Tree Care WA

# Arboricultural Impact Assessment

**Site:**

**Como Baptist church**

109, 111 & 113 Robert Street
469 & 471 Canning Highway
Como, Western Australia

**Commissioned by:**
DEM (Aust) Pty Ltd

**Assessment Prepared by:**
James Jordan
*Dip Arboriculture*
Consulting Arborist

QTRA Registered User

ISA TRAQ CERTIFIED

Tree Care WA

# Contents

# Introduction

Tree Care WA has been engaged by DEM (Aust) Pty Ltd to provide an Arboricultural Impact Assessment with respect to the proposed development in Como.

This assessment has been created in accordance with the Ground Floor Plan – Master Plan DRWG arsk0003 rev – 3, which was prepared by DEM (Aust) Pty Ltd. Development impacts have been assessed in accordance with AS4970-2009 Protection of Trees on Development Sites following the Arboricultural assessments.

The aim of this assessment is to:

- Assess all trees within the site boundaries including trees within neighbouring properties and street trees if applicable. Provide data on - Tree's height, canopy spreads, trunk diameters, retention values, calculated TPZ and SRZ radii along with planning protection status.
- To provide specific recommendations in relation to proposed works located within tree protection zones, with the main purpose to assist in the trees continued health and stability.
- Provide information relating to remedial tree works if applicable to construction constraints and design.

## Documents Reviewed

- Drawing: ar101- rev b01 Basement 2 Plan – Master Plan
- Drawing: ar101- rev b01 Basement 1 Plan – Master Plan
- Drawing: lask0101- rev 2 Ground Floor Plan Landscape Concept
- Drawing: arsk0334- rev 3 Level 1 Plan - Master Plan - Combined Sites
- Drawing: ar102- rev b 01 Site Plan - Master Plan - Combined Sites
- Drawing: ar0002- rev 01 Demolition Plan - Master Plan - Combined Sites
- Drawing: ar002- rev 01 Demolition Plan - Master Plan - Combined Sites

# Tree Assessment Summary

**Trees located within the subject sites**

- High Retention Trees within the subject site boundaries

  Tree 222, 231, 232, 233, 234, 323, 326

- Moderate Retention Trees within the subject site boundaries

  Tree 223, 224, 225, 226, 227, 229, 230, 327

- Low Retention Trees within the subject site boundaries

  Tree 228, 235, 236, 256, 257, 258, 259, 322, 324, 325

**Local Government Trees**

Tree 223, 224, 225, 226, 231, 234, 327

# Tree Impact Summary

Trees 222, 223 and 224 are to remain in situ and protection whilst development occurs will be required. All other vegetation within the site will need to be removed to accommodate the proposed development as per Drawing: ar0002- rev 01 Demolition Plan - Master Plan - Combined Sites.

Provided tree protection is enforced as per the Tree Protection Plan, the proposed development will have very little to no impact upon trees 223 and 224.

**Tree 222 -**
The basment of the proposed north western building will make an encroachment of 125m² into the TPZ of of the tree with no SRZ incursion. This encroachment represents 17.8% of the total TPZ area which is 706.9m². This is unlikely to affect the health and structural integrity of the tree providing that the tree protection plan is enforced.

# Methodology

In March 2020 James Jordan carried out an assessment at the Como Bapist Site. The tree assessment consisted of a ground based basic tree assessment principal of the Visual Tree Assessment (VTA) outlined by Mettheck and Breloer (1994) and Lonsdale's approach (1999).

The trees were assessed against age, health, height, canopy spread and Useful Life Expectancy (ULE). All trees were only assessed from ground level.

- **DBH** (Diameter at Breast Height) measured at 1.2m above ground level.
- **DGL** (Diameter at Ground Level) measured at the root crown.
- In accordance with AS4970-2009, Protection of Trees on Development Sites, calculations were made to determine Tree Protection Zones (TPZ) and Structural Root Zones (SRZ)
- In accordance with AS4970-2009, calculations were made to determine the level of encroachment (minor or major encroachment). The level of encroachment was used as a benchmark to determine if trees would remain viable.
- **Minor** encroachment (development disturbance infringes less than 10% of the total TPZ area and is outside the SRZ). TPZ area infringed must be compensated for elsewhere contiguous with the likely root spread.
- **Major** encroachment (development disturbance infringes by more than 10% of the total TPZ area, and/or is inside the SRZ). The project arborist must demonstrate the tree will remain viable.

# Site and Vegetation Description

The site is comprised of two sections which has been divided by Robert Street. To the south west the land is made up of the exisitng Como Bapist Church and Canning Bridge Early Learning Centre. The land to the north east is currently a cleared vacant area. Both sites hold a mixture of indigenous, non-indigenous native and exotic tree species which are commonly used in urban landscape settings within the Perth metropolitan area.

Most of the assessed trees are commonly found species and are considered to be of a moderate to low significance for reasons of either their general health, condition or location. Trees 222, 231, 232, 233, 234, 323 and 326 were considered high due to being in a good to fair overall condition, larger size etc. Ideally,

trees with a high retention value should be retained and incorporated into the development plans, however the realistic contraints of the proposed develompent make the retention of most trees not practical, with the exception of tree 222 a large *Eucalyptus gomphocephala* (Tuart Tree). This tree is a significant tree and as such alterations to the design has occurred to ensure its retention.

Trees 223 and 224 are also to remain in situ.

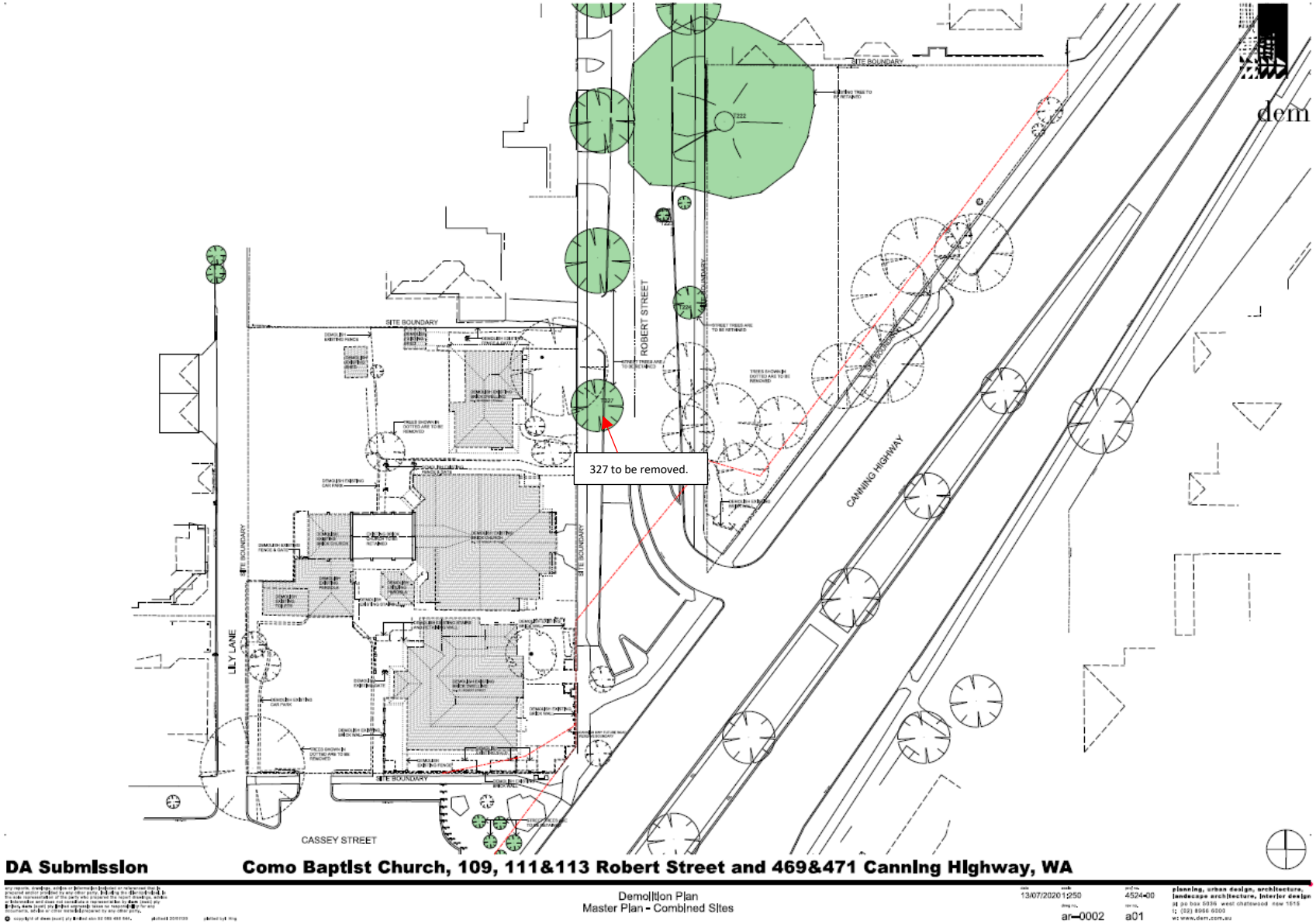
## Site Map (Aerial Photograph)

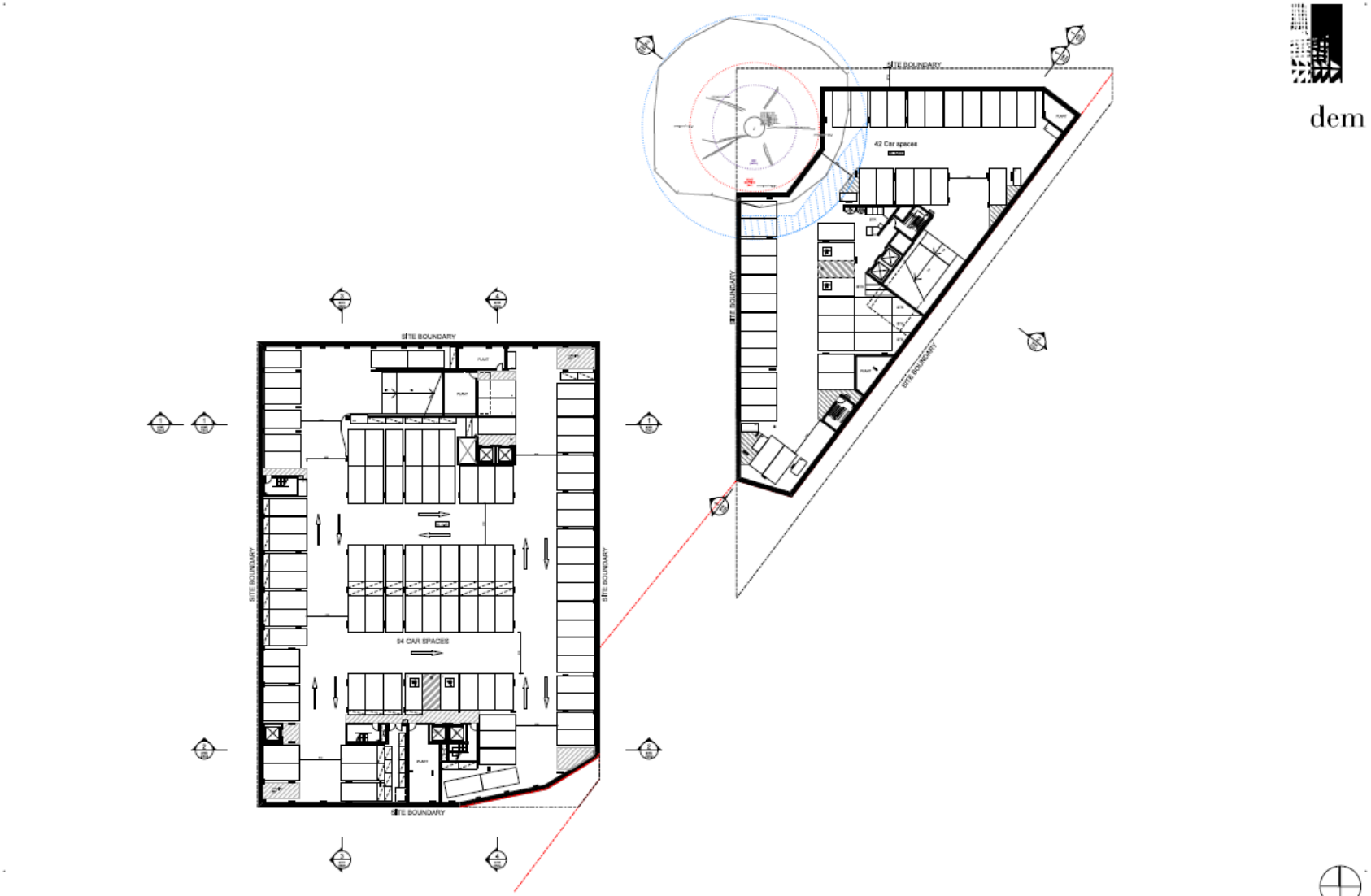
# Tree Data

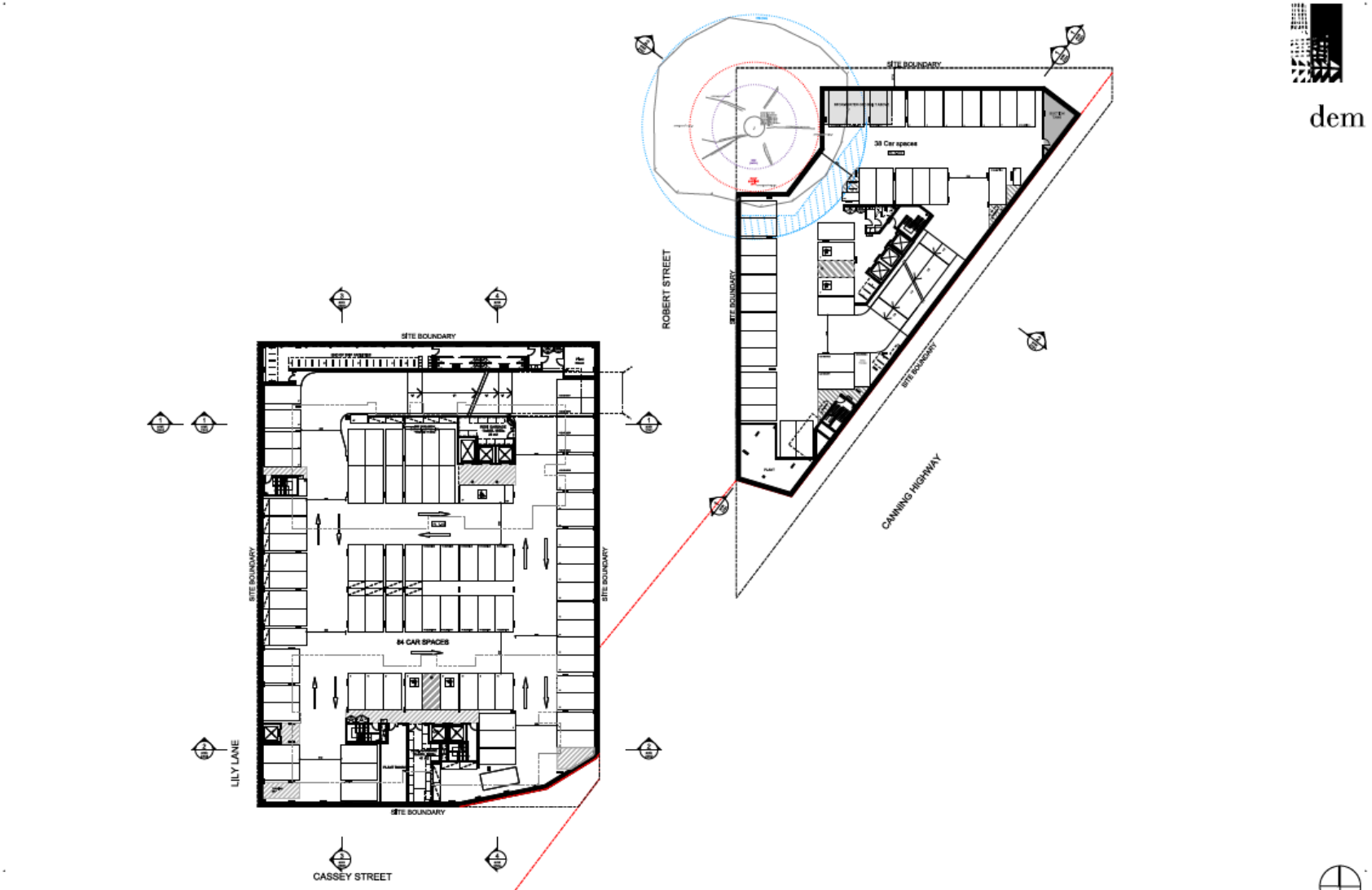
| Tree # | Botanical Name | Common Name | Height | Spread N/S | Spread E/W | DBH | DGL | TPZ | SRZ | Age | Health | Structure | ULE | Retention Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 222 | *Eucalyptus gomphocephala* | Tuart | 26 | 29 | 27 | 1.94 | 2.29 | 15 | 4.6 | Mature | Fair | Fair | 40 + | High |
| 223 | *Agonis flexuosa* | WA Peppermint | 2.5 | 3 | 3 | 0.07 | 0.1 | 2 | 1.5 | Juvenile | Good | Good | 20 to 40 | Moderate |
| 224 | *Agonis flexuosa* | WA Peppermint | 6 | 6.5 | 5.5 | 0.26 | 0.32 | 3.1 | 2 | Juvenile | Good | Good | 20 to 40 | Moderate |
| 225 | *Agonis flexuosa* | WA Peppermint | 8 | 7.5 | 8 | 0.19 | 0.33 | 2.2 | 2 | Juvenile | Fair | Good | 20 to 40 | Moderate |
| 226 | *Agonis flexuosa* | WA Peppermint | 7 | 7 | 3 | 0.26 | 0.27 | 3.2 | 1.9 | Juvenile | Fair | Poor | 10 to 20 | Moderate |
| 227 | *Lophostemon confertus* | Queensland Box Tree | 13 | 11 | 11 | 0.61 | 0.7 | 7.3 | 2.8 | Mature | Poor | Good | 10 to 20 | Moderate |
| 228 | *Jacaranda mimosifolia* | Jacaranda | 6 | 5 | 7.5 | 0.72 | 0.34 | 8.7 | 2.1 | Juvenile | Poor | Poor | 20 to 40 | Low |
| 229 | *Corymbia ficifolia* | Red Flowering Gum | 8 | 8.5 | 7 | 0.57 | 0.63 | 6.8 | 2.7 | Mature | Poor | Good | 10 to 20 | Moderate |
| 230 | *Cinnamomum camphora* | Camphor Laurel Tree | 13 | 9 | 10.5 | 0.55 | 0.62 | 6.6 | 2.7 | Mature | Poor | Fair | 10 to 20 | Moderate |
| 231 | *Corymbia callophylla* | Marri | 19 | 20 | 12 | 1.02 | 1.05 | 12.2 | 3.3 | Mature | Fair | Fair | 20 to 40 | High |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 232 | *Eucalyptus obliqua* | Messmate Stringybark | 18 | 13 | 10.5 | 0.68 | 0.74 | 8.2 | 2.9 | Mature | Fair | Fair | 20 to 40 | High |
| 233 | *Eucalyptus sideroxylon* | Red Ironbark | 23 | 13.5 | 14 | 0.74 | 0.8 | 8.9 | 3.1 | Mature | Good | Good | 20 to 40 | High |
| 234 | *Corymbia callophylla* | Marri | 19 | 12 | 12 | 0.82 | 0.77 | 9.9 | 2.9 | Mature | Good | Fair | 20 to 40 | |
| 235 | *lagunaria patersonia* | Pyramid Tree | 7 | 4.5 | 5 | 0.27 | 0.34 | 3.2 | 2.1 | Semi-mature | Fair | Fair | 10 to 20 | Low |
| 236 | *Cupressus × leylandii* | Leyland Cypress | 11 | 2.5 | 2.5 | N/A | N/A | 2 | 1.5 | Mature | Poor | Fair | 5 to 10 | Low |
| 256 | *Cinnamomum camphora* | Camphor Laurel Tree | 4 | 2 | 2 | N/A | N/A | 2 | 1.5 | Juvenile | Poor | Fair | 5 to 10 | Low |
| 257 | *Syzygium smithii* | Lilly Pilly Tree | 4 | 2 | 2 | N/A | N/A | 2 | 1.5 | Juvenile | Poor | Fair | 5 to 10 | Low |
| 258 | *Cinnamomum camphora* | Camphor Laurel Tree | 4 | 2 | 2 | N/A | N/A | 2 | 1.5 | Juvenile | Poor | Fair | 5 to 10 | Low |
| 259 | *Syzygium smithii* | Lilly Pilly Tree | 4 | 2 | 2 | N/A | N/A | 2 | 1.5 | Juvenile | Poor | Fair | 5 to 10 | Low |
| 322 | *Prunus avium* | | 7 | 10 | 6 | 0.4 | 0.63 | 4.8 | 2.7 | Mature | Good | Fair | 10 to 20 | Low |
| 323 | *Corymbia citriodora* | lemon-scented gum | 23 | 21 | 16 | 0.81 | 0.95 | 9.7 | 3.2 | Mature | Good | Good | 20 to 40 | High |
| 324 | *Brachychiton populneus* | Kurrajong | 7 | 5 | 5 | 0.27 | 0.34 | 3.2 | 2.1 | Semi-mature | Poor | Fair | 5 to 10 | Low |
| 325 | *Robinia pseudoacacia* | Black Locust | 7 | 6 | 6 | 0.83 | 0.83 | 10.4 | 3 | Mature | Poor | Very poor | 5 to 10 | Low |
| 326 | *Corymbia citriodora* | Lemon Scented Gum | 22 | 21 | 18 | 0.77 | 0.95 | 9.2 | 3.2 | Mature | Good | Good | 20 to 40 | High |
| 327 | *Agonis flexuosa* | WA Peppermint | 6 | 7 | 4 | 0.07 | 0.17 | 2 | 1.6 | Juvenile | Good | Fair | 20 to 40 | Moderate |

# Site Plans


SITE BOUNDARY
ROBERT STREET
CANNING HIGHWAY
LEY LANE
CASSEY STREET
327 to be removed.
dem
DA Submission
Como Baptist Church, 109, 111&113 Robert Street and 469&471 Canning Highway, WA
Demolition Plan
Master Plan - Combined Sites
13/07/2020
1:250
4524-00
ar-0002
a01
planning, urban design, architecture, landscape architecture, interior design


SITE BOUNDARY
42 Car spaces
SITE BOUNDARY
SITE BOUNDARY
SITE BOUNDARY
94 CAR SPACES
SITE BOUNDARY
SITE BOUNDARY
DA Submission
Como Baptist Church, 109, 111&113 Robert Street and 469&471 Canning Highway, WA
Basement 2 Plan
Master Plan - Combined Sites
25/02/21
1:250
4524•00
ar–0100
b01
planning, urban design, architecture, landscape architecture, interior design




dem

**DA Submission** **Como Baptist Church, 109, 111&113 Robert Street and 469&471 Canning Highway, WA**

Basement 1 Plan
Master Plan - Combined Sites

25/02/21 | 1:250 | 4524-00 | ar-0101 | b01

planning, urban design, architecture, landscape architecture, interior design



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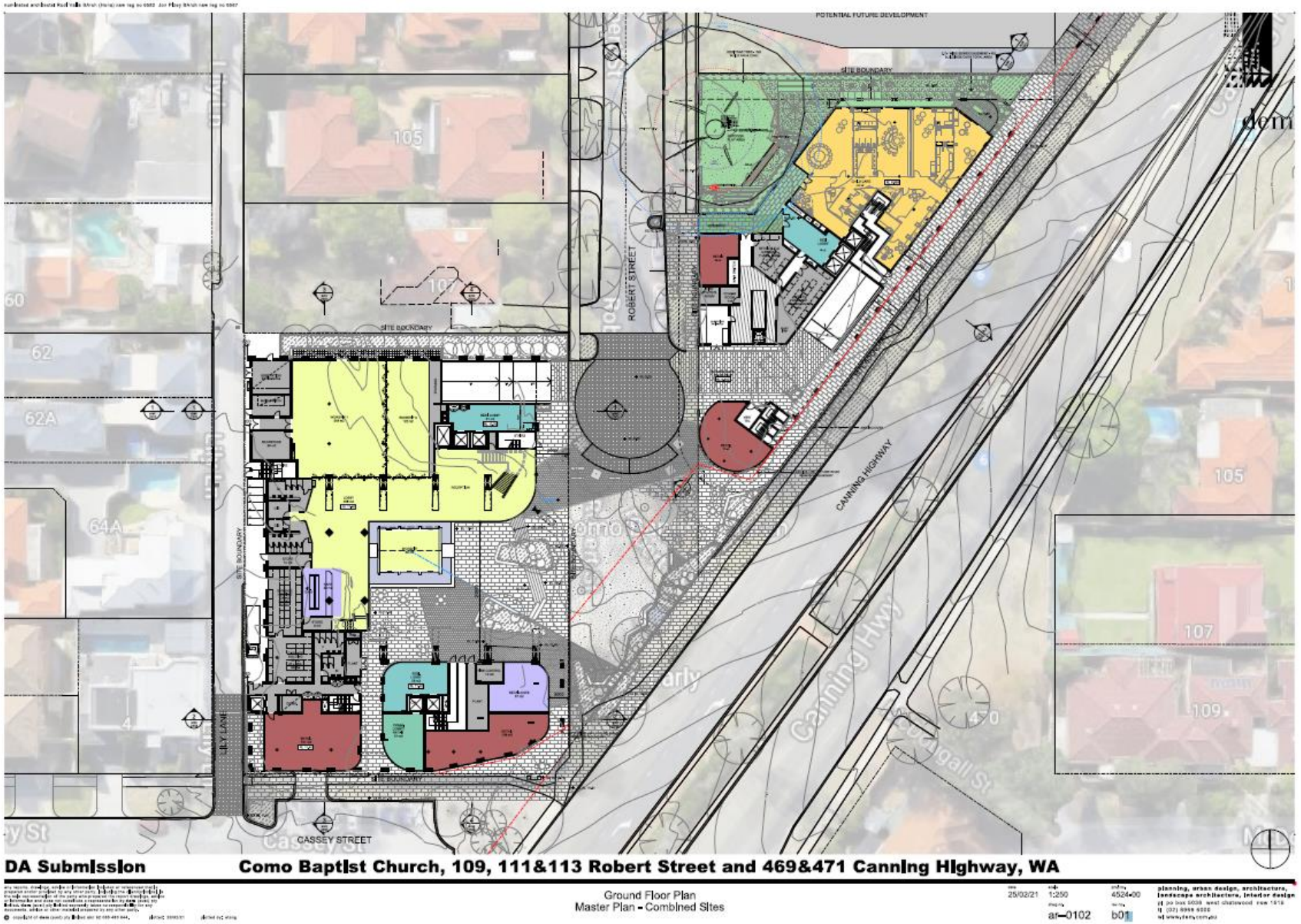
POTENTIAL FUTURE DEVELOPMENT
SITE BOUNDARY
ROBERT STREET
CANNING HIGHWAY
CASSEY STREET
Canning Hwy
105
107
109
62
62A
64A
DA Submission
Como Baptist Church, 109, 111&113 Robert Street and 469&471 Canning Highway, WA
Ground Floor Plan
Master Plan - Combined Sites
25/02/21
1:250
4524x00
ar-0102
b01



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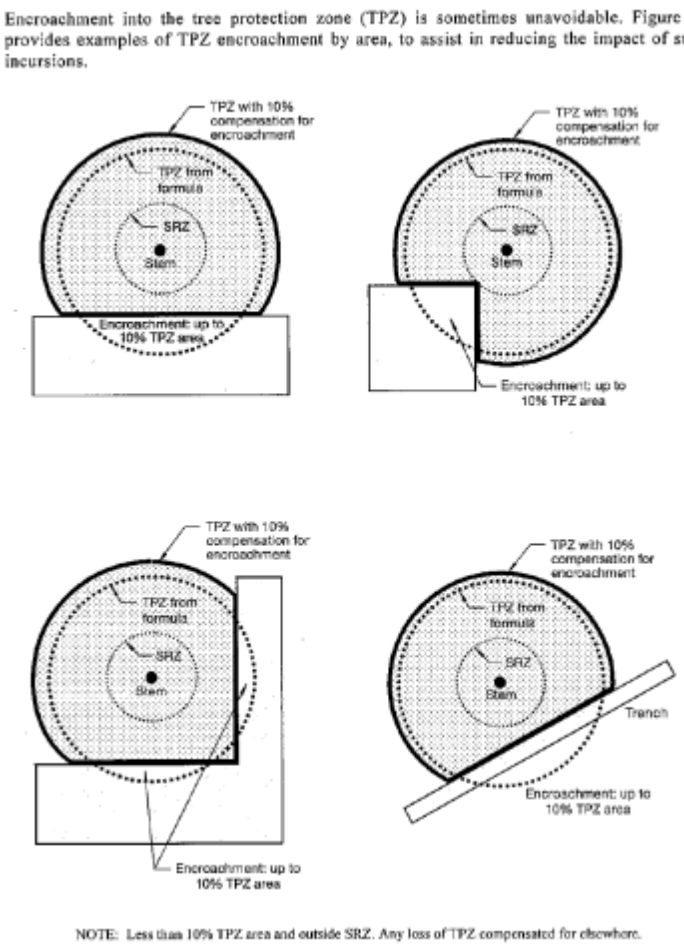
# Tree Protection Zone Information (TPZ)

The Tree Protection Zone is a designated area to limit or exclude any activities during development that could be detrimental to tree health. The TPZ is designed to protect the tree crown, trunk and the rooting area that is considered essential to tree health.




The radius of the TPZ is calculated at 12 x the diameter of the trunk (DBH) at 1.4m as per AS 4970 (2009).

Generally, a 10% encroachment of the TPZ area is permissible provided that the encroachment is compensated for, resulting in no loss to the total TPZ area and there is no encroachment into the Structural Root Zone (SRZ). The SRZ is the area considered essential to tree stability and is only calculated when there is major encroachment proposed into the TPZ.

Examples of minor (10% or less) TPZ encroachment

Exert from Appendix D, AS 4970 – Protection of Trees on Development Sites

Major encroachment (>10% of TPZ area) may require tree sensitive construction techniques to minimise the impact on retained trees and/or a non-destructive root investigation to conclusively prove to the Responsible Authority that the encroachment will not be detrimental to tree health as per the recommendations in AS4970.

Within the Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) for each tree, site workers and contractors are NOT to allow the following to occur-

- Mechanical excavation including trenching without consulting the site Arborist which must be onsite.
- Excavation for silt fencing.
- Cultivation.
- Storage.
- Preparation of chemicals, including preparation of cement products.
- Parking of vehicles and plant.
- Refuelling.
- Dumping of waste.
- Placement of fill.
- Lighting of fires.
- Soil level changes.
- Temporary or permanent installation of utilities and signs.
- Physical damage to the tree.

# Development Proposal

The proposed development of the site involves the complete demolition of the existing buildings besides the original church, the removal of all paved carparks followed by the construction of a multiple story complex. Including the installation of basement parking, roadways, pathways gardens and landscape communal areas.

The majority of vegetation within the site is to be removed to accommodate the proposed development minus trees 222, 223 and 224.

# Impact Assessment

With the exception of Trees' 222, 223 and 224 all vegetation within the site will need to be removed to accommodate the proposed development due to multiple major encroachments.

Tree 222 - The basement of the proposed north western building will make an encroachment of 125m² into the TPZ of the tree with no SRZ incursion. This encroachment represents 17.8% of the total TPZ area which is 706.9m². This is unlikely to affect the health and structural integrity of the tree providing that the tree protection plan is enforced.

A root mapping exercise assisted with evaluating the risk to the tree prior the development application. There will be the need for stringent tree protection measures for tree 222 which is detailed within the tree protection plan. Root pruning at the extremity of the complex will be required to take place prior the development commences utilising the use of non-destructive trenching methods I.e. Vacuum excavation.

# Root Mapping Assessment

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**W:** unitedscanning.com.au
**P:** PO Box 3029, Midland WA 6056
**A:** Level 8, 251 Adelaide Tce, Perth 6000
**ABN:** 89 262 952 771

UNITED SCANNING SERVICES PTY LTD

## 1. Scanning Results

To whom it may concern,

This document is to state that Ground Penetrating Radar Scanning was undertaken by UNITED SCANNING SERVICES PTY LTD on the: 20 March 20

Scanning was undertaken in the following location:
Robert St Como

Description of Works Completed:

Undertook GPR scanning to map out major tree root system on a heritage listed tree.
All detected roots are marked clearly on site with approximate depths.

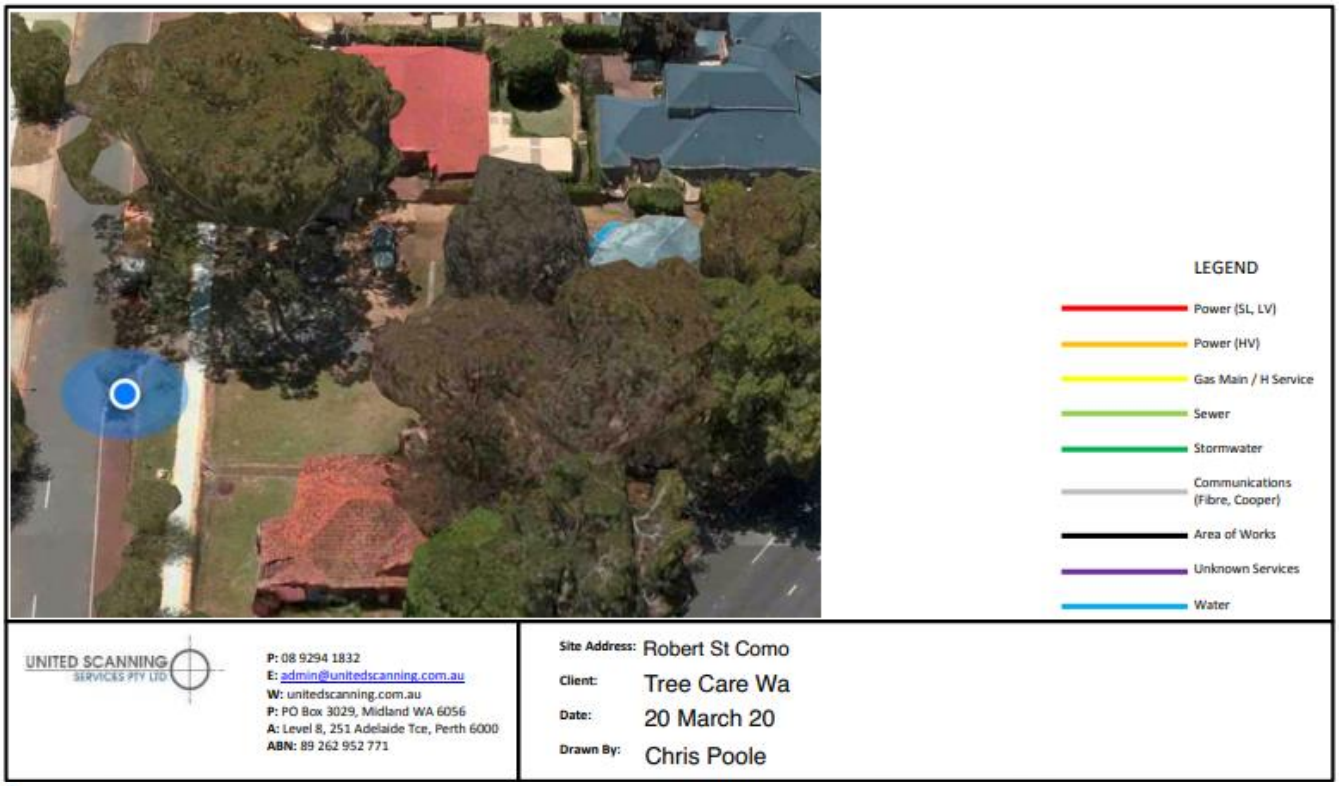
If you require any more information, please let us know.

**Matthew Hill**

DIAL BEFORE YOU DIG www.1100.com.au ATCO Gas AUSTRALIA WATER CORPORATION CONCRETE INSTITUTE of AUSTRALIA

*Whilst every effort is taken to accurately record and interpret the images located by the Ground Penetrating Radar, United Scanning Services cannot be held responsible for inaccurate or false interpretation of data, images or reports relating to target service locations. Design and structural interpretations or opinions expressed by the company or its technicians must be verified by a suitably qualified professional engineer.*

## 2. As Located Utility Reference Plan

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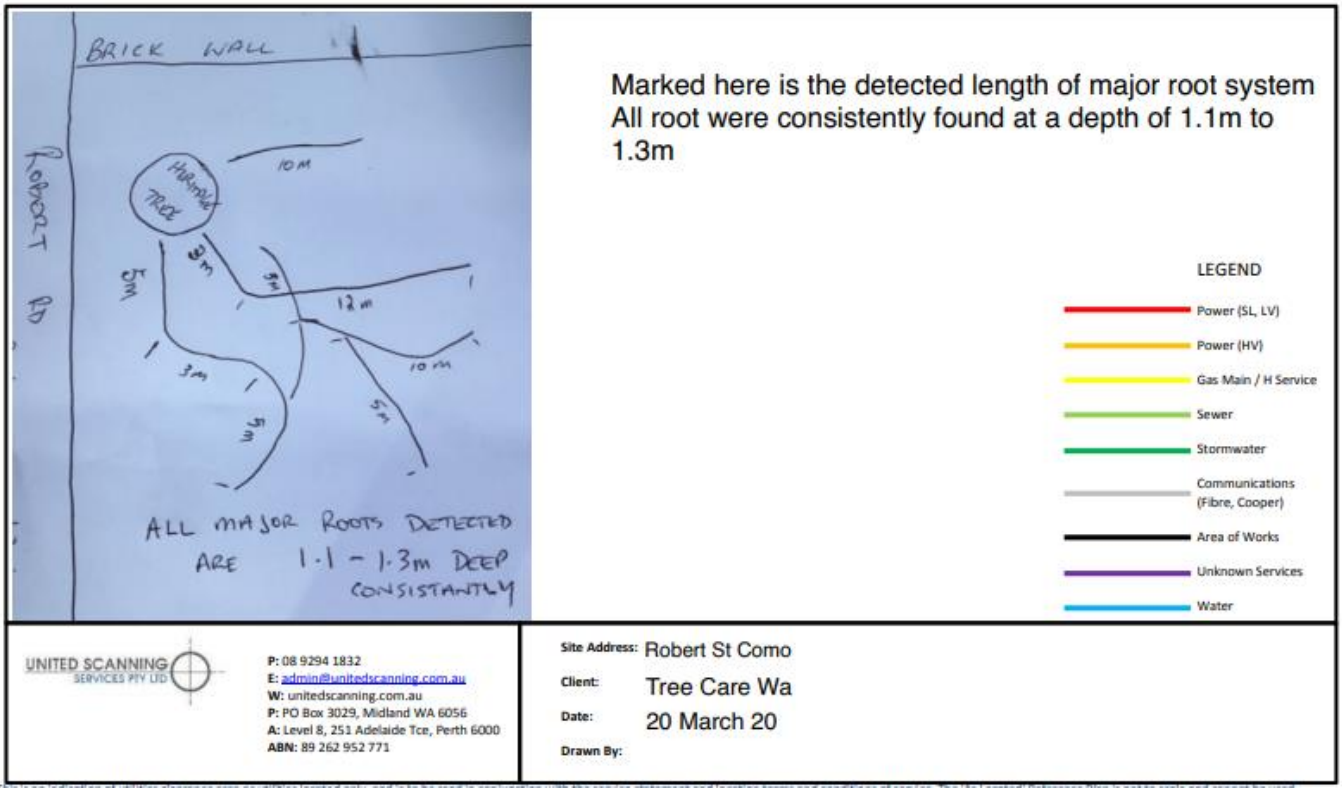

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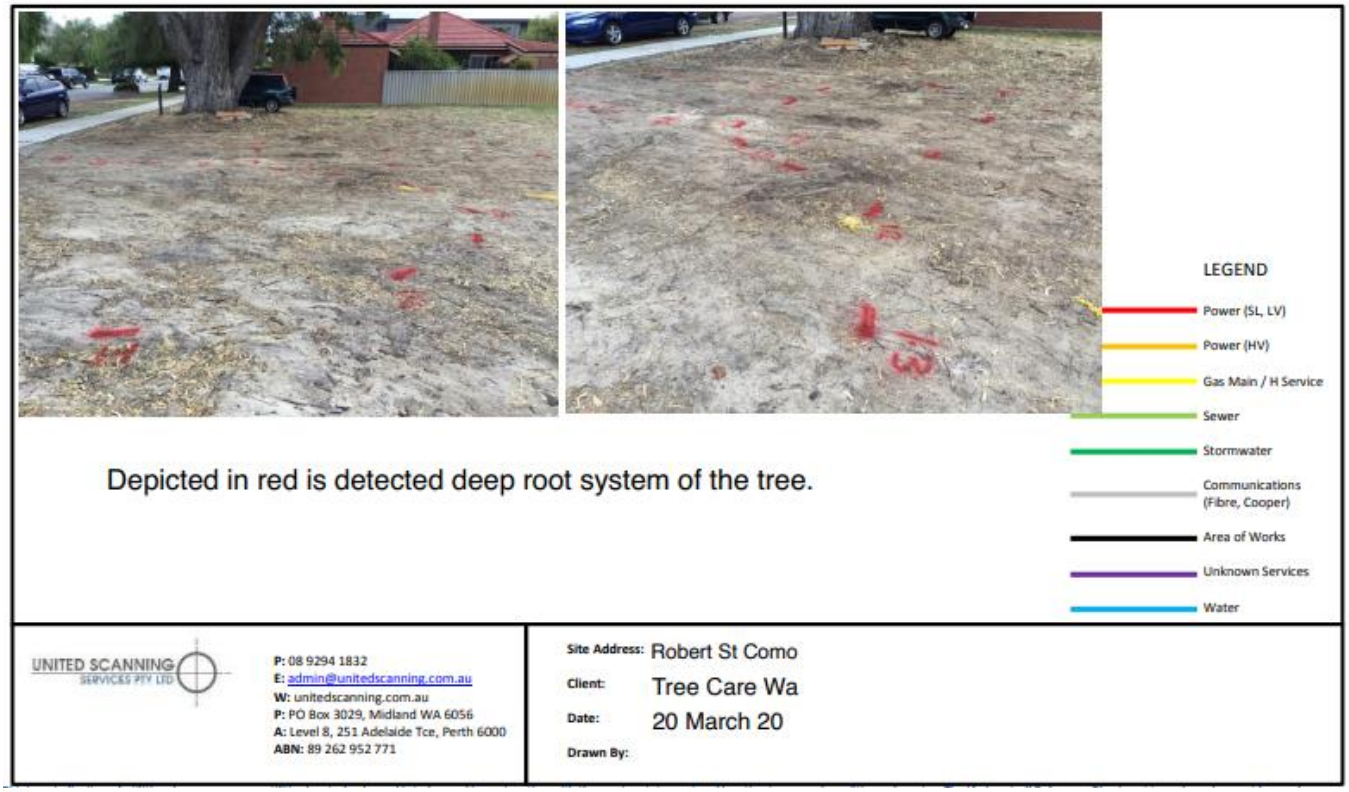
LEGEND
Power (SL, LV)
Power (HV)
Gas Main / H Service
Sewer
Stormwater
Communications (Fibre, Cooper)
Area of Works
Unknown Services
Water
Depicted in red is detected deep root system of the tree.
UNITED SCANNING SERVICES PTY LTD
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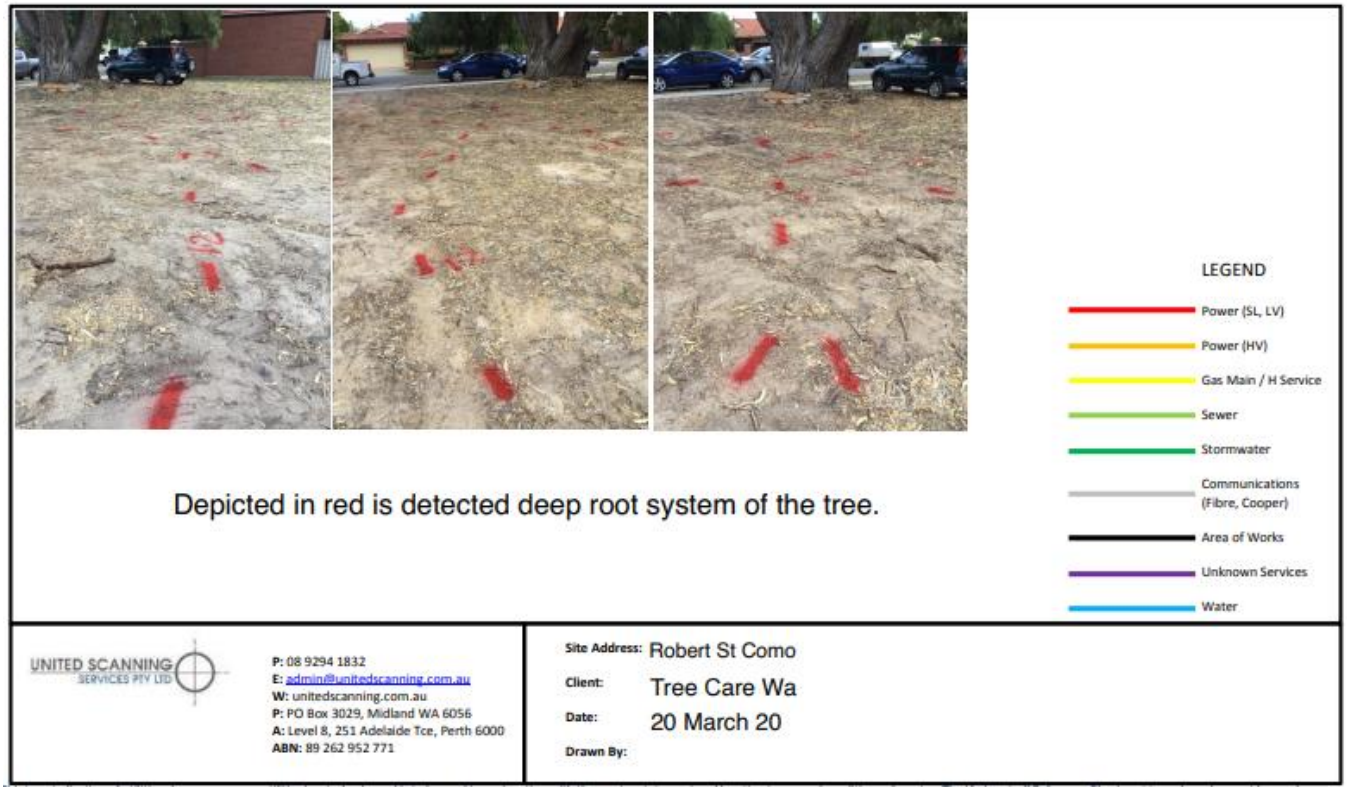
P: PO Box 3029, Midland WA 6056
A: Level 8, 251 Adelaide Tce, Perth 6000
ABN: 89 262 952 771
Site Address: Robert St Como
Client: Tree Care Wa
Date: 20 March 20
Drawn By:

2.


LEGEND
Power (SL, LV)
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Site Address: Robert St Como
Client: Tree Care Wa
Date: 20 March 20
Drawn By:

2. As Located Utility Reference Plan

Depicted in red is detected deep root system of the tree.

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A: Level 8, 251 Adelaide Tce, Perth 6000
ABN: 89 262 952 771

Site Address: Robert St Como
Client: Tree Care Wa
Date: 20 March 20
Drawn By: Chris Poole

## Recommendations

- All works to be completed in conjunction with the attached Tree Protection Plan (TPP)
- Root pruning for tree 222 is to be completed by the project Arborist utilising non- destructive detection methods in accordance with AS4372-2007 Pruning of Amenity Trees using clean sharp hand tools.
- All trees to remain will require tree protection methods as per AS4970 – 2009 Protection of trees on development sites.
- Following the sites demolition, reduce the TPZ fencing surrounding Tree 222 to accommodate excavation for the footings.
- Ground protection system must be installed and maintained for the developments duration in accordance with AS4970-2009 Protection of Trees on Development Sites. The ground protection system can only be removed once the dwellings construction has ended to allow for landscaping.

# Appendix 1 – Tree Assessment Methodology

The subject trees were assessed against the following categories.

## Age

- **Juvenile -** Recently planted or self-set and relatively small
- **Semi mature -**The tree is established and approaching its expected mature size.
- **Mature -** Has reached its full potential in size for the species in that area.
- **Early Veteran -** Characterized by both a very slow growth rate and the trees inability to withstand disturbances with its limited energy reserves to fight of invading pests and diseases.
- **Veteran -** The tree is entering a phase where it has lost its ability to defend itself against pest and diseases and structural integrity may be compromised.

## 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 that species. Minor dead wood may be present throughout the crown, with only minor fauna feeding in the foliage, 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.

## Structure

- **Good -** Good Branch attachment and/or no minor structural defects. Trunk and scaffold branches sound or only minor damage. Good trunk and scaffold branch taper. No branch or over extension. No damage to structural roots and/or good buttressing present. No obvious root pests or diseases.
- **Fair -** Some minor structural defects and/or minimal damage to trunk. Bark missing. Cavities could be present. Minimal or no damage to structural roots. Typical structure for species.
- **Poor -** Major structural defects and/or trunk damaged and/or missing bark. Large cavities and/or girdling or damaged roots that are problematic.
- **Hazardous -** Tree poses immediate hazard potential that should be rectified as soon as possible.

# Appendix 2 – Retention Value

The Retention Value is determined as a result of the collation of the data set (species, size, age, health, structure, form and site conditions etc) in relation to the following retention descriptors:

**None** – Tree with severe health and/or structural defects that cannot be rectified through reasonably practicable Arboricultural works; Tree may be inter dependent with surrounding trees and will be unable to be retained once adjacent shelter trees are removed; The tree is classed as a noxious or environmental weed species and is detrimental to the environment; Trees that have no retention value are likely to require immediate removal prior to any development works.

**Low** – A tree that offers little in terms of contributing to the of the future landscape for reasons of poor health, structural condition, or species suitability in relation to unacceptable growth habit, or combinations of these characteristics; A tree that is not significant due to its size and/or age and can be easily replaced; Tree is likely to have a ULE of under 10 years; Trees classed as having a low retention value may be able to be retained in the mid to short term if they do not require a disproportionate expenditure of resources (i.e. design modification).

**Moderate** – A tree with some attributes that may benefit the site in relation to botanical, horticultural, historical or local significance but may be limited to some degree by their current health condition or future growth in relation to existing or future site conditions and/or immediate/future maintenance requirements. The tree is likely to tolerate changes in its environment and will respond to Arboricultural treatments. Trees classed as having a moderate retention value should be considered for retention if reasonably practicable. Arboricultural works may be required but should remain within reasonable limits. Tree may have an ULE of over 10 years if managed appropriately.

**High** - A tree in good overall condition that has the potential to positively contribute to the landscape in the mid to long-term if appropriately managed. Species is suited to its existing site conditions and is capable of tolerating certain changes in its environment. Ideally, trees with a high retention value should be retained and incorporated into any development plans. The tree is considered to be worthy of material constraint.

# Appendix 4 – Site Photographs


222.jpg


223.jpg


224.jpg


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# Appendix 5 – Terminology and Definitions

The following definitions are stated in the Glossary of Arboricultural Terms, International Society of Arboriculture 2011, unless otherwise stated.

**Abiotic:** plant ailment caused by non-living, environmental, or man-made agents

**Barrier Zone:** chemically defended tissue formed by the still living cambium, after a tree is wounded or invaded by pathogens to inhibit the spread of decay into new annual growth rings. Wall 4 in CODIT model. Contrast with reaction zone

**Bifurcation:** Natural division of a branch or stem into two or more stems or parts

**Biotic:** pertaining to non-human living organism/ biotic agent: a living organism capable of causing disease/ biotic disorder: disorder caused by a living organism

**Bracket:** British English term for fruiting body of a decay fungus. See Conk.

**Codominant Structure:** Stems or trunks of about the same size originating from the same position from the main stem52. When the stem bark ridge turns upward the union is strong; when the ridge turns inward the union is weak, a likely point of failure in storm or windy weather conditions or where increasing weight causes undue stress on the defective union53.

**CODIT:** acronym for Compartmentalisation of Decay in Trees (refer Compartmentalisation)

**Compartmentalisation:** Dynamic tree defence process involving protection features that resist the spread of pathogens and decay causing organisms54. Natural defence process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms.

**Compaction:** Results from loads or stress forces applied to the soil as well as shear forces. Both foot traffic and vehicle traffic exert both forces on soils. Vehicle traffic may cause significant compaction at depths of 150–200 mm (the area in which most absorbing roots are located). The degree of compaction will depend on weight of vehicles, number of movements, soil moisture levels and clay content. Soil handling, stockpiling and transporting also tend to lead to the breakdown of soil structure and thus to compaction. Vibration as a result of frequent traffic or adjacent construction activities will also compact soils.

**Compression wood**: (1) in mechanics, the action of forces to squeeze, crush or push together any material (s) or substance(s): contrast with tension. (2) the ability of an internal combustion engine to contain or pressurized a combustible fuel - air mixture.

**Conk:** Fruiting body or nonfruiting body (sterile conk) of a fungus. Often associated with decay.

**Crown**: Portion of the tree consisting of branches and leaves and any part of the trunk from which branches arise.

**Crown damage**: The canopy of trees can be directly or indirectly damaged. Incorrect techniques of pruning such as lopping or flush cutting may produce wounds that are susceptible to infection by wood decay organisms. Similarly, mechanical damage to branches by machinery, etc. will also create wounds. Trees automatically respond to wounding and in doing so use stored sugars. Any wound places an additional load on trees that will inevitably be stressed during construction.

**Damping:** Damping occurs where energy is dissipated. In trees, damping occurs naturally in three main ways with aerodynamic damping of the leaves, internal damping in the wood and root zones, and with mass damping of the branches.

**Deadwood:** Dead branches within canopy of tree59 Deadwood is a naturally occurring feature of most tree species and comprises dead or decaying branches within the canopy of a tree. Deadwood may have habitat value and require removal only according to the considered risk of its location, i.e. high use pedestrian area or damage to adjacent infrastructure.
Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard. Consideration of the need for deadwood removal should take into account the occupancy of the target zone, i.e. high use pedestrian area or presence of infrastructure, possible damage to the tree during its removal as well as its conservation for habitat value. In some instances, retention of a reduced tree structure for habitat purposes maybe considered appropriate, especially when hollows are present.
Further reference: Principles of Tree Hazard Assessment. Lonsdale, David. TSO, 2009

**Dead wooding: (Crown cleaning):** The removal of dead branches. Recommendation to remove deadwood is for removal of all dead branches within tree canopy > 30mm diameter in trees which overhang pedestrian or vehicular areas and removal of all dead branches within tree canopy > 50mm diameter if trees are located in a Parkland or similar area.

**Decay:** The process of degradation of woody tissues by micro-organisms.

**Desiccation:** Severe drying out. Dehydration.

**Drip Line:** Is the imaginary perimeter line at soil surface level which is directly below the outermost edge of the tree's foliage or canopy.

**Epicormic bud**: Latent or adventitious bud located at the cambium and concealed by the bark.
**Epicormic shoots:** Shoots produced from epicormic buds at the cambium of trunks or branches.

**Field Capacity:** Maximum soil moisture content following the drainage of water due to the force of gravity.

**Included bark:** Inwardly formed bark within the junction of branches or codominant stems.
**Kino:** Dark red to brown resin-like substance produced by trees in the genera Eucalyptus, Pterocarpus and Butea and related genera. Kino forms in the barrier zones. Large kino veins form in some tree in response to injury and infection.

**Leaves:** The main function of leaves is photosynthesis, that is, the production of sugars and oxygen. The sugars produced by the leaves (and any other green tissue) are the source of chemical energy for all living cells in the entire plant and as such are essential for the normal functioning and survival of the tree. Anything that directly or indirectly damages the leaves will interfere with photosynthesis.

**Non-woody part of tree**: 'organs that increase the surface area of vascular plants, thereby capturing more solar energy for photosynthesis'. … maybe classified as microphylls (usually spine-shaped leaves with a single vein) or megaphylls (leaves with a highly branched vascular system). Needles and leaves are major energy trapping organs of a tree. Flowers are modified leaves …. as they fit the definition of an organ.

**Macropore:** Relatively larger space between soil particles that is usually air-filled and allows for water movement and root penetration. Contrast with micropore.

**Micropore:** Space between soil particles that is relatively small and likely to be water filled.

**Mortality Spiral:** Sequence of stressful events or conditions causing the decline and eventual death of a tree. Once in a mortality spiral trees are more likely to succumb to any further or additional stress factors such as drought, pest infestation or disease. (See definition Stress)

**Necrosis:** Localised death of tissue in a living organism

**Occlusion** (See wound): Shut in or out. Occlusion is the process of trees forming callus and clear wood over wounds.

**Pathogen:** A disease-causing organism.

**Pipe:** Mud filled channel extending upwards from root/ stem zone of tree.

**Phototropism:** Influence of light on the direction of plant growth. Tendency of plants to grow towards light.

**Phloem:** Plant vascular tissue that transports photosynthates and growth regulators. Situated on the inside of the bark, just outside the cambium. Is bidirectional (transports up and down). Contrast with xylem.

**Photosynthesis:** Process in green plants (and in algae and some bacteria) by which light energy is used to form glucose (chemical energy) from water and carbon dioxide.

**Reaction wood**: Wood forming in leaning or crooked stems or on lower or upper sides of branches as a means of counteracting the effects of gravity. See compression wood and tension wood.

**Shrub:** A woody plant similar to a tree except it is usually several-stemmed and smaller than a tree.

**Stem / Trunk:** Organ which supports branches, leaves, flowers and fruit; may also be referred to as 'the trunk'.

**Stress:** In Plant Health Care, (1) a factor that negatively affects the health of a plant; a factor that stimulates a response. (2) in mechanics, a force per unit area.

**Stress – acute**: Disorder or disease that occurs suddenly and over a short period of time.

**Stress – chronic**: Disorder or disease occurring over a longer time.

**Tree:** Long lived woody perennial plant greater than (or usually greater than) 3 m in height with one or relatively few main stems or trunks75,76. A tree has 3 major organs – roots, stem and leaves.

**Vigour:** Ability of a tree to sustain its life processes. The term 'vigour' in this document is synonymous with commonly used terms such as 'health' and 'vitality'. Inherent genetic capacity of a plant to deal with stress.

**Vitality:** Ability of plant to deal effectively with stress.

**Water sprouts/ Epicormic growth** (Usually multiple shoots): Shoots produced from epicormic buds at the cambium of trunks or branches. Grows 'from the stub ends and only grows from the outermost living tissue layer of that year's growth. They are weakly attached and prone to falling out or being blown off with the risk increasing markedly as they increase in size. When epicormic shoots arise from stub ends that are decaying, the chances of them falling out are significantly greater'.

**Wound:** An opening that is created when the bark is cut, removed or injured.
NOTE: Pruning a live branch always creates a wound, even when the cut is properly made.

**Xylem:** Main water and mineral-conducting (unidirectional, up only) tissue in trees and other plants. Provides structural support. Arises (inward) from the cambium and becomes wood after lignifying. Contrasted with phloem.

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# Disclaimer and Limitations

References in this report to the Arborist means James Jordan as an employee of Tree Care WA.

References in this report to Tree Care WA means Westworks Group Pty Ltd as trustee for Ussheridan Trust trading as Tree Care WA (ACN 156 131 010 ABN 46 156 131 010).

In this report a reference to a group of persons includes a reference to all of them collectively, any two or more collectively and each of them individually.

The releases and limitations in this report apply to the Arborist, Tree Care WA and any employees, directors, contractors and agents of the Arborist and/or Tree Care WA.

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

The Arborist and Tree Care WA cannot and do not guarantee trees contained within this report will be structurally sound under all circumstances and cannot and do not guarantee that the recommendations made will categorically result in the tree being made “safe”. Unless specifically mentioned this report will only be concerned with above ground inspections, that will be undertaken visually from ground level.

Trees are living organisms and as such cannot be classified as “safe” under any circumstances.

Failure events can occur for any number of reasons at any time and cannot always reasonably be foreseen, as any number of circumstances can come about at any time before or after an inspection that the Arborist and Tree Care WA may not be aware of.

All recommendations are made based on what can be reasonably identified at the time of inspection therefore the author accepts no liability for any recommendations made.

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4th August 2020

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TRAQ CERTIFIED

# Tree Protection Plan – Como Baptist Church

TREE PROTECTION ZONE
15M Radius from centre of tree

STRUCTURAL ROOT ZONE

(NO WORKS ALLOWED)

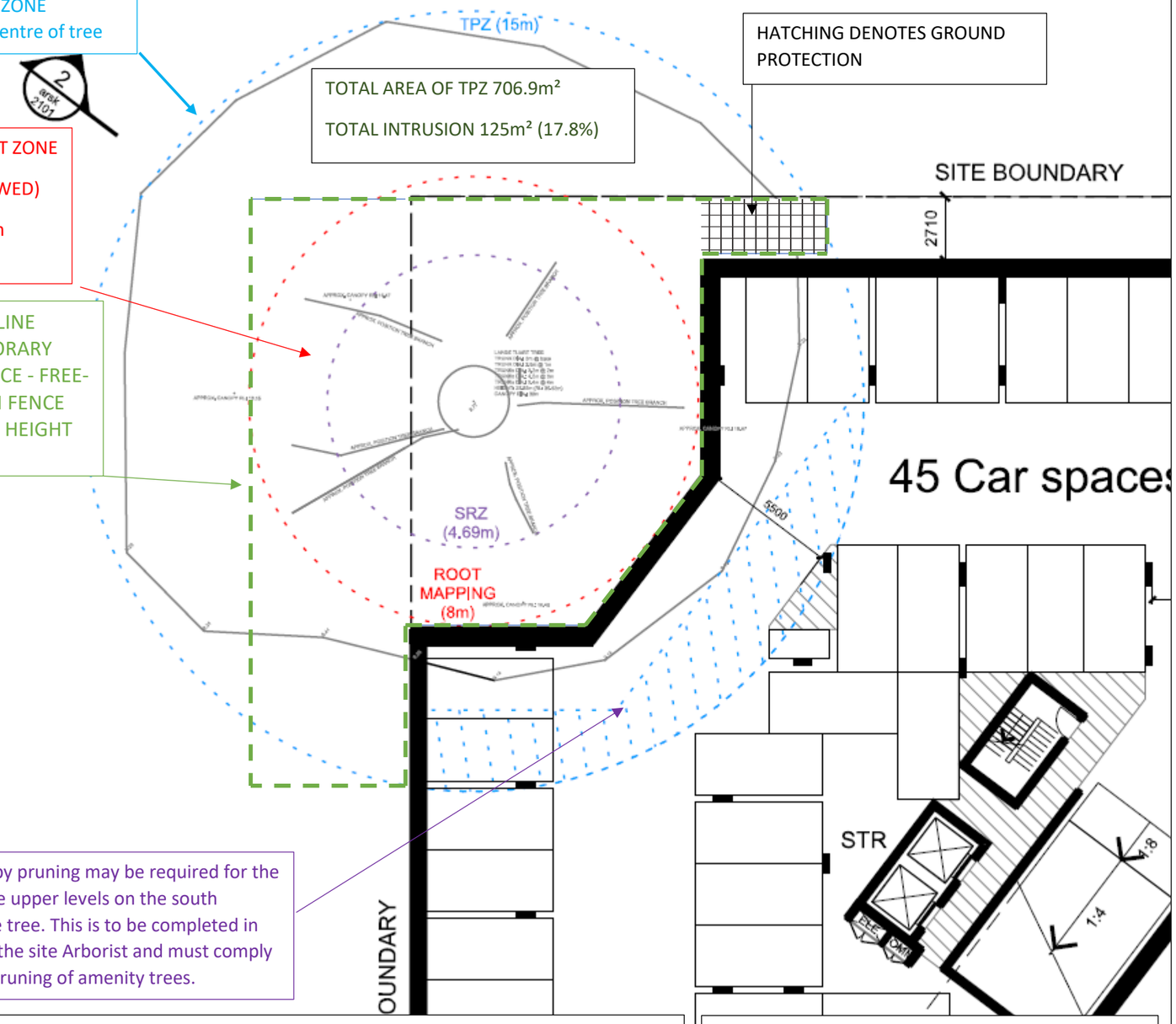
4.69M Radius from centre of tree.

BROKEN GREEN LINE DENOTES TEMPORARY PROTECTIVE FENCE - FREE-STANDING MESH FENCE WITH MINIMUM HEIGHT OF 1.8m

HATCHING DENOTES GROUND PROTECTION

TOTAL AREA OF TPZ 706.9m²

TOTAL INTRUSION 125m² (17.8%)




Some minor canopy pruning may be required for the construction of the upper levels on the south eastern side of the tree. This is to be completed in consultation with the site Arborist and must comply to AS 4373-2007 Pruning of amenity trees.

## INFORMATION

| | |
|---|---|
| LOCATION | 469 & 471 Canning Highway Como, WA |
| ARCHITECT | Dem Aus Pty Ltd |
| CLIENT/OWNER | Como Baptist Church |
| LOCAL GOVERNMENT AUTHORITY | City of South Perth |
| SITE ARBORIST | Tree Care WA - James Jordan 0437 848 0012 |

## Tree Protection for Trees 223 and 224

Temporary protective fencing to be installed as per the recommended TPZ – No encroachment has been allowed for.

**Tree 223 = 2m Radius**

**Tree 224 = 3m Radius**

## ARBORICULTURAL METHOD STATEMENT

From commencement of the development, the following methodology shall be implemented in the manner and sequence described below.

**Note: The Construction Exclusion Zone is defined as the Tree Protection Zone**

The Construction Exclusion Zone shall comprise:
a) Solid 'ground protection of to be laid immediately outside of the development site as shown within the plan.
b) Temporary 'protective fencing' to be established from the edge of the road as shown on the Plan
The Construction Exclusion Zone shall:
1. Be fixed in place prior to commencement of any construction works, delivery of site accommodation or materials, and shall remain intact for the duration of site construction works;
2. Preclude all construction activity, with the sole exception of the specified works as have been agreed by all parties (Dem Pty Ltd, City of South Perth the Site Arborist), and are shown on the Plan;
3. Preclude the storage and tipping of all materials and substances within the Exclusion Zone any incursion within the Construction Exclusion Zones shall be by prior arrangement, following consultation with the Site Arborist and City's Arborist.

**Temporary Protective Fencing -** The Temporary Protective Fencing shown on the Plan will comprises a robust, 1.8m high free-standing mesh type fencing, this includes the closure of the public footpath. The closure of the section of footpath is necessary to stop construction vehicles parking within the TPZ during construction. The Temporary Protective Fencing shall not be removed, nor modified, without the consent of the site Arborist.
**Signage**: Shall be affixed to all 4 sides, and state – "Tree Protection Fence - No Access - This fence may only be moved following consulting with the site Arborist.

**Ground Protection Area**- The Ground Protection Area is shown on the Plan in a grid pattern, and comprises sturdy inter linked strapped rumble boards (or thick scaffold boards) on top of a 150mm layer of woodchips. The boarded area shall be limited to, but be capable of, 2-ton site vehicles without distortion.

**Tree Protection Zone Intrusion:**

**1. Lower Basement's** – GPR (Ground Penetrating Radar) has indicated the presence of tree roots within this area. Non-destructive excavation shall be used to a depth of 1.5m from existing surface levels of the far extremity of the lower basement walls, root pruning will be required thereafter by the site Arborist. All tree root pruning is to be completed only by the site Arborist.

**Sequence of work** -
1. Pre-construction site meeting
2. Erection and installation of tree protection barriers, Fence & Ground Protection
3. Main construction phase
4. Removal of tree protection barriers'
5. Landscape works

**1. Pre-Construction Site Meeting**
To outline working methods in relation to trees, a site meeting of the following shall take place prior to the commencement if any construction activity on site:

- Client
- Main Contractor
- Site Arborist
- City of South Perth

**2. Erection and installation of tree protection barriers**
a. The main contractor shall erect both the protective fence and ground protection.
b. The Site Arborist shall inspect the installation of the tree protection barriers prior to commencement of any construction works, or delivery of plant materials.
**3. Main Construction Phase**
1. There shall be no storage of construction equipment, plant, or material within the Protective Fencing.
2. There shall be no construction equipment exceeding 2t onto the boarded Ground Protection Area; nor shall there be any storage and tipping of potentially harmful substances (e.g. concrete, and other such)
3. Site drainage and washings from concrete and mortar mixings shall be directed away from the Exclusion Zone.
4. The integrity of the TPZ fencing and boarded ground protection shall be maintained for the duration of the Main Construction Phase.
5. Any damage occurring to the tree protection barriers during the main construction phase shall be reported to the Site Arborist and immediately made good by the Main Contractor
**4. Underground Services**
There shall be no new excavation for the installation, renewal or repair of underground services (or other purpose) within any area designated as the Tree Protection Zone.
**5. Removal of Tree Protection Barriers**
TPZ fencing and ground protection shall be removed only upon completion of the Main Construction Phase once approved by the Site Arborist.
**6. Landscape Works**
1. There shall be no excavation of the ground within any of the remaining TPZ area.
2. No hard landscaping works or excavation for cables, irrigation, or any other service shall be carried out within the zone or otherwise protected on this drawing without prior consultation with the Site Arborist.