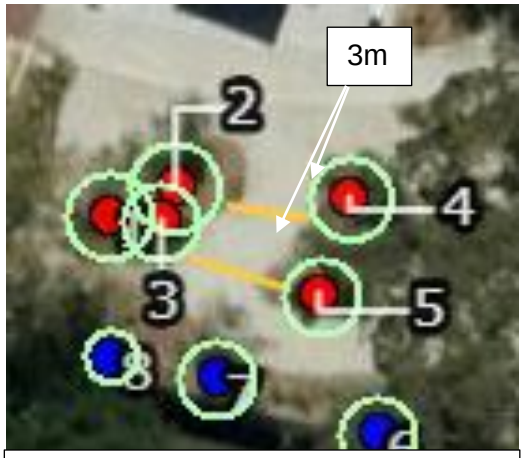


Diagram 3 – distance between trees

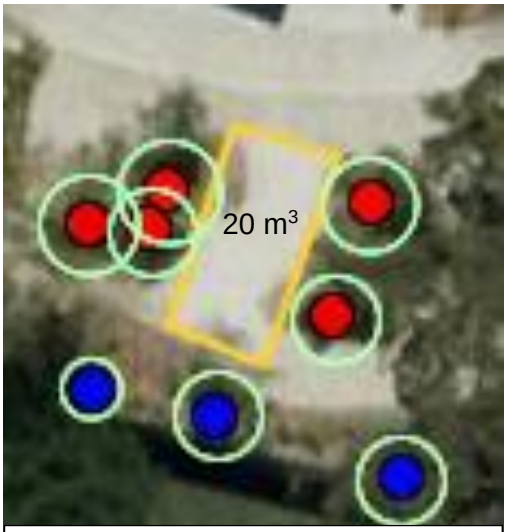


Diagram 4 – Area between trees

Plan WA002949 – S1 – 2, indicates that tree pruning may be required for crane access and set up.

The species of tree in this area already have high canopies over the area. It is possible that Tree 9 and trees at the entrance to the carparking area may need to be uplifted to prevent damage to the trees and allow safe access of the crane.

Thes trees (E. maculata, Agonis flexuosa, Liquidambar styraciflua) were all observed to be in good health and have a form and structure that would allow for target pruning to occur, however, it is recommended that a Pruning plan be developed at the detailed design phase to properly accommodate the works and protect the trees.

Carpark trees, view to the west.

9.0 Glossary of Arboricultural Terminology

Abscission - The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way.

Abiotic - Pertaining to non-living agents, e.g., environmental factors.

Absorptive roots - non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients.

Adaptive growth - In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress.

Adaptive roots - The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading.

Adventitious shoots - Shoots that develop other than from apical, axillary, or dormant buds; see also 'epicormic'

Anchorage - The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree.

Axil - The place where a bud is borne between a leaf and its parent shoot.

Bacteria - Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms.

Bark - A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex, and periderm; occasionally applied only to the periderm or the phellem.

Basidiomycotina (Basidiomycetes) - One of the major taxonomic groups of fungi.

Bolling - A term sometimes used to describe pollard heads.

Bottle-butt - A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay.

Bracing - The use of rods or cables to restrain the movement between parts of a tree.

Branch:

- **Primary** - A first order branch arising from a trunk or stem
- **Lateral** - A second order branch, subordinate to a primary branch
- **Sub-lateral** - A third order branch, originating from lateral branch

Branch bark ridge - The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem.

Branch-collar - A visible swelling formed at the base of a branch.

Brown-rot - A type of wood decay in which cellulose is degraded, while lignin is only modified.

Buckling - An irreversible deformation of a structure subjected to a bending load.

Buttress zone - The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions.

Cambium - Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally.

Canker - A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria.

Canopy species - Tree species that mature to form a closed forest canopy.

Cleaning out - The removal of dead, crossing, weak, and damaged branches, where this will not damage or spoil the overall appearance of the tree.

Compartmentalisation - The chemical confinement of disease, decay, or other dysfunction within a trees tissue, due to passive and/or active defences operating at the boundaries of the affected region.

Compression fork - An acute angled fork that is mechanically optimised for the growth pressure that two or more adjacent stems exert on each other.

Compression strength - The ability of a material or structure to resist failure when subjected to compressive loading, measurable in trees with special drilling devices.

Compressive loading - Mechanical loading which exerts a positive pressure, the opposite to tensile loading.

Tree Protection Zone - Area from which access is prohibited for the duration of the project to prevent damage to a tree.

Crown/Canopy - The main foliage bearing section of the tree.

Crown lifting - The removal of limbs and small branches to a specified height above ground level.

Crown thinning - The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure.

Crown reduction/shaping - A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape.

Crown reduction/thinning - Reduction of the canopy volume by thinning to remove selected branches whilst preserving the natural tree shape.

Deadwood - Branch or stem wood bearing no live tissues.

Decurrent - A system of branching in which the crown is borne on a number of major widely spreading limbs of similar size.

Defect - In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.

Delamination - The separation of wood layers along their length, visible as longitudinal splitting.

Dieback - The death of parts of a woody plant, starting at shoot-tips or root-tips.

Disease - A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused pathogens.

Distal - In the direction away from the main body of a tree or subject organism (cf. proximal)

Dominance - In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also, the tendency of a tree to maintain a taller crown than its neighbours.

Dormant bud - An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so.

Dysfunction - In woody tissues, the loss of physiological function, especially water conduction, in sapwood.

DBH (Diameter at Breast Height) - Stem diameter measured at a height of 1.4 metres or the nearest measurable point. Where measurement at a height of 1.4 metres is not possible, another height may be specified.

Endophytes - Micro-organisms that live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed.

Epicormic shoot - A shoot having developed from a dormant or adventitious bud and not having developed from a first-year shoot.

Excrescence - Any abnormal outgrowth on the surface of tree or other organism.

Excurrent - In trees, a system of branching in which there is a well-defined central main stem, bearing branches which are limited in their length, diameter, and secondary branching (cf. decurrent).

Fastigiate - Having upright, often clustered branches.

Flush cut - A pruning cut which removes part of the branch bark ridge and or branch-collar.

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

Habit - The overall growth characteristics, shape of the tree and branch structure.

Haloing - Removing or pruning trees from around the crown of another (usually mature or post-mature) tree to prevent it becoming supressed.

Hazard beam - An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth, prone to longitudinal splitting.

Heartwood/false-heartwood - The dead central wood that has become dysfunctional as part of the aging processes and being distinct from the sapwood.

Heave - The lifting of pavements and other structures by root diameter expansion; also, the lifting of one side of a wind-rocked root-plate.

High canopy tree species - Tree species having potential to contribute to the closed canopy of a mature forest.

Incipient failure - In wood tissues, a mechanical failure which results only in deformation or cracking, and not in the fall or detachment of the affected part.

Included bark (ingrown bark) - Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact.

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

Internode - The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches.

Lever arm - A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or individual branch.

Lignin - The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification.

Lions tailing - When a branch of a tree that has few if any side branches except at its end and is thus liable to snap due to end-loading.

Loading - A mechanical term describing the force acting on a structure from a particular source, e.g., the weight of the structure itself or wind pressure.

Longitudinal - Along the length (of a stem, root, or branch).

Lopping - A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting

Minor deadwood - Deadwood of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target.

Mulch - Material laid down over the rooting area of plants to help conserve moisture; mulch may consist of organic matter, or artificial material.

Mycelium - The body of a fungus, consisting of branched filaments (hyphae).

Occlusion - The process whereby a wound is progressively closed by the formation of new wood and bark around it.

Pathogen - A micro-organism which causes disease in another organism.

Photosynthesis - The process whereby plants use light energy to split hydrogen from water molecules and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products.

Phytotoxic - Toxic to plants.

Pollarding - The removal of the tree canopy, back to the stem or primary branches, usually to a point just outside that of the previous cutting.

Primary branch - A major branch, generally having a basal diameter greater than 0.25 x stem diameter.

Probability - A statistical measure of the likelihood that a particular event might occur.

Pruning - The removal or cutting back tree parts to growth points.

Rams-horn - In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in cross section.

Reactive Growth/Reaction Wood - Production of woody tissue in response to altered mechanical or external loading.

Residual wall - The amount of non-decayed wood remaining following decay of internal wood

Rib - A ridge of wood that has usually developed because of locally increased mechanical loading. Often associated with internal cracking in the wood of the stem, branch, or root.

Ringbarking (girdling) - The removal of a ring of bark and phloem around the circumference of a stem or branch, normally resulting in an inability to transport photosynthetic assimilates above or below the area of damage.

Ripewood - The older central wood of those tree species in which sapwood gradually ages without being converted to heartwood.

Root-collar - The transitional area between the stem/s and roots.

Root zone - Area of soils containing absorptive roots of the tree/s described. The Primary root zone is that which we consider of primary importance to the physiological well-being of the tree.

Sapwood - Living xylem tissues.

Selective delignification - A kind of wood decay (white-rot) in which lignin is degraded faster than cellulose.

Shedding - In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots, and bark scales.

Shrub species - Woody perennial species forming the lowest level of woody plants in a forest or garden and not normally considered to be trees.

Simultaneous white rot - A kind of wood decay in which lignin and cellulose are degraded at about the same rate.

Soft-rot - A kind of wood decay in which a fungus degrades cellulose within the cells,

Spores - Propagules of fungi; most spores are microscopic and dispersed in air or water.

Sporophore - The spore bearing structure of fungi.

Stem/s - Principle above-ground structural component(s) of a tree that supports its branches.

Stress - In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition, or extremes of temperature: In mechanics, the application of an external force to an object.

Stringy white-rot - The kind of wood decay produced by selective delignification.

Structural roots - Roots, generally having a diameter greater than 50 millimetres, and contributing significantly to the structural support and stability of the tree.

Structural root zone (ZRZ) - The zone of the root plate most likely to contain roots that are critical for anchorage and the stability of the tree.

Subsidence - In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots.

Subsidence - In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight.

Taper - In stems and branches, the degree of change in girth along a given length.

Targets - In tree risk assessment persons or property or other things of value which might be harmed or damaged by falling parts of a tree

Topping/ Lopping - In arboriculture, the removal of the crown of a tree, or of a major proportion of it.

Torsional stress - Mechanical stress applied by a twisting force.

Translocation - Plant physiology, the movement of water and dissolved materials through the body of the plant.

Transpiration - The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells.

Tree Protection Zone (TRZ) - This is an area left around a tree to ensure protection of the above and below ground parts of the tree during construction works. It will usually include the SRZ and is usually recommended to be fenced off for the period of the works.

Understorey - This layer consists of younger individuals of the dominant trees, together with smaller trees and shrubs which are adapted to grow under lower light conditions.

Understorey tree species - Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a forest or garden.

Vascular wilt - A type of plant disease in which water-conducting cells become dysfunctional.

Vessels - Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally, not present in coniferous trees.

Vigour - The expression of carbohydrate expenditure to growth (in trees).

Vitality - A measure of physiological condition.

White-rot - A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded.

Wind exposure - The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity.

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

Woundwood - Wood with atypical anatomical features, formed in the vicinity of a wound.

10.0 References

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d. This report only covers identifiable defects present at the time of inspection. The Arborist and Westworks Consultancy accept no responsibility and cannot be held liable for any structural defect or unforeseen event/situation that may occur after the time of inspection.

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