

# **Appendix 17**

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## **Arboricultural Impact Assessment**



# ARBORICULTURAL IMPACT ASSESSMENT

Proposed Sportsfield Upgrades

Timbrell Park  
Five Dock NSW 2046

**Project No:** G658  
**Date:** 4 June 2025

## CREATIVE PLANNING SOLUTIONS PTY LIMITED

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| Revision | Date          | Description               |
|----------|---------------|---------------------------|
| A        | 29 April 2025 | For REF                   |
| B        | 9 May 2025    | For REF (Increased Scope) |
| C        | 4 June 2025   | For REF (Increased Scope) |

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# 1 EXECUTIVE SUMMARY

This Arboricultural Impact Assessment (AIA) was commissioned by the City of Canada Bay Council on the 26<sup>th</sup> of July 2024. The report relates to one-hundred and seventy-two (172) trees located within Timbrell Park, Five Dock.

The report provides an evaluation of the likely impact to existing trees as a result of proposed sportsfield upgrade works including bulk earthworks, stormwater drainage works and new sportsfield lighting within the park.

A summary of those trees identified has been provided in **Table 1** below along with a description of their location, retention values and nominated retention/removal status under the proposal.

**Table 1 – Tree assessment summary**

| Retain / Remove  | Identified Retention Values                                                                                                           |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                      |                                  | Number of Trees  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------|
|                  | High                                                                                                                                  | Medium                                                                                                                                                                                                                                                                 | Low                                                                                                                                                                                                                                                                                                  | Dead                             |                  |
| Remove           | <b>1 tree</b><br><i>Tree 142</i>                                                                                                      | <b>12 trees</b><br><i>Trees 32, 40, 80, 116, 122, 127, 132, 136, 148, 150, 160 &amp; 165</i>                                                                                                                                                                           | <b>24 trees</b><br><i>Trees 2, 3, 4, 5, 6, 26, 33, 35, 36, 48, 63, 81, 115, 117, 118, 120, 121, 125, 131, 141, 147, 164, 166 &amp; 168</i>                                                                                                                                                           | -                                | <b>37 trees</b>  |
| Retain & Protect | <b>21 trees</b><br><i>Trees 9, 53, 94, 95, 97, 98, 100, 101, 102, 107, 123, 124, 128, 129, 130, 137, 151, 152, 169, 170 &amp; 171</i> | <b>52 trees</b><br><i>Trees 22, 23, 28, 29, 30, 31, 37, 39, 41, 42, 44, 45, 47, 52, 57, 58, 59, 60, 70, 71, 73, 74, 75, 76, 78, 79, 82, 84, 86, 88, 92, 96, 99, 108, 109, 110, 111, 126, 133, 134, 138, 140, 143, 146, 149, 156, 158, 159, 161, 162, 163 &amp; 167</i> | <b>61 trees</b><br><i>Trees 1, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 27, 34, 38, 43, 46, 49, 50, 51, 54, 55, 56, 61, 62, 64, 65, 66, 67, 68, 69, 72, 77, 83, 85, 87, 89, 90, 91, 93, 104, 105, 106, 112, 113, 114, 119, 135, 139, 144, 145, 153, 154, 155, 157 &amp; 172</i> | <b>1 tree</b><br><i>Tree 103</i> | <b>135 trees</b> |
| <b>Total</b>     |                                                                                                                                       |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                      |                                  | <b>172 trees</b> |

Based on the plans supplied, and should the proposed works proceed in their current form, it is recommended that thirty-seven (37) trees be removed (**Trees 2, 3, 4, 5, 6, 26, 32, 33, 35, 36, 40, 48, 63, 80, 81, 115, 116, 117, 118, 120, 121, 122, 125, 127, 131, 132, 136, 141, 142, 147, 148, 150, 160, 164, 165, 166 & 168**) and one-hundred and thirty-five (135) trees be retained and protected (**Trees 1, 7-25, 27-31, 34, 37-39, 41-47, 49-62, 64-79, 82-114, 119, 123, 124, 126, 128-130, 133-135, 137-140, 143-146, 149, 151, 152-159, 161-163, 167, 169-171 & 172**).

Specific recommendations as per **Section 7** will need to be adopted to ensure root sensitive construction techniques and methodology are employed which mitigate any potential negative impacts to retained trees.

## 2 INTRODUCTION

### 2.1 Background

This Arboricultural Impact Assessment (AIA) was commissioned by the City of Canada Bay Council on the 26<sup>th</sup> of July 2024 to evaluate the potential impacts that proposed sportsfield lighting upgrade works, bulk earthworks, drainage works and car parking bays will have on existing trees located on the subject site at Timbrell Park, Five Dock (refer to **Figure 1**).

Accordingly, the purpose of this report is to assess the potential impact of the proposed development on the subject trees, as well as provide recommendations for further amendments to the design or construction methodology where necessary to minimise any adverse impact. The report also provides recommended tree protection measures to ensure the long-term preservation of the trees to be retained where appropriate.

### 2.2 Objectives

This report has been prepared to assess the level of impact development works are likely to cause to existing trees and make a determination as to whether trees will be adversely affected. The report will aim to provide guidance as to those trees requiring removal, retention or protection in accordance with the provisions of *AS4970-2009 Protection of trees on development sites*. Where necessary, it will also provide recommendations for design modifications and any replacement planting. As such, the objectives of this report are as follows:

- Assess the current site and growing conditions of trees;
- Assess the current health, condition, lifespan & significance of the trees within the site;
- Identify relative retention values of trees within the site;
- Calculate anticipated encroachment levels resulting from proposed works;
- Determine the likely impact as a result of the calculated encroachments;
- Assess potential for retention and protection of trees where possible;
- Advise any design modifications necessary to retain important trees;
- Recommend tree and root sensitive design and construction methodologies to mitigate impacts to trees to be retained;
- Inform of any tree removal necessary due to unsustainable impacts;
- Provide guidance and recommendations for any replacement planting necessary.

No aerial inspection, root mapping or internal diagnostic testing has been carried out as part of this report. Additionally, no cation exchange capacity testing or plant tissue analysis has been undertaken.

### 2.3 Legislation & Regulating Documents

This Arboricultural Impact Assessment has considered the following regulatory documents:

- *State Environmental Planning Policy (Biodiversity and Conservation) 2021*
- *Canada Bay Local Environmental Plan 2013 (CBLEP 2013)*
- *Canada Bay Development Control Plan 2023 (CBDCP 2023)*
- *Greater Sydney Regional Strategic Weed Management Plan 2023-2027 (GSRSWMP)*

## 2.4 Documentation Received

The following documents were received and have been relied upon for this Assessment:

**Table 2** – Documentation received and reviewed as part of the Arboricultural Impact Assessment

| Document Description            | Author                   | Revision No. / Date   |
|---------------------------------|--------------------------|-----------------------|
| Detail Survey                   | SDG                      | A / 2 July 2024       |
| Sportsfield Upgrade Plans       | SportENG                 | T3 / 9 May 2025       |
| Lighting Plans                  | GRA Electrical Engineers | P1 / 22 February 2025 |
| On-Street Parking Concept Plans | Stantec                  | P3 / 18 August 2023   |

Note: care has been taken to obtain all information from reliable sources; however, the author makes no representations, guarantees or warranties as to the accuracy of information provided by others. No other information has been reviewed, should this become available impacts may be subject to change.

## 2.5 The Site

The site is known as Timbrell Park, Five Dock and is legally described as Lot 1 in DP DP356799 and Lot 7010 in DP 93651 (the site). The site is located at the south-western tip of Iron Cove and is bordered by Henley Marine Drive to the north, Timbrell Drive to the east and Iron Cove Creek to the south. At present, the site is defined by a large open space area programmed for a number of different sports and includes an existing recently built amenities building as well as a number of shade structures, sheds, crickets pitches and other supporting infrastructure (refer to **Figure 1** below).

The topography of the subject site is generally of an even and consistent grade with a fall of approximately 1m as measured from western to eastern corners of the site (RL 2.5 – RL 1.5).

## 2.6 Proposed Development

The proposed development is for sportsfield upgrades including bulk earthworks, installation of sub-grade stormwater drainage infrastructure, installation of eleven (11) light towers and associated electrical infrastructure as well as establishment of four (4) on-street parking areas within the frontage of Timbrell Park located along Henley Marine Drive (refer to **Figures 2, 3, 4 & 5** below).

## 2.7 Limitations

Trees are living organisms whose health and condition can change rapidly. The conclusions and recommendations in this report are valid for one (1) year only from the date of the report, unless otherwise stated. Any changes to the site as it stands at present, for example building extensions, excavation works, importing of soils, extreme weather events etc. will invalidate this report. Any reproduction of this report must be in full colour using the report in its entirety.



**Figure 1** - Aerial image indicating subject site (outlined yellow).  
Source: Nearmap, June 2025.

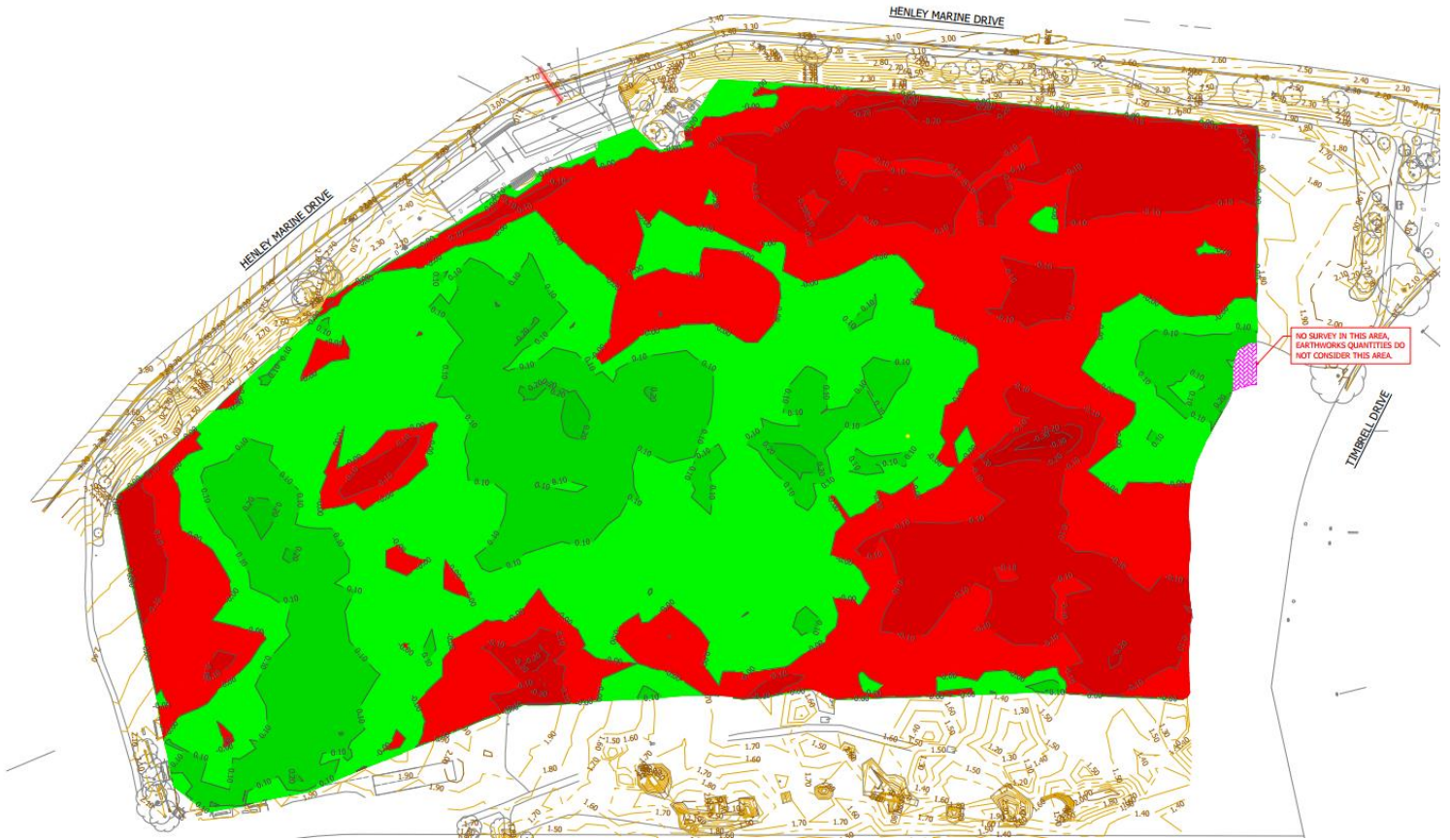


**Figure 2** – Bulk Earthworks Plan extract showing the proposed layout of bulk earthworks.  
Source: SportENG, May 2025.



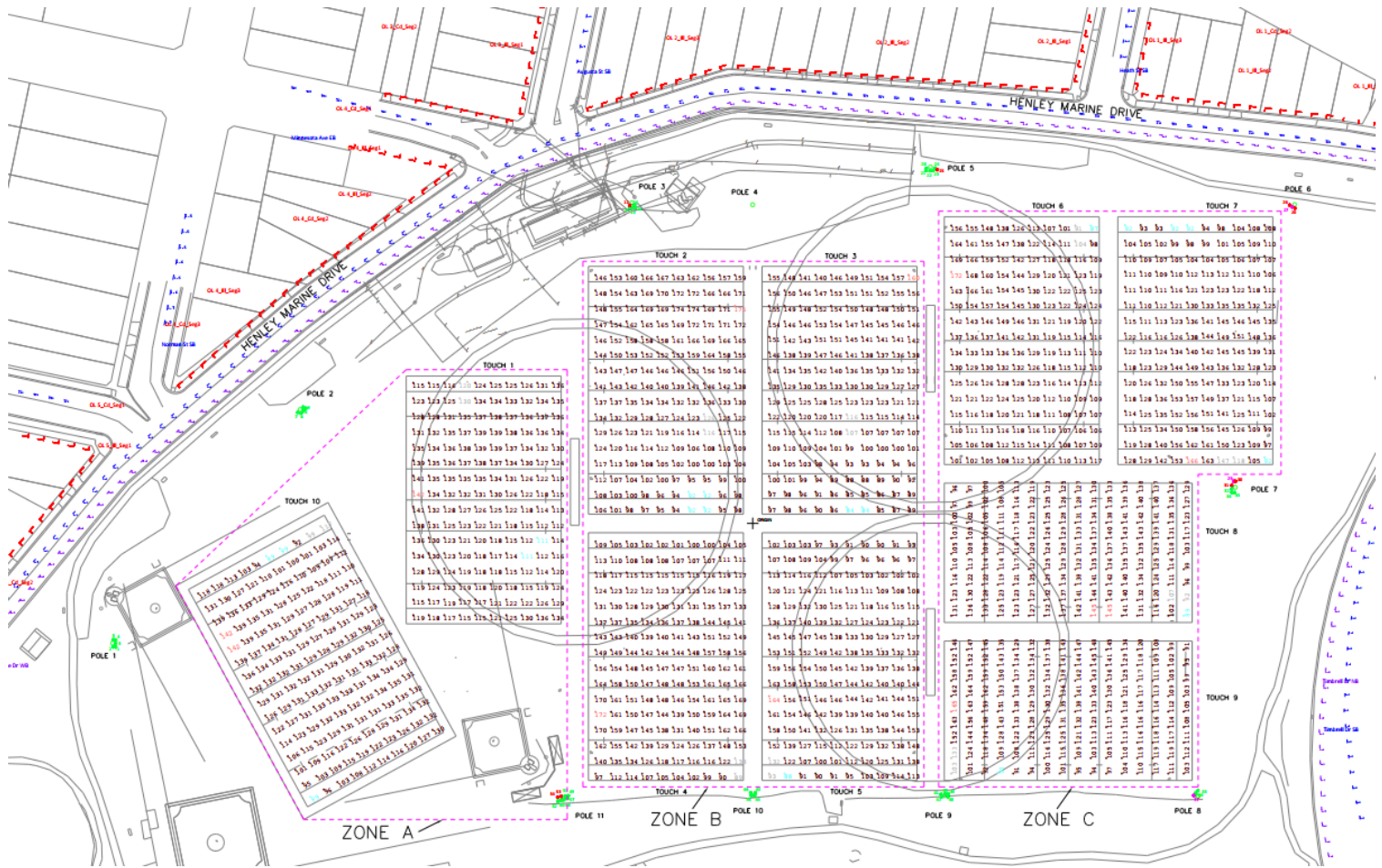


**Figure 4 – Sportsfield Lighting Design Layout showing the proposed layout of the development.**  
Source: GRA Electrical Engineers – April 2025



**Figure 5** – On-Street Parking Concept Layout Plan extract showing the proposed layout of the parking areas.  
Source: Stantec, August 2023.

## 3 METHODOLOGY

### 3.1 Methodology

#### 3.1.1 Site Inspections

Site inspections were carried out by the author with the subject trees and the general growing environment evaluated on the 1<sup>st</sup> and 2<sup>nd</sup> of August 2024 and 24<sup>th</sup> of January 2025. The weather at the time of each inspection was overcast to sunny with good visibility.

The subject trees were inspected visually from ground level with the following information recorded and provided in tabulated form at **Appendix 1**:

- Tree Species (Botanical & Common Name);
- Approximate height;
- Approximate canopy spread;
- Trunk Diameter (measured at 1.4 metres from ground level);
- Trunk Diameter at base (above root crown);
- Age class;
- Health & vigour; using foliage size, colour, extension growth, presence of disease or pest infestation, canopy density, presence of deadwood, dieback and epicormic growth as indicators;
- Condition; using visible evidence of structural defects, instability, evidence of previous pruning and physical damage as indicators;
- Suitability of the tree to the site and its existing location;
- Safe Useful Life Expectancy (SULE).

#### 3.1.2 Visual Tree Assessment (VTA)

The modified Level 1 limited Visual Tree Assessment (VTA) was undertaken for all trees during the site inspection. The VTA consists of a detailed inspection of the subject tree from ground level to the upper canopy. This method of tree evaluation is adapted from Mattheck, 2007 and is recognised by The International Society of Arboriculture (ISA), Arboriculture Australia and The Institute Australian of Consulting Arborists (IACA). No aerial inspections or major root excavations were undertaken.

#### 3.1.3 Safe Useful Life Expectancy (SULE)

The remaining Safe Useful Life Expectancy of a tree is an estimate of the sustainability of the tree in the landscape, calculated based on an estimate of the average age of the species in an urban area, less its estimated current age. The life expectancy of each tree has been further modified where necessary in consideration of its current health, vigour, condition and suitability to the site. The estimated SULE of each tree is shown in **Appendix 1**.

The following ranges have been allocated to each tree:

- Long SULE: Trees that appear to be retainable with an acceptable level of risk for > 40 years.
- Medium SULE: Trees that appear to be retainable with an acceptable level of risk for 15 to 40 years.
- Short SULE: Trees that appear to be retainable with an acceptable level of risk for 5–15 years.
- Remove: Trees with a high level of risk that would need removing within the next 5 years.
- Small, Young or Regularly Pruned.

### 3.1.4 Landscape Significance

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. Several factors contribute towards the assessment of a tree's significance including but not limited to condition and vigour, form, visual prominence, heritage status, indigeneity, legislative protection, cultural sentiment and future growth potential.

For the purposes of this report the Australian Institute of Consulting Arborists (IACA) Significance of a Tree, Assessment Rating System (STARS)® has been utilised. The system uses a scale of High, Medium and Low significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

**Appendix 3** provides a full outline of assessment criteria for each significance rating as per IACA STARS (2010).

### 3.1.5 Retention Value

Retention values have been determined for each tree on site to establish a hierarchy for tree retention. Retention values are based on estimated life spans and their associated landscape significance rating in accordance with the Tree Retention Value Priority Matrix. This matrix established the following retention values and can be found at **Appendix 3** with attributed retention values found within **Appendix 1**:

- Priority for Retention (**High**)
- Consider for Retention (**Medium**)
- Consider for Removal (**Low**)
- Priority for Removal

### 3.1.6 AS 4970:2025 Protection of Trees on Development Sites

The Australian Standard, AS 4970:2025 – *Protection of trees on development sites*, has been used as a guide to provide recommendations for the assessed trees. The Standard provides guidance on the principles for protecting trees on land subject to development as well as principles for determining viability of tree retention. Terminology and recommended methods are consistent with AS 4970:2025.

### 3.1.7 Notional Root Zone

The assessed trees have been allocated a Notional Root Zone (NRZ). The Australian Standard, AS4970-2025- '*Protection of trees on development sites*', has been used as a guide in the allocation of NRZs for the assessed trees. The NRZ is calculated based on trunk (stem) diameter at standard height (DSH), measured at 1.4 metres above ground level. The radius of the NRZ is calculated by multiplying the trees DSH by 12. The method provides a NRZ that addresses health and growing requirements of a tree as well as the trees stability. NRZ distances are measured as a radius from the centre of the trunk at (or near) ground level. The maximum NRZ should be no more than 15m radius and the minimum TPZ should be no less than 2m radius.

An extract of the AS4970-2025 for calculating NRZ has been provided at **Appendix 6** for reference.

### 3.1.8 Structural Root Zone

The assessed trees have been allocated a Structural Root Zone (SRZ). The Australian Standard, AS4970-2025 - 'Protection of trees on development sites', has been used as a guide in the allocation of SRZ's for the assessed trees. The SRZ is a radial area extending outwards from the centre of the trunk and is calculated as follows:

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

### 3.1.9 Tree Protection Zone

Using the NRZ as a starting point, a Tree Protection Zone (TPZ) is a specified area located both above and below ground that is required for the protection of trees during development works. The purpose of a TPZ is to protect of a tree's roots and crown throughout the development process via the installation of tree protection measures and appropriate site management.

The location and alignment of specified TPZs are shown in the Tree Location Plans held at **Appendix 2**.

### 3.1.10 Tree Location and Identification

Where provided, the location of assessed trees has been informed by the Detail Survey prepared by SDG dated 2 July 2024. Where trees were not formally surveyed (such as along the southern and eastern extents of the site), their locations have been obtained onsite using a Trimble TDC600 GNSS Receiver delivering sub-metre accuracy.

## 4 OBSERVATIONS

### 4.1 General

The site area subject to this assessment was observed as highly disturbed with minimal understorey present. Species observed varied including exotic, Australian native and locally endemic species as well as a number of weed species. Health, vigour and condition was also highly varied across the trees forming part of the assessment. Root zones of assessed trees were generally observed as modified groundcover within deep soil areas.

### 4.2 Tree Preservation Order

Part B, Section 6 – *Urban Forest* of the Canada Bay Development Control Plan 2023 applies to all land within the Canada Bay Local Government Area. The provisions included within the DCP generally protect any tree or vegetation that corresponds with the following criteria:

- a) *any tree with a height equal to or greater than 5 metres above ground level (existing); or*
- b) *any tree that is under 5 metres in height that has a trunk diameter of more than 300mm at ground level (existing); or*
- c) *has a canopy spread of over 4m; or*
- d) *a native palm, cycad or mangrove, irrespective of its dimensions.*

### 4.3 The Trees

A total of one-hundred and seventy-two (172) trees were observed on the subject site which have been surveyed as part of this assessment. All tree data recorded on site has been tabulated and is contained at **Appendix 1**. Each tree has been provided with an identification number for reference purposes and is denoted on the Tree Location Plan held at **Appendix 2**.

All trees appeared to be planted, or otherwise self-seeded specimens and were generally located within garden beds located to the perimeter of the existing sportsfields.

## 5 DISCUSSION

### 5.1 Impact Assessment

The scope of the impact assessment is to calculate encroachment to the root zones and canopies as a result of the proposed sportsfield upgrade works and evaluate the likely impact of the proposed works on the subject trees. A summary of the impacts anticipated are contained within the Tree Schedule at **Appendix 1**. Additionally, plans demonstrating the level of encroachment and conflict to the NRZ and SRZ of the subject trees can be found at **Appendix 2**. As part of the assessment the following criteria have been considered:

- Existing Relative Levels (R.L.);
- Proposed Relative Levels;
- Notional Root Zones (NRZ);
- Structural Root Zones (SRZ);
- Footprint of the proposed development (incl. stormwater and services) and temporary structures (scaffolding, hoardings etc.);
- Encroachment to the NRZ & SRZ from proposed bulk earthworks;
- Encroachment to NRZ & SRZ from proposed sub-grade infrastructure;
- Species tolerance to disturbance; and
- Assessment of the likely impact of the works on existing trees.

### 5.2 Trees Recommended for Removal

Should the proposed works proceed in their current form, it is recommended that thirty-seven (37) trees be removed. This includes **Trees 2, 3, 4, 5, 6, 26, 32, 33, 35, 36, 40, 48, 63, 80, 81, 115, 116, 117, 118, 120, 121, 122, 125, 127, 131, 132, 136, 141, 142, 147, 148, 150, 160, 164, 165, 166 & 168**. Removals have been recommended based upon trees being located within the footprint of the proposed works or due to 'Major', unsustainable encroachment to their respective Notional Root Zones (NRZs) and Structural Root Zones (SRZs).

**Table 3** below provides a summary of impacts to be sustained as part of the proposed works and subsequent reasoning for removal. Refer to **Appendix 2** for a plan indicating the location of the tree that will require removal (dashed red).

**Table 3 – Trees recommended for removal**

| Reason for Removal                                                                                                                                                               | Trees Recommended for Removal    |                                                                              |                                                                                                    |      |                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------|--------------------------------|
|                                                                                                                                                                                  | High Retention Value             | Medium Retention Value                                                       | Low Retention Value                                                                                | Dead | Total                          |
| Full encroachment. Located within the footprint of proposed bulk earthworks, shared pathway, or on-street car parking areas.                                                     | One (1) tree:<br><b>Tree 142</b> | Eight (8) trees:<br><b>Trees 116, 122, 127, 132, 136, 150, 160 &amp; 165</b> | Fourteen (14) trees:<br><b>Trees 2, 3, 4, 5, 26, 33, 35, 36, 117, 118, 121, 131, 164 &amp; 166</b> | -    | <b>Twenty-three (23) trees</b> |
| Major, unsustainable encroachment to the NRZ (21-45%) and/or SRZ (3-45%) as per AS 4970:2025 due to the proposed bulk earthworks, shared pathway or on-street car parking areas. | -                                | Four (4) trees:<br><b>Trees 32, 40, 80 &amp; 148</b>                         | Nine (9) trees:<br><b>Trees 6, 48, 63, 81, 115, 120, 125, 141 &amp; 147</b>                        | -    | <b>Thirteen (13) trees</b>     |
| Moderate encroachment to NRZ (13%) as per AS 4970:2025 due to proposed on-street parking area. Considered unsustainable impact given overmature age class and fair health.       | -                                | -                                                                            | One (1) tree:<br><b>Tree 168</b>                                                                   | -    | <b>One (1) tree</b>            |
| <b>Total</b>                                                                                                                                                                     |                                  |                                                                              |                                                                                                    |      | <b>Thirty-seven (37) trees</b> |

### 5.3 Trees Recommended for Retention & Protection

Should the proposed works proceed in their current form, it is recommended that one-hundred and thirty-five (135) trees be retained and protected. This includes **Trees 1, 7-25, 27-31, 34, 37-39, 41, 42-47, 49-62, 64-79, 82-114, 119, 123, 124, 126, 128-130, 133-135, 137-140, 143-146, 149, 151-159, 161-163, 167, 169, 170, 171 & 172.**

Refer to **Appendix 2** for a plan indicating the location of trees that are to be retained and protected (shaded green). Retention of each of these trees is contingent on implementation of the tree protection measures outlined within **Section 7** below.

**Table 4 – Trees recommended for retention & protection**

| Works Within the Tree Protection Zone (TPZ)                                                                                | Trees Recommended for Retention & Protection                                      |                                                                                                                                                                 |                                                                                                                                                                                                                                                            |                                  |                                               |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------|
|                                                                                                                            | High Retention Value                                                              | Medium Retention Value                                                                                                                                          | Low Retention Value                                                                                                                                                                                                                                        | Dead                             | Total                                         |
| Major, but sustainable encroachment to NRZ (9-38%) and/or SRZ (6-9%) due to proposed bulk earthworks.                      | Two (2) trees:<br><b>Trees 53 &amp; 97</b>                                        | Eleven (11) trees:<br><b>Trees 30, 31, 37, 39, 71, 73, 74, 75, 76, 78 &amp; 79</b>                                                                              | Four (4) trees:<br><b>Tree 38, 46, 49 &amp; 54</b>                                                                                                                                                                                                         | -                                | <b>Seventeen (17) trees</b>                   |
| Moderate encroachment to NRZ (14-20%) due to the proposed bulk earthworks, shared pathway or on-street car parking areas . | Two (2) trees:<br><b>Trees 95 &amp; 130</b>                                       | Six (6) trees:<br><b>Trees 29, 47, 58, 59, 60 &amp; 70</b>                                                                                                      | -                                                                                                                                                                                                                                                          | -                                | <b>Eight (8) trees</b>                        |
| Minor encroachment to NRZ (<1-9%) due to proposed bulk earthworks, shared path, or on-street car parking areas.            | Seven (7) trees:<br><b>Trees 100, 101, 107, 129, 137, 170 &amp; 171</b>           | Ten (10) trees:<br><b>Trees 28, 42, 44, 45, 52, 82, 96, 143, 161 &amp; 163</b>                                                                                  | Seven (7) trees:<br><b>Trees 7, 27, 56, 64, 65, 72 &amp; 172</b>                                                                                                                                                                                           | -                                | <b>Twenty-four (24) trees</b>                 |
| No works proposed within the NRZ<br><br>*Note – see Section 5.3.1 below for cable trenching requirements.                  | Ten (10) trees:<br><b>Trees 9, 94, 98, 102, 123, 124, 128, 151, 152 &amp; 169</b> | Twenty-five (25) trees:<br><b>Trees 22, 23, 41, 57, 84, 86, 88, 92, 99, 108, 109, 110, 111, 126, 133, 134, 138, 140, 146, 149, 156, 158, 159, 162 &amp; 167</b> | Fifty (50) trees:<br><b>Trees 1, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 34, 43, 50, 51, 55, 61, 62, 66, 67, 68, 69, 77, 83, 85, 87, 89, 90, 91, 93, 104, 105, 106, 112, 113, 114, 119, 135, 139, 144, 145, 153, 154, 155 &amp; 157</b> | One (1) tree:<br><b>Tree 103</b> | <b>Eighty-six (86) trees</b>                  |
| <b>Total</b>                                                                                                               |                                                                                   |                                                                                                                                                                 |                                                                                                                                                                                                                                                            |                                  | <b>One-hundred and fifty-four (135) trees</b> |

### 5.3.1 Major, Sustainable Encroachment

Eighteen (18) trees (**Trees 30, 31, 37, 38, 39, 46, 49, 53, 54, 59, 71, 73, 74, 75, 76, 78, 79 & 97**) located around the east and south-east perimeter of the sportsfield have been recommended for retention and protection. It is acknowledged that these trees are subject to major encroachment to their respective NRZ and/or SRZ as per *AS 4970:2025 Protection of trees on development sites* due to being located in proximity to proposed bulk earthworks. The level of encroachment to these trees is considered tolerable and sustainable given the excavation within the NRZ/SRZ of these trees extends to only 100mm in depth, likely sparing the majority of the root mass of these trees. The replenishment of new sandy loam soil for the sportsfield and the installation of irrigation system will provide good environmental conditions for compensatory root development.

### 5.3.2 Cable Trenching

To support the installation of the lighting towers, it is acknowledged that electrical conduits will need to be laid within a series of trenches to be excavated between the towers and to relevant electrical substations/nodes.

To ensure this trenching work does not result in significant impacts to trees, the final Electrical Engineering plans are to be updated to show cable routes relocated outside of the TPZ for any tree nominated for retention. Should encroachment into a TPZ be unavoidable, advice is to be sought from the Project Arborist in order to minimise impacts as much as practicable.

## 5.4 Ancillary Construction Related Impacts

Vehicles, machinery and equipment requiring access to the site have potential to result in inadvertent impacts to those trees being retained including compaction of the root zone, soil disturbance, physical damage to roots, trunk damage etc. and as such will require management.

Furthermore, storage and stockpiling of material may result in similar impacts and will require management. In this regard, protection for those trees to be retained is to be carried out in accordance with **Appendix 5**.

## 6 CONCLUSION

### 6.1 Proposed Development Impact

Based on the plans and information supplied, the proposal would result in the following impacts to existing trees:

**Removal** of thirty-seven (37) trees, including:

- Nine (9) trees (**Trees 2, 3, 4, 5, 26, 33, 35, 36 & 142**) subject to full encroachment due to being located within the proposed bulk earthworks footprint.
- Ten (10) trees (**Trees 116, 117, 118, 121, 122, 127, 131, 132, 136 & 160**) subject to full encroachment due to being located within the proposed shared path footprint.
- Four (4) trees (**Trees 150, 164, 165 & 166**) subject to full encroachment due to being located within the proposed on-street parking area footprint.
- Thirteen (13) trees (**Trees 6, 32, 40, 48, 63, 80, 81, 115, 120, 125, 141, 147 & 148**) subject to major, unsustainable encroachment to their respective NRZs (21-45%) or SRZs (3-45%).
- One (1) tree (**Tree 168**) subject to moderate encroachment to its NRZ (13%) and considered unsustainable given overmature age class and fair health of tree.

**Retention and protection** of one-hundred and thirty-five (135) trees, including:

- Eighteen (18) trees (**Trees 30, 31, 37, 38, 39, 46, 49, 53, 54, 59, 71, 73, 74, 75, 76, 78, 79 & 97**) subject to major but tolerable and sustainable encroachment to their respective NRZs and or SRZs due to the proposed bulk earthworks.
- Seven (7) trees (**Trees 29, 47, 58, 60, 70, 95 & 130**) subject to moderate encroachment to their respective NRZs due to the proposed bulk earthworks, due to the proposed shared path, or due to the proposed on-street parking area.
- Twenty-three (23) trees (**Trees 7, 27, 28, 42, 44, 45, 52, 56, 64, 65, 72, 82, 96, 100, 101, 107, 129, 137, 143, 161, 163, 170 & 172**) subject to minor encroachment to their respective NRZs due to the proposed bulk earthworks, or due to the proposed shared path, or due to the proposed on-street parking areas.
- Eighty-six (86) trees (**Trees 1, 8-25, 34, 41, 43, 50, 51, 55, 57, 61, 62, 66-69, 77, 83-94, 98, 99, 102-106, 108-114, 119, 123, 124, 126, 128, 133-135, 138-140, 144-146, 149, 151-159, 162, 167 & 169**) which are generally located away from the proposed works and are to have nil encroachment to their respective NRZs<sup>1</sup>;

<sup>1</sup> Contingent upon relocation of proposed cable routes outside TPZs.

Specific recommendations as per **Section 7** will need to be adopted to ensure root sensitive construction techniques and methodology are employed which mitigate the potential negative impacts to trees nominated for retention.

## 7 RECOMMENDATIONS

### 7.1 Tree Removal

Remove **Trees 2, 3, 4, 5, 6, 26, 32, 33, 35, 36, 40, 48, 63, 80, 81, 115, 116, 117, 118, 120, 121, 122, 125, 127, 131, 132, 136, 141, 142, 147, 148, 150, 160, 164, 165, 166 & 168** (37 trees) to facilitate the proposed development works.

Development consent and relevant approvals must be obtained prior to the removal or pruning of any tree protected under Part B, Section 6 – *Urban Forest* of the Canada Bay Development Control Plan 2023.

All tree removal work is to be carried out by an experienced Arborist with minimum AQF Level 3 qualifications in accordance with AS 4373-2007 - *Pruning of Amenity Trees*, Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation.

### 7.2 Tree Retention & Protection

Retain and protect **Trees 1, 7-25, 27-31, 34, 37-39, 41, 42-47, 49-62, 64-79, 82-114, 119, 123, 124, 126, 128-130, 133-135, 137-140, 143-146, 149, 151-159, 161-163, 167, 169, 170, 171 & 172** (135 trees) in accordance with the Tree Location Plan held at **Appendix 2**, AS 4970:2025 – *Protection of trees on development sites* and the specific recommendations below:

#### 7.2.1 Project Arborist Engagement

A Project Arborist experienced in tree protection on construction sites should be engaged prior to the commencement of any works on site. The Project Arborist shall monitor and report regularly to the Principal Certifying Authority (PCA) and the Applicant on the condition and protection of the retained trees during the works. The Project Arborist is to supervise and monitor any excavation, machine trenching or compacted fill placement within the TPZ of retained trees throughout construction.

#### 7.2.2 Tree Protection and Management Plan

Following design development and prior to any construction works taking place on site, a dedicated Tree Protection and Management Plan is to be prepared by a suitably qualified AQF Level 5 Arborist. The purpose of this document is to provide a suitable framework for tree protection to ensure all trees nominated for retention are not adversely impacted by the proposed works.

#### 7.2.3 Tomographic Testing

Prior to the commencement of the proposed works, tomographic testing should be undertaken upon **Tree 107** to determine the extent of decay, altering-wood and sound-wood within the main stem within proximity to two (2) observable bracket fungi located at approximately 1.5m and 4.2m respectively. Following completion of the testing, a report is to be prepared by a suitably qualified AQF5 Consulting Arborist which details any change to the expected structural integrity of this tree and, if necessary, recommendations for its ongoing management.

## 8 REFERENCES

- City of Canada Bay Council. Canada Bay Local Environmental Plan 2013.
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APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species         | Common Name              | Height (m) | Crown Spread (m) | DBH (mm)           | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating          | Landscape Significance | Retention Value | Development Impact                                                             | Retain / Remove | Comments                                                                   |
|----------|-------------------------|--------------------------|------------|------------------|--------------------|----------|----------------|----------------|-----------|-------------------|----------------------|----------------------|------------------------|-----------------|--------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------|
| 1        | Melaleuca styphelioides | Prickly-leaved Paperbark | 4          | 2                | 50                 | 100      | 2.00           | 1.50           | SM        | Fair              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Reduced foliage size. Sooty mould                                          |
| 2        | Melaleuca styphelioides | Prickly-leaved Paperbark | 4          | 3                | 100                | 100      | 2.00           | 1.50           | SM        | Average           | Average              | Medium 15-40 years   | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Nil                                                                        |
| 3        | Melaleuca styphelioides | Prickly-leaved Paperbark | 4          | 2                | 50                 | 100      | 2.00           | 1.50           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Included, co-dominant stems                                                |
| 4        | Melaleuca styphelioides | Prickly-leaved Paperbark | 4          | 2                | 50                 | 100      | 2.00           | 1.50           | SM        | Average           | Fair                 | Short 5-15 years     | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Chlorotic foliage                                                          |
| 5        | Melaleuca styphelioides | Prickly-leaved Paperbark | 4          | 2                | 50                 | 50       | 2.00           | 1.50           | SM        | Fair              | Fair                 | Short 5-15 years     | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Included, co-dominant stems from 1m. Reduced foliage size                  |
| 6        | Melaleuca styphelioides | Prickly-leaved Paperbark | 5          | 2                | 50, 50             | 100      | 2.00           | 1.50           | SM        | Fair              | Average              | Medium 15-40 years   | Low                    | Low             | Major 44% NRZ and 38% SRZ encroachment from proposed bulk earthworks footprint | Remove          | Lower crown dieback                                                        |
| 7        | Eucalyptus botryoides   | Bangalay                 | 7          | 6                | 150, 150, 150, 150 | 300      | 3.60           | 2.00           | SM        | Good              | Poor                 | Short 5-15 years     | Low                    | Low             | Minor 0.4% NRZ encroachment from proposed bulk earthworks footprint            | Retain          | Root plate failure. Leaders ascending from fallen bole. Recommend removal  |
| 8        | Ulmus parvifolia        | Chinese Elm              | 4          | 4                | 100, 100           | 250      | 2.00           | 1.85           | SM        | Average           | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Co-dominant stems from base                                                |
| 9        | Eucalyptus microcorys   | Tallowwood               | 9          | 9                | 400, 400           | 650      | 6.79           | 2.76           | M         | Good              | Fair                 | Long 40 years +      | Medium                 | High            | No works proposed within NRZ                                                   | Retain          | Included, co-dominant stems from 0.5m. Union appears sound                 |
| 10       | Melaleuca linariifolia  | Flax-leaved Paperbark    | 4          | 3                | 50, 50             | 100      | 2.00           | 1.50           | SM        | Average           | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Included, co-dominant stems from 1m                                        |
| 11       | Prunus persica          | Peach / Nectarine        | 4          | 6                | 300, 150, 100      | 450      | 4.20           | 2.37           | M         | Good              | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Included, co-dominant stems from 0.5m. Evidence of significant fruit yield |
| 12       | Acacia floribunda       | White Sally Wattle       | 3          | 4                | 50, 50, 50, 50     | 150      | 2.00           | 1.50           | M         | Average           | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Multi-stemmed from ground level                                            |
| 13       | Melaleuca linariifolia  | Flax-leaved Paperbark    | 2          | 2                | 50, 50             | 100      | 2.00           | 1.50           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Co-dominant leaders                                                        |
| 14       | Acacia floribunda       | White Sally Wattle       | 3          | 3                | 50, 50, 50, 50     | 200      | 2.00           | 1.68           | S         | Poor              | Fair                 | Very Short < 5 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | In severe decline                                                          |
| 15       | Melaleuca linariifolia  | Flax-leaved Paperbark    | 2          | 2                | 50                 | 100      | 2.00           | 1.50           | SM        | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Nil                                                                        |
| 16       | Melaleuca styphelioides | Prickly-leaved Paperbark | 2          | 2                | 50                 | 50       | 2.00           | 1.50           | SM        | Average           | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Nil                                                                        |
| 17       | Acacia floribunda       | White Sally Wattle       | 4          | 4                | 50, 50, 50, 50     | 150      | 2.00           | 1.50           | M         | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Multi-stemmed from ground level                                            |
| 18       | Acacia floribunda       | White Sally Wattle       | 4          | 4                | 50, 50, 50, 50     | 200      | 2.00           | 1.68           | M         | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Multi-stemmed from ground level                                            |
| 19       | Eucalyptus sp.          | Eucalyptus               | 3          | 2                | 50                 | 100      | 2.00           | 1.50           | J         | Fair              | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Sooty mould. Suppressed                                                    |
| 20       | Melaleuca styphelioides | Prickly-leaved Paperbark | 4          | 3                | 50                 | 100      | 2.00           | 1.50           | SM        | Average           | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Nil                                                                        |
| 21       | Acacia floribunda       | White Sally Wattle       | 3          | 3                | 50, 50             | 100      | 2.00           | 1.50           | M         | Good              | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Crown bias to east                                                         |
| 22       | Eucalyptus robusta      | Swamp Mahogany           | 7          | 6                | 250                | 300      | 3.00           | 2.00           | SM        | Good              | Average              | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                   | Retain          | Surface roots extending to south-west                                      |

APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species                | Common Name            | Height (m) | Crown Spread (m) | DBH (mm)           | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating        | Landscape Significance | Retention Value | Development Impact                                                             | Retain / Remove | Comments                                                                              |
|----------|--------------------------------|------------------------|------------|------------------|--------------------|----------|----------------|----------------|-----------|-------------------|----------------------|--------------------|------------------------|-----------------|--------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|
| 23       | <i>Eucalyptus botryoides</i>   | Bangalay               | 6          | 6                | 250                | 300      | 3.00           | 2.00           | SM        | Average           | Fair                 | Long 40 years +    | Low                    | Medium          | No works proposed within NRZ                                                   | Retain          | Lower lateral branches poorly attached                                                |
| 24       | <i>Eucalyptus botryoides</i>   | Bangalay               | 6          | 4                | 150                | 200      | 2.00           | 1.68           | SM        | Fair              | Fair                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Reduced foliage density. Included, co-dominant stems from 2m                          |
| 25       | <i>Cellis sinensis</i>         | Chinese Hackberry      | 7          | 10               | 200, 200, 200      | 500      | 4.80           | 2.47           | SM        | Average           | Average              | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Self-sown thicket of approximately 12 individual trees                                |
| 26       | <i>Casuarina glauca</i>        | Swamp Oak              | 4          | 2                | 50, 50, 50, 50     | 100      | 2.00           | 1.50           | J         | Good              | Good                 | Medium 15-40 years | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Group of approx. 25 saplings lining edge of existing turf area                        |
| 27       | <i>Casuarina glauca</i>        | Swamp Oak              | 14         | 6                | 150, 150, 150      | 250      | 3.12           | 1.85           | M         | Average           | Average              | Medium 15-40 years | Low                    | Low             | Minor 10% NRZ encroachment from proposed bulk earthworks footprint             | Retain          | Group of 3                                                                            |
| 28       | <i>Casuarina glauca</i>        | Swamp Oak              | 14         | 5                | 250, 200, 200      | 350      | 4.53           | 2.13           | M         | Average           | Average              | Medium 15-40 years | Medium                 | Medium          | Minor 4% NRZ encroachment from proposed bulk earthworks footprint              | Retain          | Group of 3                                                                            |
| 29       | <i>Casuarina glauca</i>        | Swamp Oak              | 14         | 3                | 250                | 350      | 3.00           | 2.13           | M         | Average           | Average              | Medium 15-40 years | Medium                 | Medium          | Moderate 14% NRZ encroachment from proposed bulk earthworks footprint          | Retain          | Slender form                                                                          |
| 30       | <i>Casuarina glauca</i>        | Swamp Oak              | 14         | 7                | 400, 300           | 700      | 6.00           | 2.85           | M         | Good              | Average              | Medium 15-40 years | Medium                 | Medium          | Major 19% NRZ and 6% SRZ encroachment from proposed bulk earthworks footprint  | Retain          | Co-dominant leaders. Strong buttressing at base                                       |
| 31       | <i>Casuarina glauca</i>        | Swamp Oak              | 14         | 3                | 200, 100, 50, 50   | 350      | 2.81           | 2.13           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 9% NRZ and 3% SRZ encroachment from proposed bulk earthworks footprint   | Retain          | Multi-stemmed from ground level                                                       |
| 32       | <i>Casuarina glauca</i>        | Swamp Oak              | 14         | 4                | 200, 150           | 400      | 3.00           | 2.25           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 31% NRZ and 31% SRZ encroachment from proposed bulk earthworks footprint | Remove          | Included, co-dominant stems from 0.5m. Surface roots extending to west                |
| 33       | <i>Casuarina glauca</i>        | Swamp Oak              | 5          | 2                | 50, 50, 50, 50     | 100      | 2.00           | 1.50           | J         | Good              | Good                 | Medium 15-40 years | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Group of 4 saplings lining edge of existing turf area                                 |
| 34       | <i>Casuarina glauca</i>        | Swamp Oak              | 9          | 5                | 250                | 300      | 3.00           | 2.00           | M         | Fair              | Average              | Short 5-15 years   | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Browning foliage                                                                      |
| 35       | <i>Casuarina glauca</i>        | Swamp Oak              | 9          | 7                | 200, 150, 150, 150 | 300      | 3.93           | 2.00           | SM        | Average           | Average              | Medium 15-40 years | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Group of 4 trees surrounded by smaller saplings at edge of existing turf area         |
| 36       | <i>Casuarina glauca</i>        | Swamp Oak              | 3          | 2                | 50, 50, 50, 50     | 50       | 2.00           | 1.50           | J         | Average           | Good                 | Medium 15-40 years | Low                    | Low             | Within proposed bulk earthworks footprint                                      | Remove          | Group of 4 saplings lining edge of existing turf area                                 |
| 37       | <i>Melaleuca quinquenervia</i> | Broad-leaved Paperbark | 7          | 8                | 400, 400, 250      | 550      | 7.42           | 2.57           | M         | Good              | Average              | Medium 15-40 years | Medium                 | Medium          | Major 27% NRZ encroachment from proposed bulk earthworks footprint             | Retain          | Low branching structure                                                               |
| 38       | <i>Melaleuca quinquenervia</i> | Broad-leaved Paperbark | 11         | 8                | 500, 400, 150      | 600      | 7.89           | 2.67           | OM        | Fair              | Fair                 | Short 5-15 years   | Medium                 | Low             | Major 31% NRZ and 2% SRZ encroachment from proposed bulk earthworks footprint  | Retain          | Multiple, included co-dominant leaders. Browning foliage with reduced overall density |
| 39       | <i>Melaleuca quinquenervia</i> | Broad-leaved Paperbark | 10         | 9                | 650, 400, 300, 300 | 750      | 10.48          | 2.93           | M         | Good              | Average              | Medium 15-40 years | Medium                 | Medium          | Major 32% NRZ encroachment from proposed bulk earthworks footprint             | Retain          | Multi-stemmed from 1m                                                                 |
| 40       | <i>Melaleuca quinquenervia</i> | Broad-leaved Paperbark | 10         | 6                | 400, 300, 200, 200 | 550      | 6.89           | 2.57           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 38% NRZ and 19% SRZ encroachment from proposed bulk earthworks footprint | Remove          | Multiple included, co-dominant leaders                                                |
| 41       | <i>Melaleuca quinquenervia</i> | Broad-leaved Paperbark | 10         | 5                | 250, 250, 250, 200 | 450      | 5.72           | 2.37           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | No works proposed within NRZ                                                   | Retain          | Multiple included, co-dominant leaders                                                |
| 42       | <i>Melaleuca quinquenervia</i> | Broad-leaved Paperbark | 11         | 5                | 450, 350, 350      | 600      | 8.03           | 2.67           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Minor 3% NRZ encroachment from proposed bulk earthworks footprint              | Retain          | Multiple included, co-dominant leaders                                                |
| 43       | <i>Melaleuca quinquenervia</i> | Broad-leaved Paperbark | 11         | 6                | 400, 400, 200      | 550      | 7.20           | 2.57           | M         | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Multiple included, co-dominant leaders                                                |

APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species         | Common Name            | Height (m) | Crown Spread (m) | DBH (mm)           | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating        | Landscape Significance | Retention Value | Development Impact                                                             | Retain / Remove | Comments                                        |
|----------|-------------------------|------------------------|------------|------------------|--------------------|----------|----------------|----------------|-----------|-------------------|----------------------|--------------------|------------------------|-----------------|--------------------------------------------------------------------------------|-----------------|-------------------------------------------------|
| 44       | Casuarina glauca        | Swamp Oak              | 15         | 4                | 200, 200, 200, 200 | 350      | 4.80           | 2.13           | M         | Average           | Average              | Medium 15-40 years | Medium                 | Medium          | Minor 3% NRZ encroachment from proposed bulk earthworks footprint              | Retain          | Group of 6. Slender forms                       |
| 45       | Casuarina glauca        | Swamp Oak              | 15         | 7                | 350, 300, 250, 250 | 600      | 6.97           | 2.67           | M         | Average           | Average              | Medium 15-40 years | Medium                 | Medium          | Minor 4% NRZ encroachment from proposed bulk earthworks footprint              | Retain          | Group of 6                                      |
| 46       | Casuarina glauca        | Swamp Oak              | 13         | 6                | 200, 200, 200, 200 | 300      | 4.80           | 2.00           | M         | Average           | Average              | Medium 15-40 years | Low                    | Low             | Major 28% NRZ and 4% SRZ encroachment from proposed bulk earthworks footprint  | Retain          | Group of 10. Slender forms                      |
| 47       | Casuarina glauca        | Swamp Oak              | 15         | 7                | 350, 300           | 500      | 5.53           | 2.47           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Moderate 17% NRZ encroachment proposed bulk earthworks footprint               | Retain          | Bifurcated from base                            |
| 48       | Casuarina glauca        | Swamp Oak              | 8          | 4                | 150, 100           | 200      | 2.16           | 1.68           | SM        | Average           | Good                 | Medium 15-40 years | Low                    | Low             | Major 37% NRZ and 34% SRZ encroachment from proposed bulk earthworks footprint | Remove          | Pair. Saplings surrounding base                 |
| 49       | Casuarina glauca        | Swamp Oak              | 9          | 6                | 250, 100, 100      | 350      | 3.45           | 2.13           | M         | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | Major 24% NRZ and 9% SRZ encroachment from proposed bulk earthworks footprint  | Retain          | Trunk lean and crown bias to north-east         |
| 50       | Casuarina glauca        | Swamp Oak              | 10         | 4                | 250                | 300      | 3.00           | 2.00           | M         | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Trunk lean and crown bias to north-east         |
| 51       | Casuarina glauca        | Swamp Oak              | 9          | 4                | 250                | 300      | 3.00           | 2.00           | M         | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Trunk lean and crown bias to east               |
| 52       | Casuarina glauca        | Swamp Oak              | 13         | 10               | 450, 400           | 600      | 7.22           | 2.67           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Minor 7% NRZ encroachment from proposed bulk earthworks footprint              | Retain          | Bifurcated from base                            |
| 53       | Casuarina glauca        | Swamp Oak              | 14         | 10               | 450, 450, 400      | 900      | 9.02           | 3.17           | M         | Good              | Average              | Medium 15-40 years | High                   | High            | Major 27% NRZ encroachment from proposed bulk earthworks footprint             | Retain          | Larger specimen                                 |
| 54       | Casuarina glauca        | Swamp Oak              | 5          | 4                | 100, 100, 100, 100 | 150      | 2.40           | 1.50           | SM        | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | Major 21% NRZ and 7% SRZ encroachment from proposed bulk earthworks footprint  | Retain          | Group of 4. Suppressed by larger trees adjacent |
| 55       | Casuarina glauca        | Swamp Oak              | 5          | 3                | 50, 50, 50, 50     | 100      | 2.00           | 1.50           | J         | Good              | Good                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Group of approx. 15 saplings                    |
| 56       | Melaleuca quinquenervia | Broad-leaved Paperbark | 11         | 6                | 300, 300, 300      | 550      | 6.24           | 2.57           | M         | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | Minor 2% NRZ encroachment from proposed bulk earthworks footprint              | Retain          | Multiple included, co-dominant leaders          |
| 57       | Melaleuca quinquenervia | Broad-leaved Paperbark | 11         | 5                | 350, 350           | 450      | 5.94           | 2.37           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | No works proposed within NRZ                                                   | Retain          | Multiple included, co-dominant leaders          |
| 58       | Melaleuca quinquenervia | Broad-leaved Paperbark | 10         | 5                | 400, 300, 250      | 450      | 6.71           | 2.37           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Moderate 18% NRZ encroachment from proposed bulk earthworks footprint          | Retain          | Multiple included, co-dominant leaders          |
| 59       | Melaleuca quinquenervia | Broad-leaved Paperbark | 12         | 5                | 500, 400           | 700      | 7.68           | 2.85           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Moderate 15% NRZ encroachment from proposed bulk earthworks footprint          | Retain          | Multiple included, co-dominant leaders          |
| 60       | Melaleuca quinquenervia | Broad-leaved Paperbark | 11         | 8                | 500, 400, 350      | 700      | 8.76           | 2.85           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Moderate 20% NRZ encroachment from proposed bulk earthworks footprint          | Retain          | Multiple included, co-dominant leaders          |
| 61       | Casuarina glauca        | Swamp Oak              | 4          | 3                | 50, 50, 50, 100    | 50       | 2.00           | 1.50           | J         | Good              | Good                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Group of approx.8 saplings                      |
| 62       | Casuarina glauca        | Swamp Oak              | 9          | 6                | 250                | 300      | 3.00           | 2.00           | M         | Good              | Average              | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                   | Retain          | Nil                                             |
| 63       | Casuarina glauca        | Swamp Oak              | 6          | 5                | 100, 100, 100, 100 | 150      | 2.40           | 1.50           | SM        | Good              | Average              | Medium 15-40 years | Low                    | Low             | Major 43% NRZ and 39% SRZ encroachment from proposed bulk earthworks footprint | Remove          | Thicket of approx. 8 individual trees           |
| 64       | Casuarina glauca        | Swamp Oak              | 8          | 4                | 100, 100, 100, 100 | 200      | 2.40           | 1.68           | SM        | Good              | Average              | Medium 15-40 years | Low                    | Low             | Minor 8% NRZ encroachment from proposed bulk earthworks footprint              | Retain          | Slender form                                    |

APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species          | Common Name            | Height (m) | Crown Spread (m) | DBH (mm)           | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating        | Landscape Significance | Retention Value | Development Impact                                                                             | Retain / Remove | Comments                                                                                           |
|----------|--------------------------|------------------------|------------|------------------|--------------------|----------|----------------|----------------|-----------|-------------------|----------------------|--------------------|------------------------|-----------------|------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------|
| 65       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 9          | 5                | 250, 250           | 400      | 4.24           | 2.25           | M         | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | Minor 7% NRZ encroachment from proposed lighting tower. Impact tolerable subject to protection | Retain          | Included, co-dominant stems from 1m                                                                |
| 66       | Casuarina glauca         | Swamp Oak              | 10         | 4                | 250                | 300      | 3.00           | 2.00           | M         | Average           | Average              | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                                   | Retain          | Nil                                                                                                |
| 67       | Casuarina glauca         | Swamp Oak              | 10         | 4                | 250, 200           | 350      | 3.84           | 2.13           | M         | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                                   | Retain          | Included, co-dominant stems from 0.5m                                                              |
| 68       | Casuarina glauca         | Swamp Oak              | 10         | 5                | 300                | 350      | 3.60           | 2.13           | M         | Average           | Average              | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                                   | Retain          | Nil                                                                                                |
| 69       | Casuarina glauca         | Swamp Oak              | 9          | 3                | 300                | 350      | 3.60           | 2.13           | M         | Average           | Average              | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                                   | Retain          | Slender form                                                                                       |
| 70       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 11         | 6                | 350, 350, 350, 350 | 650      | 8.40           | 2.76           | M         | Good              | Average              | Medium 15-40 years | Medium                 | Medium          | Moderate 14% NRZ encroachment from proposed bulk earthworks footprint                          | Retain          | Schefflera epiphyte seeded in crown                                                                |
| 71       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 12         | 7                | 350, 350, 350, 350 | 700      | 8.40           | 2.85           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 28% NRZ encroachment from proposed bulk earthworks footprint                             | Retain          | Multiple included, co-dominant leaders                                                             |
| 72       | Cupressus arizonica      | Arizona cypress        | 3          | 3                | 100                | 150      | 2.00           | 1.50           | SM        | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | Minor 6% NRZ encroachment from proposed bulk earthworks footprint                              | Retain          | Apical dieback                                                                                     |
| 73       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 11         | 5                | 400, 300, 300, 300 | 600      | 7.87           | 2.67           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 24% NRZ encroachment from proposed bulk earthworks footprint                             | Retain          | Multiple included, co-dominant leaders                                                             |
| 74       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 13         | 7                | 600, 400, 400, 400 | 800      | 11.00          | 3.01           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 38% NRZ and 11% SRZ encroachment from proposed bulk earthworks footprint                 | Retain          | Multiple, included co-dominant stems                                                               |
| 75       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 11         | 6                | 350, 350, 350, 350 | 750      | 8.40           | 2.93           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 31% NRZ and 2% SRZ encroachment from proposed bulk earthworks footprint                  | Retain          | Multiple included, co-dominant leaders                                                             |
| 76       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 11         | 8                | 1200               | 1000     | 14.40          | 3.31           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 39% NRZ and 7% SRZ encroachment from proposed bulk earthworks footprint                  | Retain          | Multiple included, co-dominant leaders                                                             |
| 77       | Syagrus romanzoffiana    | Cocos Palm             | 6          | 3                | 200                | 250      | 2.50           | N/A            | SM        | Average           | Fair                 | Medium 15-40 years | Low                    | Low             | No works proposed within NRZ                                                                   | Retain          | Suppressed                                                                                         |
| 78       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 9          | 6                | 300, 300, 300, 300 | 600      | 7.20           | 2.67           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 29% NRZ and 1% SRZ encroachment from proposed bulk earthworks footprint                  | Retain          | Multiple included, co-dominant stems                                                               |
| 79       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 8          | 7                | 300, 250, 250, 250 | 500      | 6.32           | 2.47           | M         | Average           | Average              | Medium 15-40 years | Medium                 | Medium          | Major 24% NRZ encroachment from proposed bulk earthworks footprint                             | Retain          | Bifurcated from base                                                                               |
| 80       | Melaleuca quinquenervia  | Broad-leaved Paperbark | 11         | 8                | 1150               | 950      | 13.80          | 3.24           | M         | Fair              | Fair                 | Medium 15-40 years | Medium                 | Medium          | Major 44% NRZ and 27% SRZ encroachment from proposed bulk earthworks footprint                 | Remove          | Reduced foliage density. Large diameter surface roots extending to north into existing turfed area |
| 81       | Paraserianthes lophantha | Cape Wattle            | 5          | 5                | 50                 | 100      | 2.00           | 1.50           | M         | Fair              | Fair                 | Short 5-15 years   | Low                    | Low             | Major 45% NRZ and 45% SRZ encroachment from proposed bulk earthworks footprint                 | Remove          | Weed species                                                                                       |
| 82       | Waterhousea floribunda   | Weeping Lilly Pilly    | 11         | 8                | 300, 300, 250, 250 | 450      | 6.63           | 2.37           | M         | Average           | Fair                 | Medium 15-40 years | Medium                 | Medium          | Minor 5% NRZ encroachment from proposed bulk earthworks footprint                              | Retain          | Included co-dominant leaders. Apical dieback                                                       |
| 83       | Waterhousea floribunda   | Weeping Lilly Pilly    | 6          | 4                | 200, 100           | 250      | 2.68           | 1.85           | SM        | Fair              | Fair                 | Short 5-15 years   | Low                    | Low             | No works proposed within NRZ                                                                   | Retain          | Crown dieback. Cambial damage                                                                      |
| 84       | Fraxinus sp.             | Flowering Ash          | 10         | 10               | 450                | 450      | 5.40           | 2.37           | M         | Average           | Good                 | Medium 15-40 years | Medium                 | Medium          | No works proposed within NRZ                                                                   | Retain          | Foliage absent at time of assessment                                                               |

APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species              | Common Name       | Height (m) | Crown Spread (m) | DBH (mm)            | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating          | Landscape Significance | Retention Value | Development Impact                                                    | Retain / Remove | Comments                                                                                                                                |
|----------|------------------------------|-------------------|------------|------------------|---------------------|----------|----------------|----------------|-----------|-------------------|----------------------|----------------------|------------------------|-----------------|-----------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 85       | Casuarina glauca             | Swamp Oak         | 7          | 7                | 250, 100            | 300      | 3.23           | 2.00           | M         | Average           | Fair                 | Short 5-15 years     | Low                    | Low             | No works proposed within NRZ                                          | Retain          | Bifurcated from base. Trunk lean and crown bias to north                                                                                |
| 86       | Casuarina glauca             | Swamp Oak         | 12         | 6                | 450                 | 500      | 5.40           | 2.47           | M         | Average           | Average              | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                          | Retain          | Crown lifted                                                                                                                            |
| 87       | Eucalyptus paniculata        | Grey Ironbark     | 8          | 6                | 400, 250            | 450      | 5.66           | 2.37           | OM        | Fair              | Poor                 | Short 5-15 years     | Low                    | Low             | No works proposed within NRZ                                          | Retain          | Heavily fissured bark. Failed co-dominant leader. Limbs lopped over cricket nets                                                        |
| 88       | Casuarina glauca             | Swamp Oak         | 14         | 8                | 400, 300, 200       | 500      | 6.46           | 2.47           | M         | Average           | Average              | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                          | Retain          | Co-dominant leaders                                                                                                                     |
| 89       | Casuarina glauca             | Swamp Oak         | 7          | 3                | 100                 | 150      | 2.00           | 1.50           | SM        | Average           | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                          | Retain          | Suppressed                                                                                                                              |
| 90       | Casuarina glauca             | Swamp Oak         | 9          | 4                | 150, 100            | 250      | 2.16           | 1.85           | SM        | Average           | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                          | Retain          | Included, co-dominant stems from base                                                                                                   |
| 91       | Casuarina glauca             | Swamp Oak         | 12         | 6                | 400                 | 450      | 4.80           | 2.37           | M         | Average           | Poor                 | Short 5-15 years     | Medium                 | Low             | No works proposed within NRZ                                          | Retain          | Shear crack ascending main leader                                                                                                       |
| 92       | Casuarina glauca             | Swamp Oak         | 14         | 5                | 300, 250, 100       | 400      | 4.84           | 2.25           | M         | Average           | Average              | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                          | Retain          | Multi-stemmed from ground level                                                                                                         |
| 93       | Casuarina glauca             | Swamp Oak         | 14         | 9                | 550                 | 650      | 6.60           | 2.76           | OM        | Fair              | Fair                 | Short 5-15 years     | Medium                 | Low             | No works proposed within NRZ                                          | Retain          | Included, co-dominant stems from 4m. Reduced foliage density                                                                            |
| 94       | Eucalyptus microcorys        | Tallowwood        | 11         | 7                | 350, 200            | 400      | 4.84           | 2.25           | M         | Average           | Average              | Long 40 years +      | Medium                 | High            | No works proposed within NRZ                                          | Retain          | Bifurcated from 0.5m                                                                                                                    |
| 95       | Eucalyptus microcorys        | Tallowwood        | 15         | 12               | 600                 | 700      | 7.20           | 2.85           | M         | Good              | Good                 | Long 40 years +      | High                   | High            | Moderate 18% NRZ encroachment from proposed bulk earthworks footprint | Retain          | Minor deadwood                                                                                                                          |
| 96       | Eucalyptus microcorys        | Tallowwood        | 13         | 8                | 350, 350            | 450      | 5.94           | 2.37           | M         | Average           | Fair                 | Medium 15-40 years   | Medium                 | Medium          | Minor 0.2% NRZ encroachment from proposed bulk earthworks footprint   | Retain          | Included, co-dominant stems from 1m                                                                                                     |
| 97       | Eucalyptus microcorys        | Tallowwood        | 16         | 11               | 650                 | 750      | 7.80           | 2.93           | M         | Good              | Average              | Long 40 years +      | High                   | High            | Major 24% NRZ encroachment from proposed bulk earthworks footprint    | Retain          | Crown bias to south east                                                                                                                |
| 98       | Eucalyptus microcorys        | Tallowwood        | 16         | 10               | 550                 | 650      | 6.60           | 2.76           | M         | Average           | Average              | Long 40 years +      | High                   | High            | No works proposed within NRZ                                          | Retain          | Minor deadwood. Shipping container places over SRZ                                                                                      |
| 99       | Eucalyptus paniculata        | Grey Ironbark     | 15         | 6                | 300                 | 350      | 3.60           | 2.13           | M         | Average           | Average              | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                          | Retain          | Crown suppressed by adjoining trees                                                                                                     |
| 100      | Eucalyptus microcorys        | Tallowwood        | 16         | 12               | 600, 600            | 1100     | 10.18          | 3.44           | M         | Good              | Fair                 | Long 40 years +      | High                   | High            | Minor 9% NRZ encroachment from proposed bulk earthworks footprint     | Retain          | Included, co-dominant stems from 2m                                                                                                     |
| 101      | Ficus microcarpa var. hillii | Hills Weeping Fig | 17         | 25               | 800, 700, 600, 1200 | 2500     | 15.00          | 4.86           | M         | Good              | Good                 | Long 40 years +      | High                   | High            | Minor 9% NRZ encroachment from proposed bulk earthworks footprint     | Retain          | Well-established park tree with good primary branch architecture, trunk flare and buttress roots. Visually prominent tree in landscape. |
| 102      | Eucalyptus saligna           | Sydney Blue Gum   | 23         | 8                | 450                 | 650      | 5.40           | 2.76           | M         | Good              | Good                 | Long 40 years +      | High                   | High            | No works proposed within NRZ                                          | Retain          | Good form. Strong apically dominant single leader stem with good canopy density.                                                        |
| 103      | Dead tree                    | -                 | 6          | 2                | 200                 | 200      |                |                |           |                   |                      | Dead                 | Low                    | Dead            | No works proposed within NRZ                                          | Retain          | Dead tree. No hollows for fauna habitat. No bird nests.                                                                                 |
| 104      | Syzygium australe            | Brush Cherry      | 6          | 3                | 200                 | 250      | 2.40           | 1.85           | S         | Poor              | Poor                 | Very Short < 5 years | Low                    | Low             | No works proposed within NRZ                                          | Retain          | In severe decline.                                                                                                                      |
| 105      | Syzygium australe            | Brush Cherry      | 6          | 3                | 200                 | 250      | 2.40           | 1.85           | S         | Poor              | Poor                 | Very Short < 5 years | Low                    | Low             | No works proposed within NRZ                                          | Retain          | In severe decline.                                                                                                                      |

APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species                  | Common Name              | Height (m) | Crown Spread (m) | DBH (mm)           | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating          | Landscape Significance | Retention Value | Development Impact                                                | Retain / Remove | Comments                                                                                                                                                                                                                                    |
|----------|----------------------------------|--------------------------|------------|------------------|--------------------|----------|----------------|----------------|-----------|-------------------|----------------------|----------------------|------------------------|-----------------|-------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 106      | <i>Syzygium australe</i>         | Brush Cherry             | 6          | 4                | 100, 100, 200, 200 | 500      | 3.79           | 2.47           | S         | Poor              | Poor                 | Very Short < 5 years | Low                    | Low             | No works proposed within NRZ                                      | Retain          | In severe decline. Soft wax scale infestation.                                                                                                                                                                                              |
| 107      | <i>Eucalyptus saligna</i>        | Sydney Blue Gum          | 20         | 12               | 900                | 1000     | 10.80          | 3.31           | M         | Good              | Fair                 | Medium 15-40 years   | High                   | High            | Minor 5% NRZ encroachment from proposed bulk earthworks footprint | Retain          | Bracket fungi at approx 1.5m and 4.2m on trunk on western & southern sides. Good reaction wood + canopy density and vitality. Recommend tomographic testing to determine extent of decay. Fauna habitat boxes installed at approx 8 and 9m. |
| 108      | <i>Melaleuca styphelioides</i>   | Prickly-leaved Paperbark | 10         | 7                | 300                | 350      | 3.60           | 2.13           | SM        | Average           | Average              | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                      | Retain          | Trunk bifurcates at approx. 1.3m. Suppressed by <i>E. saligna</i> .                                                                                                                                                                         |
| 109      | <i>Melaleuca styphelioides</i>   | Prickly-leaved Paperbark | 10         | 7                | 250, 200, 150      | 500      | 4.24           | 2.47           | M         | Good              | Good                 | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                      | Retain          | Crown bias to east.                                                                                                                                                                                                                         |
| 110      | <i>Melaleuca styphelioides</i>   | Prickly-leaved Paperbark | 10         | 8                | 250, 250           | 500      | 4.24           | 2.47           | M         | Good              | Average              | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                      | Retain          | Co-dominant stems at approx. 0.8m from ground level. Minor interior deadwood.                                                                                                                                                               |
| 111      | <i>Melaleuca styphelioides</i>   | Prickly-leaved Paperbark | 10         | 8                | 250, 250           | 500      | 4.24           | 2.47           | M         | Good              | Average              | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                      | Retain          | Co-dominant stems at 0.5m on trunk. Minor interior deadwood.                                                                                                                                                                                |
| 112      | <i>Callistemon viminalis</i>     | Weeping Bottlebrush      | 3          | 2                | 50, 50             | 150      | 2.00           | 1.50           | SM        | Poor              | Poor                 | Very Short < 5 years | Low                    | Low             | No works proposed within NRZ                                      | Retain          | In severe decline.                                                                                                                                                                                                                          |
| 113      | <i>Cupaniopsis anacardioides</i> | Tuckeroo                 | 5          | 3                | 100                | 150      | 2.00           | 1.50           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                      | Retain          | Young tree.                                                                                                                                                                                                                                 |
| 114      | <i>Glochidion ferdinandi</i>     | Cheese Tree              | 5          | 3                | 100, 100, 50, 50   | 150      | 2.00           | 1.50           | SM        | Average           | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                      | Retain          | Stem inclusions.                                                                                                                                                                                                                            |
| 115      | <i>Eucalyptus robusta</i>        | Swamp Mahogany           | 7          | 4                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | Major 21% NRZ and 13% SRZ encroachment from proposed shared path  | Remove          | Apically dominant leader.                                                                                                                                                                                                                   |
| 116      | <i>Stenocarpus sinuatus</i>      | Firewheel Tree           | 7          | 4                | 400, 150           | 400      | 5.13           | 2.25           | SM        | Good              | Fair                 | Medium 15-40 years   | Medium                 | Medium          | Within proposed shared path footprint                             | Remove          | Stem inclusions - typical of species.                                                                                                                                                                                                       |
| 117      | <i>Banksia integrifolia</i>      | Coast Banksia            | 5          | 2                | 50                 | 100      | 2.00           | 1.50           | SM        | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | Within proposed shared path footprint                             | Remove          | Good form. Young tree.                                                                                                                                                                                                                      |
| 118      | <i>Cupaniopsis anacardioides</i> | Tuckeroo                 | 5          | 4                | 100, 100, 100      | 150      | 2.08           | 1.50           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | Within proposed shared path footprint                             | Remove          | Trifurcated trunk. Stem inclusions. Good canopy density.                                                                                                                                                                                    |
| 119      | <i>Melaleuca styphelioides</i>   | Prickly-leaved Paperbark | 4          | 2                | 100                | 150      | 2.00           | 1.50           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                      | Retain          | Young tree. Stem inclusions.                                                                                                                                                                                                                |
| 120      | <i>Melaleuca styphelioides</i>   | Prickly-leaved Paperbark | 4          | 1                | 50, 50             | 150      | 2.00           | 1.50           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | Major 21% NRZ and 12% SRZ encroachment from proposed shared path  | Remove          | Nil                                                                                                                                                                                                                                         |
| 121      | <i>Cupaniopsis anacardioides</i> | Tuckeroo                 | 4          | 2                | 50, 50, 50, 100    | 200      | 2.00           | 1.68           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | Within proposed shared path footprint                             | Remove          | Multi-stemmed at base.                                                                                                                                                                                                                      |
| 122      | <i>Eucalyptus punctata</i>       | Grey Gum                 | 9          | 4                | 250                | 300      | 3.00           | 2.00           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | Within proposed shared path footprint                             | Remove          | Young tree.                                                                                                                                                                                                                                 |
| 123      | <i>Corymbia citriodora</i>       | Lemon-scented Gum        | 20         | 14               | 600                | 700      | 7.20           | 2.85           | M         | Good              | Good                 | Long 40 years +      | High                   | High            | No works proposed within NRZ                                      | Retain          | Prominent tree in landscape. Good form with single leader stem and well-spaced primary branch architecture with good branch to stem attachment.                                                                                             |
| 124      | <i>Corymbia citriodora</i>       | Lemon-scented Gum        | 16         | 12               | 600, 300           | 700      | 8.05           | 2.85           | M         | Good              | Fair                 | Long 40 years +      | High                   | High            | No works proposed within NRZ                                      | Retain          | Co-dominant stems with stem inclusion.                                                                                                                                                                                                      |
| 125      | <i>Cupaniopsis anacardioides</i> | Tuckeroo                 | 5          | 5                | 150                | 200      | 2.00           | 1.68           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | Major 9% NRZ and 3% SRZ encroachment from proposed shared path    | Remove          | Young tree.                                                                                                                                                                                                                                 |

APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species                  | Common Name         | Height (m) | Crown Spread (m) | DBH (mm)           | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating          | Landscape Significance | Retention Value | Development Impact                                                                 | Retain / Remove | Comments                                                                                                          |
|----------|----------------------------------|---------------------|------------|------------------|--------------------|----------|----------------|----------------|-----------|-------------------|----------------------|----------------------|------------------------|-----------------|------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------|
| 126      | <i>Eucalyptus robusta</i>        | Swamp Mahogany      | 7          | 5                | 150                | 200      | 2.00           | 1.68           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                       | Retain          | Young tree. Good health and condition.                                                                            |
| 127      | <i>Angophora costata</i>         | Sydney Red Gum      | 9          | 5                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | Within proposed shared path footprint                                              | Remove          | Young tree. Good form.                                                                                            |
| 128      | <i>Corymbia citriodora</i>       | Lemon-scented Gum   | 11         | 7                | 200                | 300      | 2.40           | 2.00           | SM        | Good              | Good                 | Long 40 years +      | Medium                 | High            | No works proposed within NRZ                                                       | Retain          | Asymmetrical canopy. Suppressed by larger C. citriodora T130.                                                     |
| 129      | <i>Corymbia citriodora</i>       | Lemon-scented Gum   | 10         | 5                | 200, 200           | 350      | 3.39           | 2.13           | SM        | Good              | Average              | Long 40 years +      | Medium                 | High            | Minor 9% NRZ encroachment from proposed shared path                                | Retain          | Semi mature to young mature tree. Co-dominant stems at 0.4m on trunk. Suppressed by larger C. citriodora T130.    |
| 130      | <i>Corymbia citriodora</i>       | Lemon-scented Gum   | 20         | 16               | 600                | 800      | 7.20           | 3.01           | M         | Good              | Good                 | Long 40 years +      | High                   | High            | Moderate 17% NRZ encroachment from proposed shared path and on-street parking area | Retain          | Prominent tree in landscape. Broad-domed canopy with good density. Symmetrical form and good branch architecture. |
| 131      | <i>Banksia integrifolia</i>      | Coast Banksia       | 3          | 2                | 50, 50, 50         | 150      | 2.00           | 1.50           | SM        | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | Within proposed shared path footprint                                              | Remove          | Young tree.                                                                                                       |
| 132      | <i>Eucalyptus punctata</i>       | Grey Gum            | 11         | 4                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Average              | Long 40 years +      | Low                    | Medium          | Within proposed shared path footprint                                              | Remove          | Stem inclusion.                                                                                                   |
| 133      | <i>Syncarpia glomulifera</i>     | Turpentine          | 4          | 3                | 100                | 150      | 2.00           | 1.50           | SM        | Good              | Average              | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                       | Retain          | Stem inclusion.                                                                                                   |
| 134      | <i>Eucalyptus botryoides</i>     | Bangalay            | 6          | 6                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                       | Retain          | Crown bias to north-east.                                                                                         |
| 135      | <i>Cupaniopsis anacardioides</i> | Tuckeroo            | 5          | 5                | 150                | 200      | 2.00           | 1.68           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                       | Retain          | Nil.                                                                                                              |
| 136      | <i>Angophora costata</i>         | Sydney Red Gum      | 8          | 4                | 150                | 200      | 2.00           | 1.68           | SM        | Good              | Average              | Long 40 years +      | Low                    | Medium          | Within proposed shared path footprint                                              | Remove          | Semi mature to young mature tree.                                                                                 |
| 137      | <i>Agonis flexuosa</i>           | Willow Myrtle       | 9          | 13               | 1250               | 1400     | 15.00          | 3.81           | M         | Good              | Average              | Medium 15-40 years   | High                   | High            | Minor 2% NRZ encroachment from proposed shared path and bulk earthworks footprint  | Retain          | Stout trunk. Stem previously removed. Good reaction wood.                                                         |
| 138      | <i>Eucalyptus robusta</i>        | Swamp Mahogany      | 8          | 4                | 200, 100           | 350      | 2.68           | 2.13           | SM        | Good              | Average              | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                       | Retain          | Young tree.                                                                                                       |
| 139      | <i>Syncarpia glomulifera</i>     | Turpentine          | 4          | 2                | 100                | 150      | 2.00           | 1.50           | S         | Poor              | Poor                 | Very Short < 5 years | Low                    | Low             | No works proposed within NRZ                                                       | Retain          | In severe decline.                                                                                                |
| 140      | <i>Angophora costata</i>         | Sydney Red Gum      | 7          | 5                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                       | Retain          | Young tree. Fauna damage to stem.                                                                                 |
| 141      | <i>Banksia integrifolia</i>      | Coast Banksia       | 3          | 2                | 50, 50             | 100      | 2.00           | 1.50           | J         | Good              | Average              | Medium 15-40 years   | Low                    | Low             | Major 40% NRZ and 34% SRZ encroachment from proposed bulk earthworks footprint     | Remove          | Juvenile tree. Suppressed by E. botryoides.                                                                       |
| 142      | <i>Eucalyptus botryoides</i>     | Bangalay            | 9          | 9                | 300                | 400      | 3.60           | 2.25           | SM        | Good              | Good                 | Long 40 years +      | Medium                 | High            | Within proposed bulk earthworks footprint                                          | Remove          | Good central leader. Symmetrical medium to broad-domed canopy with good density.                                  |
| 143      | <i>Syncarpia glomulifera</i>     | Turpentine          | 7          | 3                | 100, 100, 150      | 250      | 2.47           | 1.85           | SM        | Good              | Average              | Long 40 years +      | Low                    | Medium          | Minor 6% NRZ encroachment from proposed shared path                                | Retain          | Multi-stemmed from 0.4m on trunk. First order co-dominant branches with inclusions.                               |
| 144      | <i>Banksia integrifolia</i>      | Coast Banksia       | 5          | 3                | 100, 50            | 150      | 2.00           | 1.50           | SM        | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                       | Retain          | Young tree.                                                                                                       |
| 145      | <i>Ligustrum lucidum</i>         | Broad-leaved Privet | 6          | 4                | 100, 100, 100, 200 | 400      | 3.17           | 2.25           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                       | Retain          | Highly invasive environmental weed.                                                                               |
| 146      | <i>Angophora costata</i>         | Sydney Red Gum      | 7          | 4                | 200                | 300      | 2.40           | 2.00           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                       | Retain          | Young tree.                                                                                                       |

APPENDIX 1: TREE ASSESSMENT DATA

Arboricultural Impact Assessment - Timbrell Park, Five Dock

| Tree No. | Genus & species                  | Common Name              | Height (m) | Crown Spread (m) | DBH (mm)           | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating          | Landscape Significance | Retention Value | Development Impact                                                            | Retain / Remove | Comments                                                                                                                                          |
|----------|----------------------------------|--------------------------|------------|------------------|--------------------|----------|----------------|----------------|-----------|-------------------|----------------------|----------------------|------------------------|-----------------|-------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 147      | <i>Banksia integrifolia</i>      | Coast Banksia            | 6          | 2                | 100, 100           | 200      | 2.00           | 1.68           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | Major 23% NRZ and 19% SRZ encroachment from proposed shared path              | Remove          | Young tree.                                                                                                                                       |
| 148      | <i>Eucalyptus robusta</i>        | Swamp Mahogany           | 8          | 4                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | Major 27% NRZ and 20% SRZ encroachment from proposed on-street parking spaces | Remove          | Young tree.                                                                                                                                       |
| 149      | <i>Eucalyptus punctata</i>       | Grey Gum                 | 9          | 4                | 250                | 300      | 3.00           | 2.00           | SM        | Good              | Fair                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                  | Retain          | Stem inclusion.                                                                                                                                   |
| 150      | <i>Acacia mearnsii</i>           | Black Wattle             | 7          | 9                | 250, 200, 150, 150 | 450      | 4.61           | 2.37           | M         | Good              | Good                 | Medium 15-40 years   | Medium                 | Medium          | Within proposed on-street parking area footprint                              | Remove          | Good form                                                                                                                                         |
| 151      | <i>Angophora floribunda</i>      | Rough-barked Apple       | 10         | 4                | 250                | 300      | 3.00           | 2.00           | SM        | Good              | Average              | Long 40 years +      | Medium                 | High            | No works proposed within NRZ                                                  | Retain          | Trunk bifurcates at 4.1m.                                                                                                                         |
| 152      | <i>Eucalyptus robusta</i>        | Swamp Mahogany           | 8          | 4                | 250                | 300      | 3.00           | 2.00           | SM        | Good              | Fair                 | Long 40 years +      | Medium                 | High            | No works proposed within NRZ                                                  | Retain          | Trunk bifurcates at 2.3m. Stem inclusion.                                                                                                         |
| 153      | <i>Melaleuca linariifolia</i>    | Flax-leaved Paperbark    | 4          | 3                | 100, 50, 50        | 200      | 2.00           | 1.68           | SM        | Good              | Good                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                  | Retain          | Young tree.                                                                                                                                       |
| 154      | <i>Banksia integrifolia</i>      | Coast Banksia            | 4          | 2                | 100                | 150      | 2.00           | 1.50           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                  | Retain          | Longitudinal wound at base of trunk.                                                                                                              |
| 155      | <i>Cupaniopsis anacardioides</i> | Tuckeroo                 | 7          | 4                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Average              | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                  | Retain          | Young tree.                                                                                                                                       |
| 156      | <i>Angophora costata</i>         | Sydney Red Gum           | 7          | 4                | 200                | 250      | 2.40           | 1.85           | SM        | Good              | Fair                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                  | Retain          | Stem inclusion.                                                                                                                                   |
| 157      | <i>Melaleuca styphelioides</i>   | Prickly-leaved Paperbark | 4          | 3                | 100                | 150      | 2.00           | 1.50           | SM        | Good              | Fair                 | Medium 15-40 years   | Low                    | Low             | No works proposed within NRZ                                                  | Retain          | Co-dominant stems.                                                                                                                                |
| 158      | <i>Cupaniopsis anacardioides</i> | Tuckeroo                 | 7          | 5                | 250                | 300      | 3.00           | 2.00           | SM        | Good              | Good                 | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                                  | Retain          | Good form.                                                                                                                                        |
| 159      | <i>Eucalyptus punctata</i>       | Grey Gum                 | 7          | 3                | 150                | 200      | 2.00           | 1.68           | SM        | Average           | Fair                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                  | Retain          | Co-dominant stems with stem inclusion.                                                                                                            |
| 160      | <i>Melaleuca linariifolia</i>    | Flax-leaved Paperbark    | 4          | 3                | 100                | 150      | 2.00           | 1.50           | J         | Good              | Average              | Medium 15-40 years   | Low                    | Medium          | Within proposed shared path footprint                                         | Remove          | Juvenile/young tree.                                                                                                                              |
| 161      | <i>Callistemon viminalis</i>     | Weeping Bottlebrush      | 7          | 8                | 200, 200, 200, 200 | 900      | 4.80           | 3.17           | M         | Good              | Good                 | Medium 15-40 years   | Medium                 | Medium          | Minor 1% NRZ encroachment from proposed footpath                              | Retain          | Multi-stemmed.                                                                                                                                    |
| 162      | <i>Brachychiton acerifolius</i>  | Illawarra Flame Tree     | 9          | 6                | 500                | 550      | 6.00           | 2.57           | M         | Average           | Good                 | Medium 15-40 years   | Medium                 | Medium          | No works proposed within NRZ                                                  | Retain          | Reduced vitality.                                                                                                                                 |
| 163      | <i>Stenocarpus sinuatus</i>      | Firewheel Tree           | 9          | 8                | 600                | 650      | 7.20           | 2.76           | M         | Average           | Average              | Medium 15-40 years   | Medium                 | Medium          | Minor 6% NRZ encroachment from proposed on-street parking spaces              | Retain          | Previous longitudinal wound to trunk. Occluding.                                                                                                  |
| 164      | <i>Brachychiton acerifolius</i>  | Illawarra Flame Tree     | 9          | 8                | 500                | 550      | 6.00           | 2.57           | OM        | Fair              | Average              | Short 5-15 years     | Medium                 | Low             | Within proposed on-street parking area footprint                              | Remove          | In decline.                                                                                                                                       |
| 165      | <i>Stenocarpus sinuatus</i>      | Firewheel Tree           | 9          | 7                | 500, 350           | 400      | 7.32           | 2.25           | M         | Average           | Average              | Medium 15-40 years   | Medium                 | Medium          | Within proposed on-street parking area footprint                              | Remove          | Previous stem removed. Reaction wood forming.                                                                                                     |
| 166      | <i>Brachychiton acerifolius</i>  | Illawarra Flame Tree     | 8          | 7                | 450                | 500      | 5.40           | 2.47           | OM        | Poor              | Fair                 | Very Short < 5 years | Low                    | Low             | Within proposed on-street parking area footprint                              | Remove          | In severe decline. Sparse canopy. Stunted new growth.                                                                                             |
| 167      | <i>Eucalyptus sp.</i>            | Eucalyptus               | 7          | 5                | 250                | 300      | 3.00           | 2.00           | SM        | Good              | Good                 | Long 40 years +      | Low                    | Medium          | No works proposed within NRZ                                                  | Retain          | Semi-mature-young-mature Eucalyptus. Good branching architecture. Mechanical damage to surface structural root.                                   |
| 168      | <i>Brachychiton acerifolius</i>  | Illawarra Flame Tree     | 6          | 5                | 600                | 650      | 7.20           | 2.76           | OM        | Fair              | Average              | Short 5-15 years     | Medium                 | Low             | Moderate 13% NRZ encroachment from proposed on-street parking area            | Remove          | In decline. Moderate aerial epicormic growth. Reduced canopy coverage. Reduced extension growth and stunted leaves. Multiple past pruning events. |

| Tree No. | Genus & species                     | Common Name       | Height (m) | Crown Spread (m) | DBH (mm) | DGL (mm) | NRZ Radius (m) | SRZ Radius (m) | Age Class | Health / Vitality | Structure/ Condition | SULE Rating      | Landscape Significance | Retention Value | Development Impact                                               | Retain / Remove | Comments                                                         |
|----------|-------------------------------------|-------------------|------------|------------------|----------|----------|----------------|----------------|-----------|-------------------|----------------------|------------------|------------------------|-----------------|------------------------------------------------------------------|-----------------|------------------------------------------------------------------|
| 169      | <i>Ficus microcarpa var. hillii</i> | Hills Weeping Fig | 18         | 30               | 2000     | 1700     | 15.00          | 4.14           | M         | Good              | Good                 | Long 40 years +  | High                   | High            | No works proposed within NRZ                                     | Retain          | Dominant landscape tree. Minor crown lift for walkway clearance. |
| 170      | <i>Ficus microcarpa var. hillii</i> | Hills Weeping Fig | 18         | 30               | 1600     | 1500     | 15.00          | 3.92           | M         | Good              | Good                 | Long 40 years +  | High                   | High            | Minor 1% NRZ encroachment from proposed on-street parking spaces | Retain          | Dominant landscape tree. Minor crown lift for walkway clearance. |
| 171      | <i>Ficus microcarpa var. hillii</i> | Hills Weeping Fig | 18         | 30               | 1100     | 1150     | 13.20          | 3.51           | M         | Good              | Good                 | Long 40 years +  | High                   | High            | Minor 2% NRZ encroachment from proposed on-street parking spaces | Retain          | Dominant landscape tree.                                         |
| 172      | <i>Stenocarpus sinuatus</i>         | Firewheel Tree    | 7          | 5                | 400      | 500      | 4.80           | 2.47           | OM        | Average           | Average              | Short 5-15 years | Medium                 | Low             | Minor 9% NRZ encroachment from proposed on-street parking area   | Retain          | In decline. Minor dieback.                                       |

Tree Inspection Data Notes & Terminology

**Tree No. (Tree Number)**  
The tree number associated to each tree located on or adjacent to the subject site.

**Botanical Name and Common Name**  
The botanical and common name of each tree is identified and recorded. Occasionally the exact species name is unknown; sp. is recorded to indicate this.

**Height, Crown Width and DSH**  
- The trees height and crown spread is recorded in metres (m);  
- The tree DSH is recorded in millimetres (mm). DSH is an abbreviation of Diameter (of the trunk) measured at Standard Height (or 1.4m from the base of the trunk). If more than one trunk is present the DSH is calculated in accordance with AS4970-2025 Protection of Trees on Development Sites

**Age Class**  
The age class of each tree is estimated as either:  
J – Juvenile refers to a well established but young tree  
SM – Semi Mature, a tree that has not grown to mature size  
M – Mature, a tree that has reached mature size and will slowly increase in size over time  
OM – Over Mature, a tree that has been mature for a long period and is beginning to display signs of decline, e.g. large dead branches  
S – Senescent, an over mature tree that is now in decline

**Health & Condition**  
The trees health and vigour is recorded as a measurement of:  
Good - the tree does not appear to appear stressed with no excessive dieback, insect infestation, decay, deadwood or epicormic shoots  
Average - the tree appears stressed and has some crown dieback, and/or a few epicormic shoots, and/or some deadwood in the crown and some new growth at branch tips. These trees may benefit from remediation of the growing environment to reduce stress and return it to good health  
Fair - the tree may have areas of crown dieback, and/or epicormic shoots, and/or areas of decay, and/or reduced new growth at branch tips. These trees have been stressed for a short period of time, remediation of the growing environment may improve trees health  
Poor - the tree may have large areas of crown dieback, and/or many epicormic shoots, and/or reduced new growth at branch tips. These trees have been stressed for a long period of time, remediation of the growing environment would not return the tree to good health.

**SRZ (Structural Root Zone)**  
The SRZ is a radial area extending outwards from the centre of the trunk. This area contains the majority of the structural woody roots. This area is responsible primarily for stability. Root damage or root loss within this zone greatly increases the opportunity for decay fungi to ingress into the heartwood, causing internal decay in addition to destabilising the trees structural integrity. The SRZ is calculated as follows (This calculation is taken from the Australian Standard 4970 – 2025 Protection of Trees on Development Sites): (D x 50)/0.42 x 0.64

**NRZ (Notional Root Zone)**  
The NRZ is a radial area measured by multiplying the DSH by twelve (12) or a circular area the size of the trees drip line, whichever is greater. This area contains the majority of the structural and feeder roots responsible for stability, gaseous exchange and water and nutrient uptake. Excavation, back filling, compaction or other disturbance should not occur in this area. The NRZ is used to identify the minimum area required for the safe retention of a given tree. This calculation is derived from the Australian Standard 4970-2025 Protection of Trees in Development Sites. NRZ encroachment is potentially acceptable if no other option is available and is classified under AS4970-2025 as 'Minor' (<10%), 'Moderate' (>10<20%) or 'Major' (>20%). A major encroachment (in excess of 20%) is required to be clearly justified by the Project Arborist and compensated for elsewhere. Justification methodology may vary depending on site or individual tree's health, vigour and ability to withstand disturbance and may require root investigation.

**Landscape Significance**  
The landscape significance of a tree or group of trees is determined using a combination of health/vigour/condition, amenity, heritage and ecological values in accordance with IACA Significance of a Tree, Assessment Rating System (STARS)® (IACA 2010)®.  
**1. High Significance in Landscape**  
**2. Medium Significance in Landscape**  
**3. Low Significance in Landscape**

**Retention Value (RV)**  
Determined by [1] tree free of visual defects and viable for retention, [2] viable for retention with minor faults which may reduce SULE, [3] trees which should not restrict development applications containing faults that are likely to become problematic in the short term, [4] trees to be considered for removal due to average condition.  
**High Retention** - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 Protection of trees on development sites. Tree sensitive construction measures must be implemented e.g. pier and beam etc. If works are to proceed within the Tree Protection Zone.  
**Medium Retention** - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.  
**Low Retention** - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.  
**Priority for Removal** - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

**S.U.L.E. Categories**  
Safe Useful Life Expectancy (after Barrell 1996, modified by the author). A trees S.U.L.E. category is the life expectancy of the tree modified first by its age, health, condition, safety and location. S.U.L.E. assessments may be modified as dictated by changes in trees health and environment.  
**Long** - Appear retainable at the time of assessment for over 40 years with an acceptable degree of risk assuming reasonable maintenance.  
**Medium** - Appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk assuming reasonable maintenance.  
**Short** - Trees appear to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk assuming reasonable maintenance.  
**Very Short** - Removal - Trees which should be scheduled for removal within the very short term or as specified within this report.  
**Small, Young or Regularly Pruned** – Trees under 5m in height that can be easily moved or replaced, includes screen plantings or hedge lines.

**Development Impact**  
Brief outline of the impact of the proposed development works or ancillary construction related activities likely to impact the tree.

**Retain/Remove**  
The proposed removal or retention recommendation in light of the proposed development related impacts.

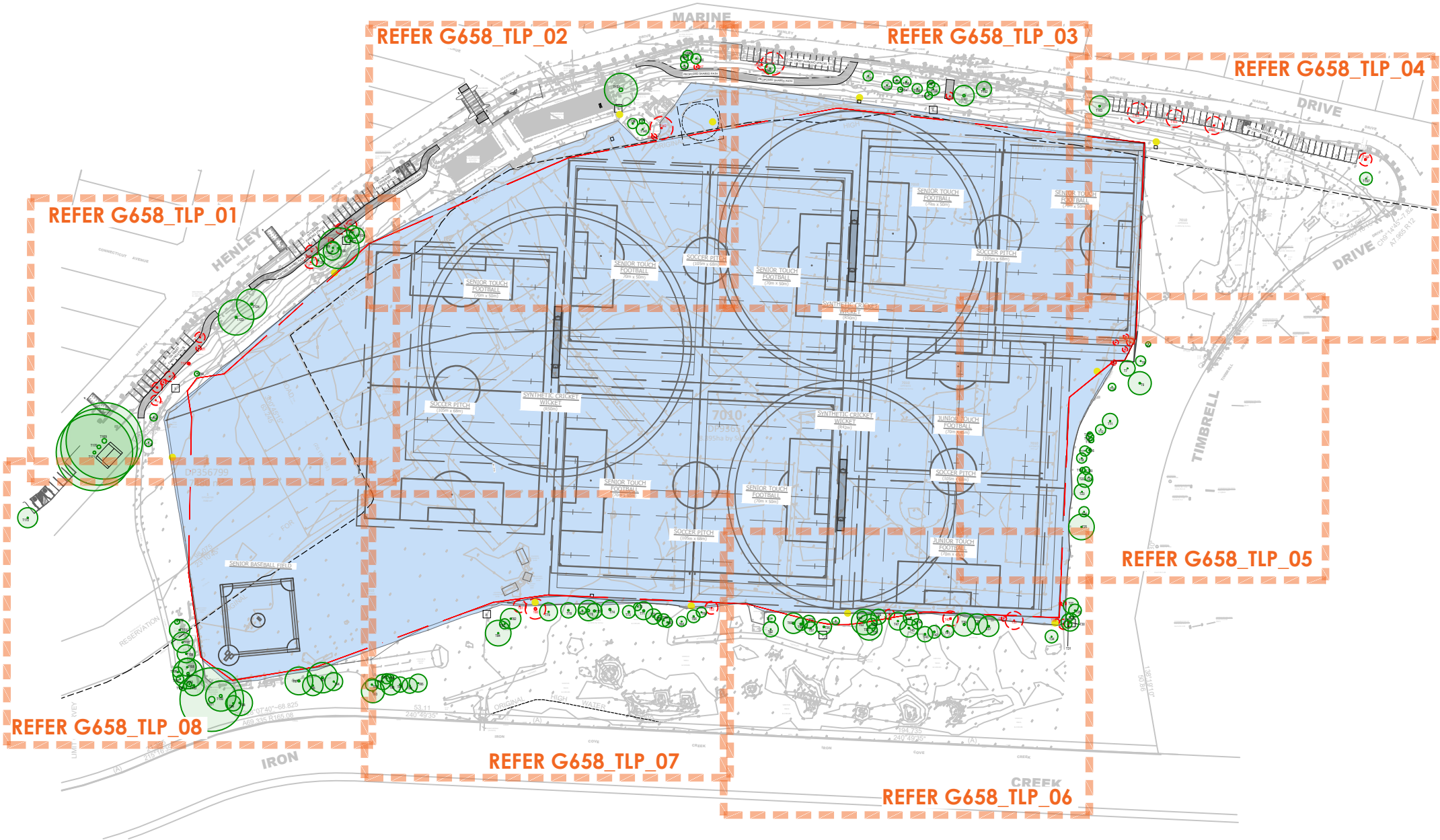
**NOTES:** This report acknowledges the current Australian Standard ‘Protection of Trees on Development Sites’ AS 4970 – 2025 with reference to the Notional Root Zone (NRZ); being a combination of the root and crown area requiring protection. The NRZ takes into consideration the Structural Root Zone (SRZ): The area required for tree stability. The standard states where a greater than 20% encroachment occurs the arborist is to take into consideration the schedule of determining impacts as set within AS4970 s. 3.3.2. Encroachments are referred to within this report as major or minor encroachments [AS4970 s. 3.3.2 & 3.3.3]. To retain specific trees and ensure their viability, development must take into consideration protection of the NRZ radius.

APPENDIX 2 - TREE LOCATION PLANS

NOTE: MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT

DRAWING LIST -

| SHEET:      | TITLE:                |
|-------------|-----------------------|
| G658_TLP_00 | COVER SHEET           |
| G658_TLP_01 | TREE LOCATION PLAN 01 |
| G658_TLP_02 | TREE LOCATION PLAN 02 |
| G658_TLP_03 | TREE LOCATION PLAN 03 |
| G658_TLP_04 | TREE LOCATION PLAN 04 |
| G658_TLP_05 | TREE LOCATION PLAN 05 |
| G658_TLP_06 | TREE LOCATION PLAN 06 |
| G658_TLP_07 | TREE LOCATION PLAN 07 |
| G658_TLP_08 | TREE LOCATION PLAN 08 |



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**DIMENSIONS :**  
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

**CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :**  
Refer to specialist and consultant's drawings for all information contained within these documents relating to and nominated as specialist and consultant work. Specialist and consultant drawing information contained in the landscape documents are indicative only and not for construction or certification purposes.

| Issue | Code | Issue Description | By | Chk | Date     |
|-------|------|-------------------|----|-----|----------|
| C     | -    | FOR REF           | SZ | TP  | 04.06.25 |
| B     | -    | FOR REF           | SZ | TP  | 07.05.25 |
| A     | -    | FOR REF           | JZ | TP  | 30.04.25 |
| P1    | PRE  | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

PROJECT

**SPORTSFIELD LIGHTING UPGRADES**

TIMBRELL PARK, FIVE DOCK

DRAWING TITLE

COVER SHEET

CLIENT



Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale



| SHEET NUMBER | REVISION |
|--------------|----------|
| G658_TLP_00  | C        |

**DIMENSIONS :**  
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

**CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :**  
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## LEGEND

-  EXISTING TREE TO BE RETAINED
-  EXISTING TREE TO BE REMOVED
-  NOTIONAL ROOT ZONE (NRZ)
-  STRUCTURAL ROOT ZONE (SRZ)
-  PROPOSED LIGHT POLE
-  PROPOSED CABLE TRENCH - TO BE RELOCATED OUTSIDE TPZs BY ELECTRICAL ENGINEER
-  SITE BOUNDARY
-  PROPOSED BULK EARTHWORKS FOOTPRINT
-  NRZ INCURSION ZONE
-  TREE PROTECTION FENCING (AS PER APPENDIX 6)

| Issue Code | Issue Description | By | Chk | Date     |
|------------|-------------------|----|-----|----------|
| C          | FOR REF           | SZ | TP  | 04.06.25 |
| B          | FOR REF           | SZ | TP  | 07.05.25 |
| A          | FOR REF           | JZ | TP  | 30.04.25 |
| P1         | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

## PROJECT

## SPORTSFIELD LIGHTING UPGRADES TIMBRELL PARK, FIVE DOCK

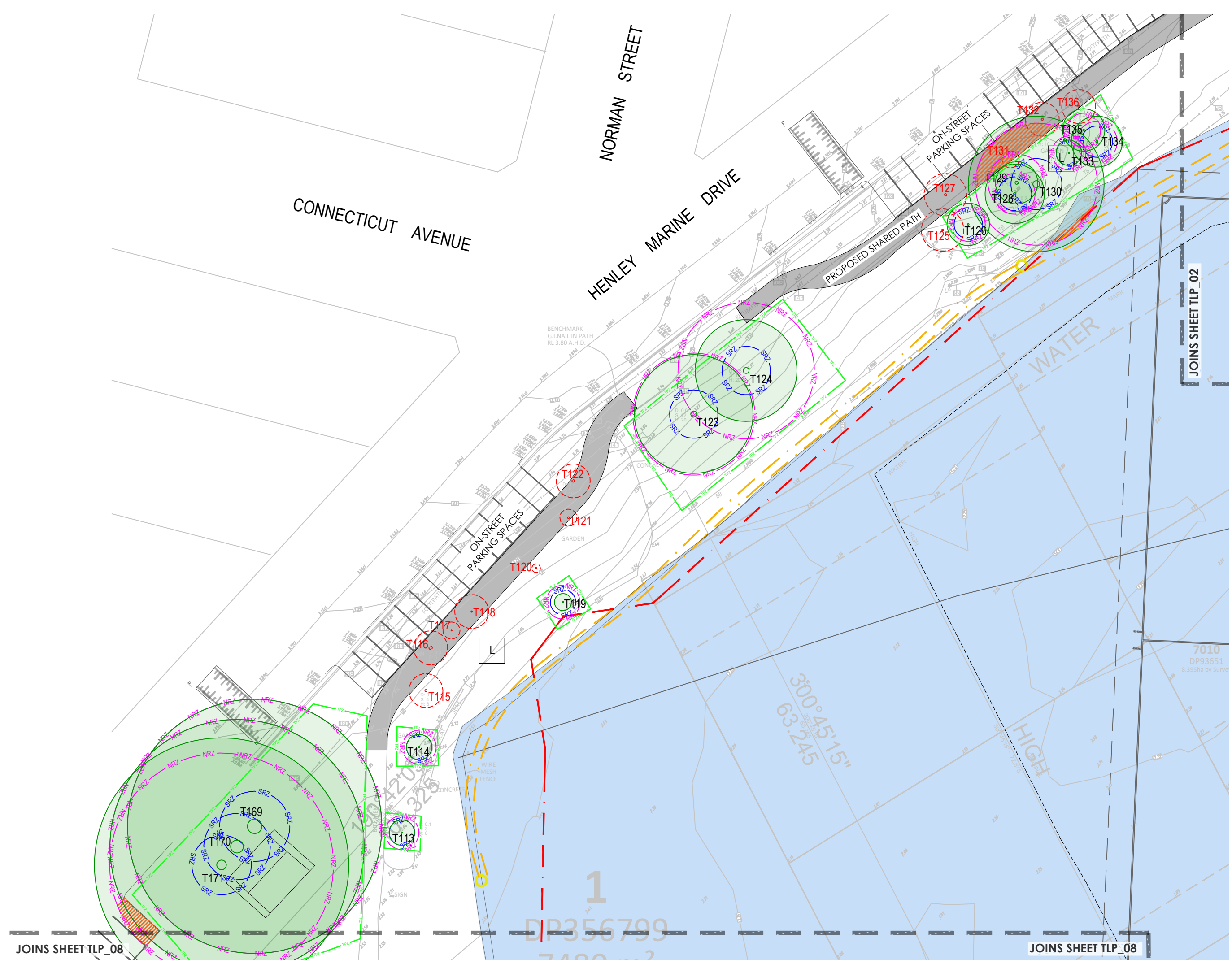
DRAWING TITLE

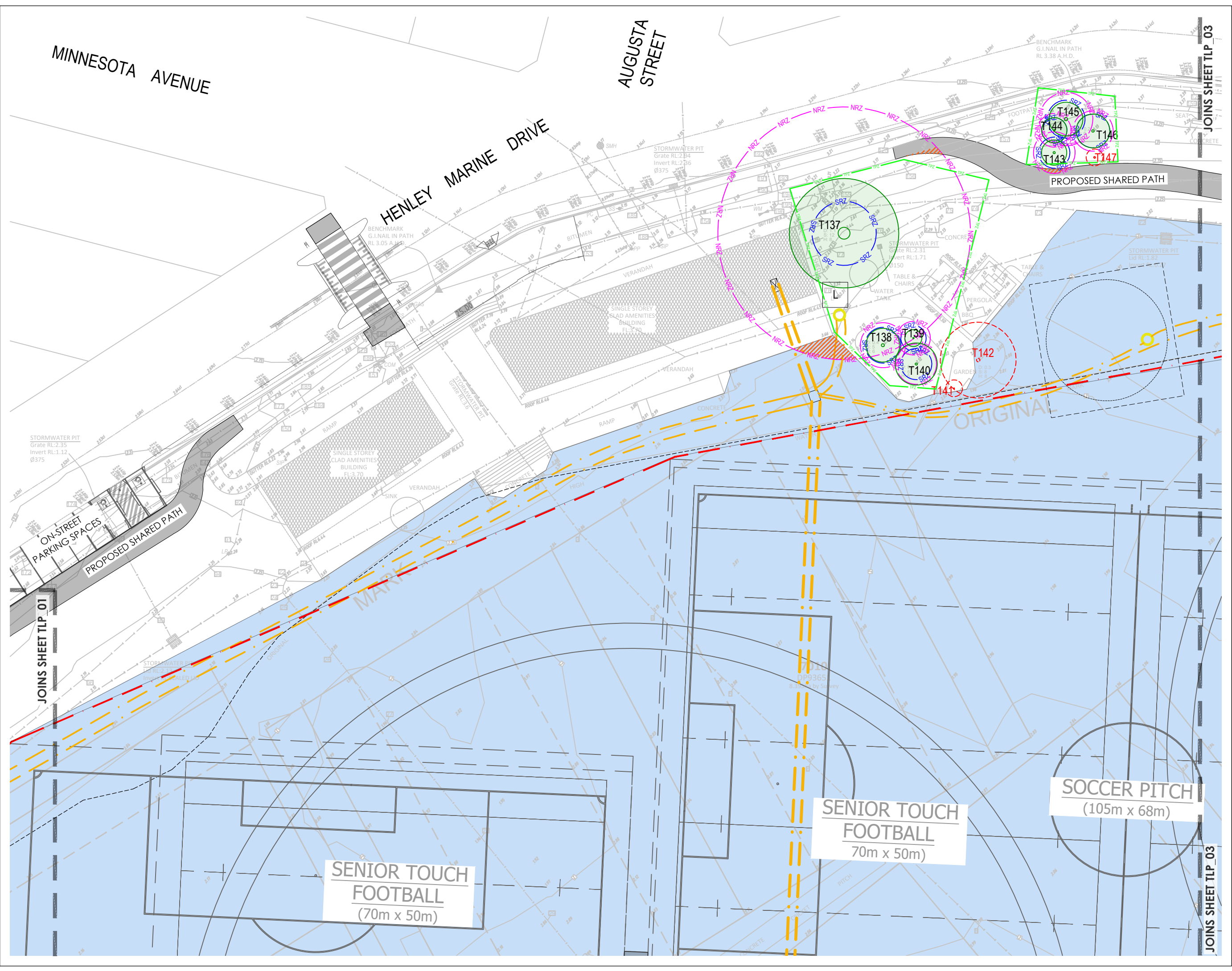
## TREE LOCATION PLAN 01

CLIENT



Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale  
1:400 @ A3  
SHEET NUMBER  
G658\_TLP\_01  
REVISION  
C





**DIMENSIONS :**  
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

**CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :**  
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- LEGEND**
- EXISTING TREE TO BE RETAINED
  - EXISTING TREE TO BE REMOVED
  - NOTIONAL ROOT ZONE (NRZ)
  - STRUCTURAL ROOT ZONE (SRZ)
  - PROPOSED LIGHT POLE
  - PROPOSED CABLE TRENCH - TO BE RELOCATED OUTSIDE TPZs BY ELECTRICAL ENGINEER
  - SITE BOUNDARY
  - PROPOSED BULK EARTHWORKS FOOTPRINT
  - NRZ INCURSION ZONE
  - TREE PROTECTION FENCING (AS PER APPENDIX 6)

| Issue Code | Issue Description | By | Chk | Date     |
|------------|-------------------|----|-----|----------|
| C          | FOR REF           | SZ | TP  | 04.06.25 |
| B          | FOR REF           | SZ | TP  | 07.05.25 |
| A          | FOR REF           | JZ | TP  | 30.04.25 |
| P1         | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

**PROJECT**

**SPORTSFIELD LIGHTING UPGRADES**

TIMBRELL PARK, FIVE DOCK

DRAWING TITLE

TREE LOCATION PLAN  
02

CLIENT



**DIMENSIONS :**  
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

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- LEGEND**
- EXISTING TREE TO BE RETAINED
  - EXISTING TREE TO BE REMOVED
  - NOTIONAL ROOT ZONE (NRZ)
  - STRUCTURAL ROOT ZONE (SRZ)
  - PROPOSED LIGHT POLE
  - PROPOSED CABLE TRENCH - TO BE RELOCATED OUTSIDE TPZs BY ELECTRICAL ENGINEER
  - SITE BOUNDARY
  - PROPOSED BULK EARTHWORKS FOOTPRINT
  - NRZ INCURSION ZONE
  - TREE PROTECTION FENCING (AS PER APPENDIX 6)

| Issue Code | Issue Description | By | Chk | Date     |
|------------|-------------------|----|-----|----------|
| C          | FOR REF           | SZ | TP  | 04.06.25 |
| B          | FOR REF           | SZ | TP  | 07.05.25 |
| A          | FOR REF           | JZ | TP  | 30.04.25 |
| P1         | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

PROJECT

## SPORTSFIELD LIGHTING UPGRADES

TIMBRELL PARK, FIVE DOCK

DRAWING TITLE

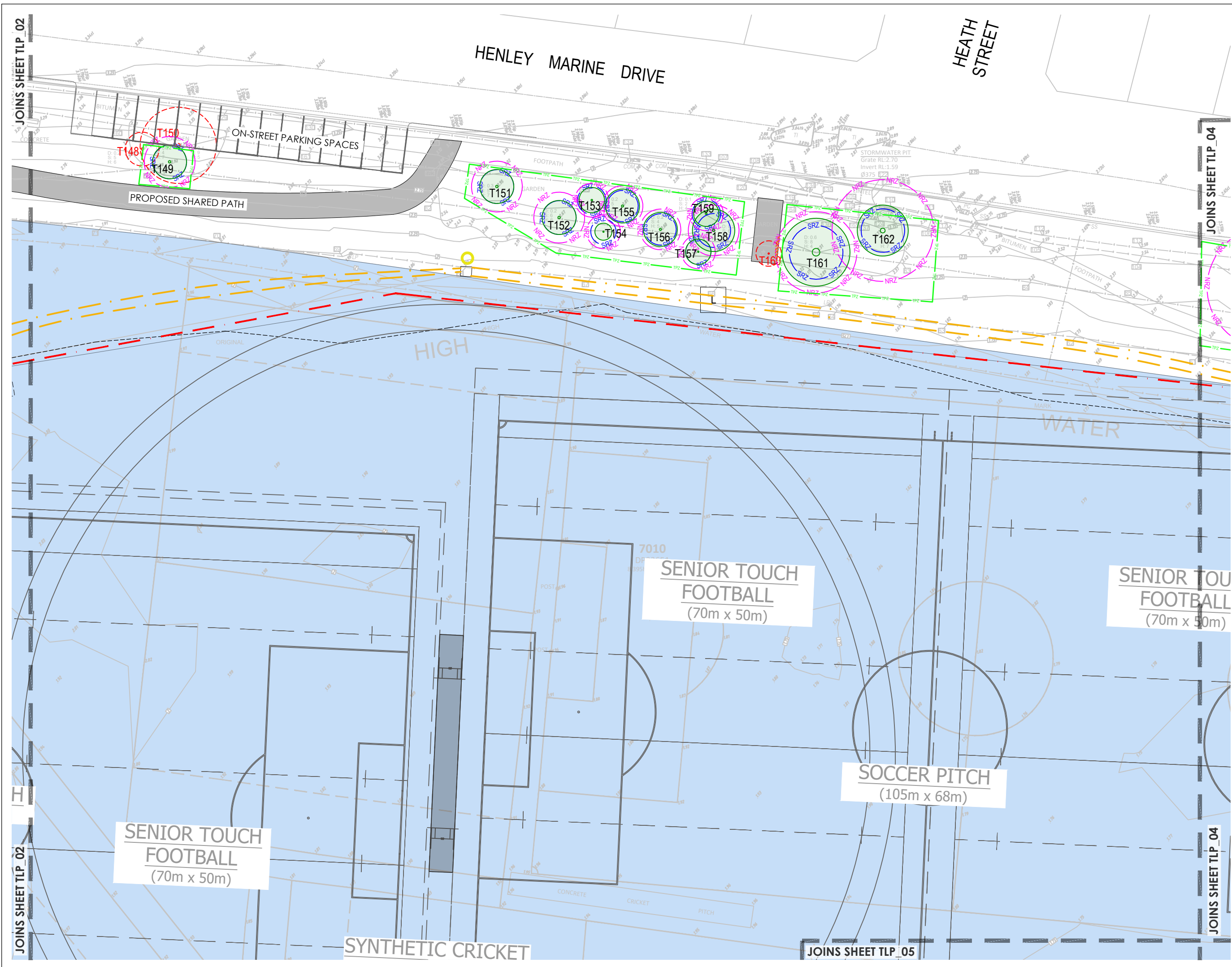
TREE LOCATION PLAN 03

CLIENT



Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale  
1:400 @ A3

SHEET NUMBER G658\_TLP\_03 REVISION C



**DIMENSIONS :**  
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

Verify all dimensions on site prior to construction.

**CIVIL, STRUCTURAL, HYDRAULIC, ELECTRICAL AND SPECIALIST WATER FEATURE WORKS :**  
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## LEGEND

-  EXISTING TREE TO BE RETAINED
-  EXISTING TREE TO BE REMOVED
-  NOTIONAL ROOT ZONE (NRZ)
-  STRUCTURAL ROOT ZONE (SRZ)
-  PROPOSED LIGHT POLE
-  PROPOSED CABLE TRENCH - TO BE RELOCATED OUTSIDE TPzs BY ELECTRICAL ENGINEER
-  SITE BOUNDARY
-  PROPOSED BULK EARTHWORKS FOOTPRINT
-  NRZ INCURSION ZONE
-  TREE PROTECTION FENCING (AS PER APPENDIX 6)

| Issue Code | Issue Description | By | Chk | Date     |
|------------|-------------------|----|-----|----------|
| C          | FOR REF           | SZ | TP  | 04.06.25 |
| B          | FOR REF           | SZ | TP  | 07.05.25 |
| A          | FOR REF           | JZ | TP  | 30.04.25 |
| P1         | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

## PROJECT

## SPORTSFIELD LIGHTING UPGRADES

TIMBRELL PARK, FIVE DOCK

## DRAWING TITLE

## TREE LOCATION PLAN 04

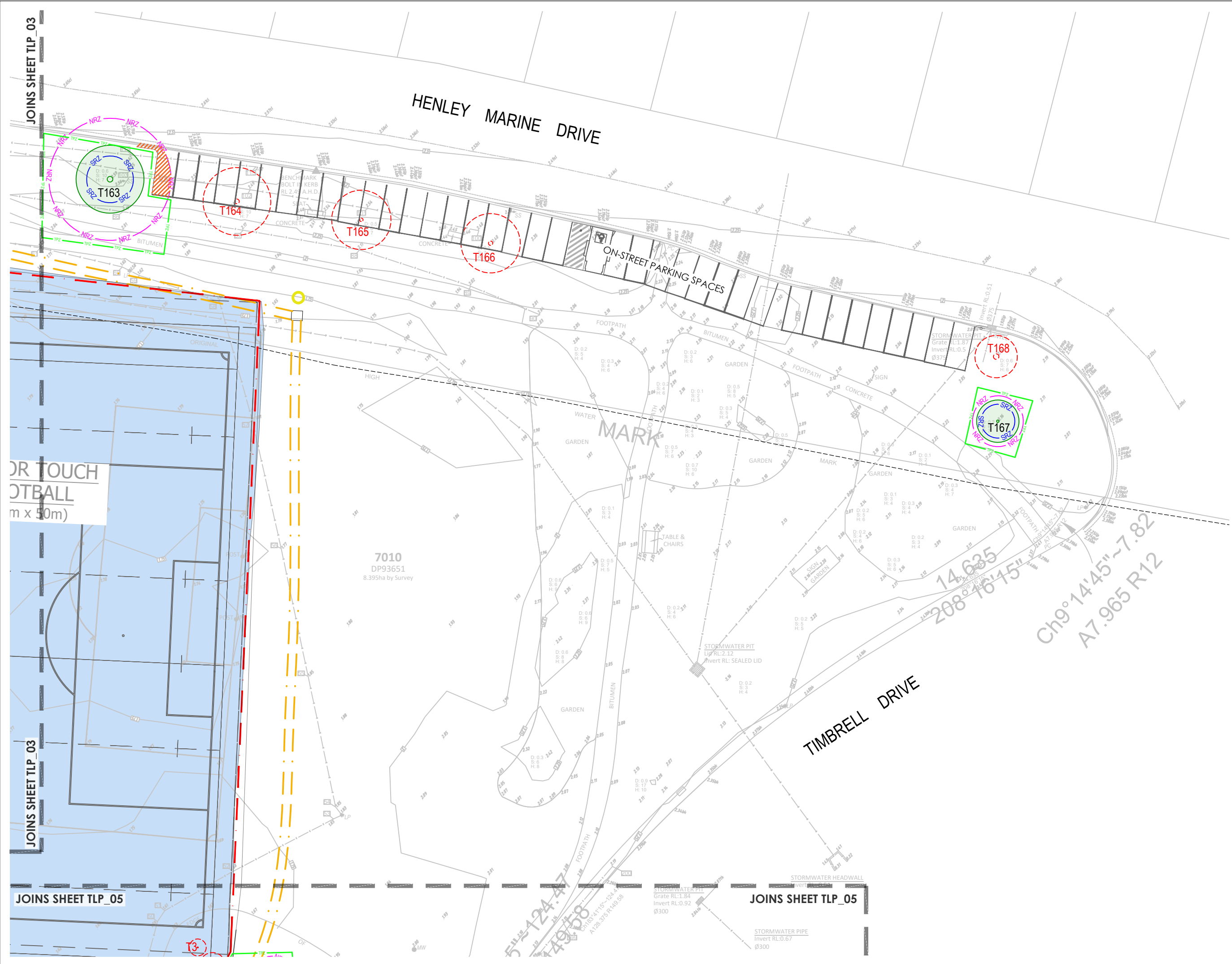
## CLIENT



Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale

1:400 @ A3

SHEET NUMBER G658\_TLP\_04 REVISION C



**DIMENSIONS :**  
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#### LEGEND

- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- NOTIONAL ROOT ZONE (NRZ)
- STRUCTURAL ROOT ZONE (SRZ)
- PROPOSED LIGHT POLE
- PROPOSED CABLE TRENCH  
- TO BE RELOCATED OUTSIDE  
TPs BY ELECTRICAL  
ENGINEER
- SITE BOUNDARY
- PROPOSED BULK  
EARTHWORKS FOOTPRINT
- NRZ INCURSION ZONE
- TREE PROTECTION FENCING  
(AS PER APPENDIX 6)

| Issue | Code | Issue Description | By | Chk | Date     |
|-------|------|-------------------|----|-----|----------|
| C     | -    | FOR REF           | SZ | TP  | 04.06.25 |
| B     | -    | FOR REF           | SZ | TP  | 07.05.25 |
| A     | -    | FOR REF           | JZ | TP  | 30.04.25 |
| P1    | PRE  | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

#### PROJECT

#### SPORTSFIELD LIGHTING UPGRADES

TIMBRELL PARK, FIVE  
DOCK

#### DRAWING TITLE

#### TREE LOCATION PLAN 05

#### CLIENT



Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale

1:400 @ A3

SHEET NUMBER  
G658\_TLP\_05

REVISION  
C



JOINS SHEET TLP\_07

JOINS SHEET TLP\_07



CPS

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CPSPLANNING.COM.AU

**DIMENSIONS :**  
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LEGEND

EXISTING TREE TO BE RETAINED

EXISTING TREE TO BE REMOVED

NOTIONAL ROOT ZONE (NRZ)

STRUCTURAL ROOT ZONE (SRZ)

PROPOSED LIGHT POLE

PROPOSED CABLE TRENCH  
- TO BE RELOCATED OUTSIDE  
TPZs BY ELECTRICAL  
ENGINEER

SITE BOUNDARY

PROPOSED BULK  
EARTHWORKS FOOTPRINT

NRZ INCURSION ZONE

TREE PROTECTION FENCING  
(AS PER APPENDIX 6)

| Issue Code | Issue Description | By | Chk | Date     |
|------------|-------------------|----|-----|----------|
| C          | - FOR REF         | SZ | TP  | 04.06.25 |
| B          | - FOR REF         | SZ | TP  | 07.05.25 |
| A          | - FOR REF         | JZ | TP  | 30.04.25 |
| P1         | PRE FOR REVIEW    | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

PROJECT

**SPORTSFIELD  
LIGHTING UPGRADES**

TIMBRELL PARK, FIVE  
DOCK

DRAWING TITLE

TREE LOCATION PLAN  
06

CLIENT

Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale

1:400 @ A3

SHEET NUMBER  
G658\_TLP\_06

REVISION  
C

**DIMENSIONS :**  
All dimensions are in millimetres unless otherwise noted. Do not scale from this drawing.

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## LEGEND

-  EXISTING TREE TO BE RETAINED
-  EXISTING TREE TO BE REMOVED
-  NOTIONAL ROOT ZONE (NRZ)
-  STRUCTURAL ROOT ZONE (SRZ)
-  PROPOSED LIGHT POLE
-  PROPOSED CABLE TRENCH - TO BE RELOCATED OUTSIDE TPZs BY ELECTRICAL ENGINEER
-  SITE BOUNDARY
-  PROPOSED BULK EARTHWORKS FOOTPRINT
-  NRZ INCURSION ZONE
-  TREE PROTECTION FENCING (AS PER APPENDIX 6)

| Issue Code | Issue Description | By | Chk | Date     |
|------------|-------------------|----|-----|----------|
| C          | FOR REF           | SZ | TP  | 04.06.25 |
| B          | FOR REF           | SZ | TP  | 07.05.25 |
| A          | FOR REF           | JZ | TP  | 30.04.25 |
| P1         | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

## PROJECT

## SPORTSFIELD LIGHTING UPGRADES TIMBRELL PARK, FIVE DOCK

## DRAWING TITLE

## TREE LOCATION PLAN 07

## CLIENT



Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale

1:400 @ A3

SHEET NUMBER  
G658\_TLP\_07

REVISION  
C



**DIMENSIONS :**  
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Verify all dimensions on site prior to construction.

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#### LEGEND

- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- NOTIONAL ROOT ZONE (NRZ)
- STRUCTURAL ROOT ZONE (SRZ)
- PROPOSED LIGHT POLE
- PROPOSED CABLE TRENCH - TO BE RELOCATED OUTSIDE TPZs BY ELECTRICAL ENGINEER
- SITE BOUNDARY
- PROPOSED BULK EARTHWORKS FOOTPRINT
- NRZ INCURSION ZONE
- TREE PROTECTION FENCING (AS PER APPENDIX 6)

| Issue Code | Issue Description | By | Chk | Date     |
|------------|-------------------|----|-----|----------|
| C          | FOR REF           | SZ | TP  | 04.06.25 |
| B          | FOR REF           | SZ | TP  | 07.05.25 |
| A          | FOR REF           | JZ | TP  | 30.04.25 |
| P1         | FOR REVIEW        | NZ | TP  | 08.08.24 |

PRE - Preliminary CA - Council Approval T - Tender CON - Construction

#### PROJECT

#### SPORTSFIELD LIGHTING UPGRADES

TIMBRELL PARK, FIVE DOCK

#### DRAWING TITLE

#### TREE LOCATION PLAN 08

#### CLIENT

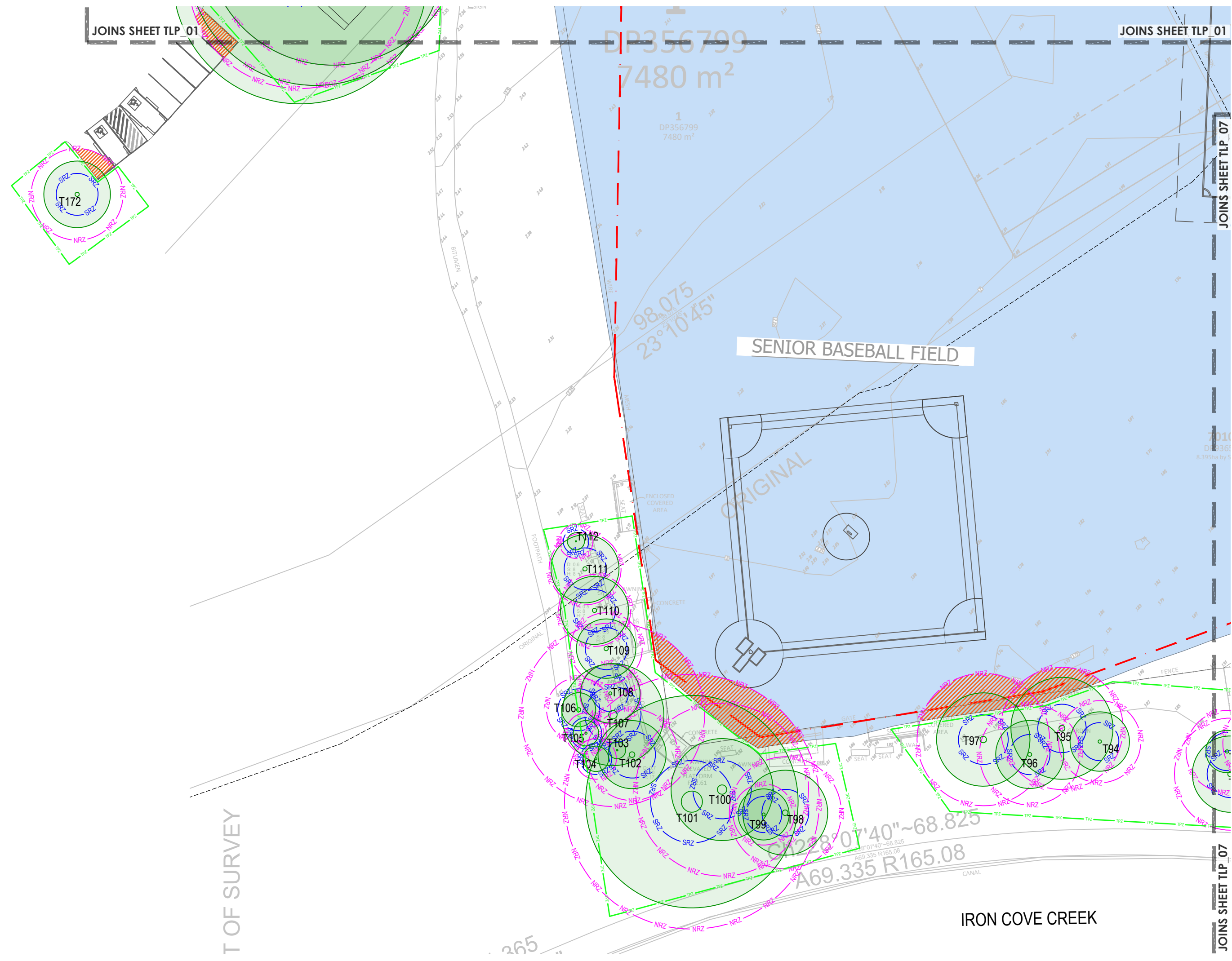


Drawn : SZ  
Designed : -  
Project No. : G658  
Bar Scale

1:400 @ A3

SHEET NUMBER  
G658\_TLP\_08

REVISION  
C



## APPENDIX 3

### IACA Significance of a Tree, Assessment Rating System (STARS)© (IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria and Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

#### **Tree Significance - Assessment Criteria**



##### **1. High Significance in landscape**

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

##### **2. Medium Significance in landscape**

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

##### **3. Low Significance in landscape**

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

##### **Environmental Pest / Noxious Weed Species**

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

##### **Hazardous/Irreversible Decline**

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

**The tree is to have a minimum of three (3) criteria in a category to be classified in that group.**

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

**Table 1.0 Tree Retention Value - Priority Matrix.**

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Significance              |                           |                           |                                           |                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|-------------------------------------------|----------------------------------|
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1. High                   | 2. Medium                 | 3. Low                    |                                           |                                  |
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Significance in Landscape | Significance in Landscape | Significance in Landscape | Environmental Pest / Noxious Weed Species | Hazardous / Irreversible Decline |
| Estimated Life Expectancy    | 1. Long >40 years                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                           |                           |                                           |                                  |
|                              | 2. Medium 15-40 Years                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |                           |                           |                                           |                                  |
|                              | 3. Short <1-15 Years                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           |                           |                           |                                           |                                  |
|                              | Dead                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           |                           |                           |                                           |                                  |
| Legend for Matrix Assessment |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                           |                           |                           |                                           |                                  |
|                              | <b>Priority for Retention (High)</b> - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone. |                           |                           |                           |                                           |                                  |
|                              | <b>Consider for Retention (Medium)</b> - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.                                                                                                                                                        |                           |                           |                           |                                           |                                  |
|                              | <b>Consider for Removal (Low)</b> - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.                                                                                                                                                                                                                                                                                          |                           |                           |                           |                                           |                                  |
|                              | <b>Priority for Removal</b> - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.                                                                                                                                                                                                                                                                                                                  |                           |                           |                           |                                           |                                  |

#### USE OF THIS DOCUMENT AND REFERENCING

The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows:

IACA, 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, [www.iaca.org.au](http://www.iaca.org.au)

#### REFERENCES

Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, [www.icomos.org/australia](http://www.icomos.org/australia)

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, [www.footprintgreen.com.au](http://www.footprintgreen.com.au)

IACA 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, [www.iaca.org.au](http://www.iaca.org.au)

The following example shows the IACA **Significance of a Tree, Assessment Rating System (STARS)** used in an Arboricultural report.

### Tree Significance

Determined by using the Tree Significance - Assessment Criteria of the *IACA Significance of a Tree, Assessment Rating System (STARS)*© (IACA, 2010), Appendix B.

Trees 14, 16, 17/3, 19 and 20/4 are of high significance with the remaining majority of medium significance and a few of low significance. Tree 14 is significant as a prominent specimen and a food source for indigenous avian fauna. Tree 16 as a non-locally indigenous planting is of good form and prominent *in situ*; Tree 17/3 as a stand of 6 street trees along the Davey Street frontage screening views to and from the site and contiguous with trees in Victoria Park extending the aesthetic influence of the urban canopy to the site. Similarly for Trees 20/4 as street trees in Long Road and Tree 19 as an extant exotic planting as a senescent component of the original landscaping. The trees of low significance are recent plantings as fruit trees – Avocados, and 1 Cootamundra Wattle as a non-locally indigenous tree in irreversible decline and potentially structurally unsound.

### Significance Scale

**1 – High**  
**2 – Medium**  
**3 – Low**

| Significance Scale   | 1                      | 2                                                    | 3         |
|----------------------|------------------------|------------------------------------------------------|-----------|
| Tree No. / Stand No. | 14, 16, 17/3, 19, 20/4 | 1/1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12/2, 15, 18, 21/5 | 3, 13, 22 |

### Tree Retention Value

Determined by using the Retention Value - Priority Matrix of the *IACA Significance of a Tree, Assessment Rating System (STARS)*© (IACA, 2010), Appendix B.

### Retention Value

**High** – Priority for Retention  
**Medium** – Consider for Retention  
**Low** – Consider for Removal  
**Remove** - Priority for Removal

| Retention Value      | High<br>Priority for Retention | Medium<br>Consider for Retention                      | Low<br>Consider for Removal | Remove<br>Priority for Removal |
|----------------------|--------------------------------|-------------------------------------------------------|-----------------------------|--------------------------------|
| Tree No. / Stand No. | 1/1, 5, 17/3*, 19              | 2, 4, 6, 7, 8, 9, 10, 11, 14, 15, 16, 18, 20/4*, 21/5 | 3, 12/2, 13,                | 22                             |

\* Trees located within the neighbouring property and should be retained and protected.

# APPENDIX 4 - EXTRACT FROM AS4970-2025: PROTECTION OF TREES ON DEVELOPMENT SITES

## Section 3 Determining protection zones

### 3.1 Tree Protection Zone (TPZ)

Establishing and maintaining a TPZ is the most important part of protecting trees during the onsite stages of work (e.g. site establishment, demolition, construction). The TPZ is the zone determined by the project arborist using the process set out below. It shall be shown on the TPP to be isolated or managed so that the tree remains viable.

The NRZ is the starting point for determining the TPZ, along with the considerations in [Clause 3.3.2](#). Alternatively, the TPZ may be specified by the consent authority.

### 3.2 Calculating the Notional Root Zone (NRZ)

The radius of the NRZ is calculated for each tree by multiplying its diameter at standard height (DSH) by 12.

$$\text{Radius of the NRZ} = \text{DSH} \times 12$$

where

DSH = trunk diameter measured at 1.4 m above ground

The radius of the NRZ is measured from the centre of the stem.

The NRZ for palms, cycads, tree ferns and the like, is not calculated but shall not be less than 2 m.

Any NRZ radius shall not be less than 2 m nor greater than 15 m. [Clause 3.3](#) details the methods to produce the TPZ based on the NRZ.

### 3.4 Structural Root Zone (SRZ)

The SRZ is a notional area required for tree stability. A larger area is required to maintain a viable tree.

The SRZ shall be calculated when major encroachment (greater than 20 %) into an NRZ is proposed. SRZ locations and dimensions may be included on arboriculture documentation.

Many factors affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). Natural or built structures, such as rocks and footings, can also influence the SRZ. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula or [Figure 2](#). Root investigation can provide more information on the extent of these roots.

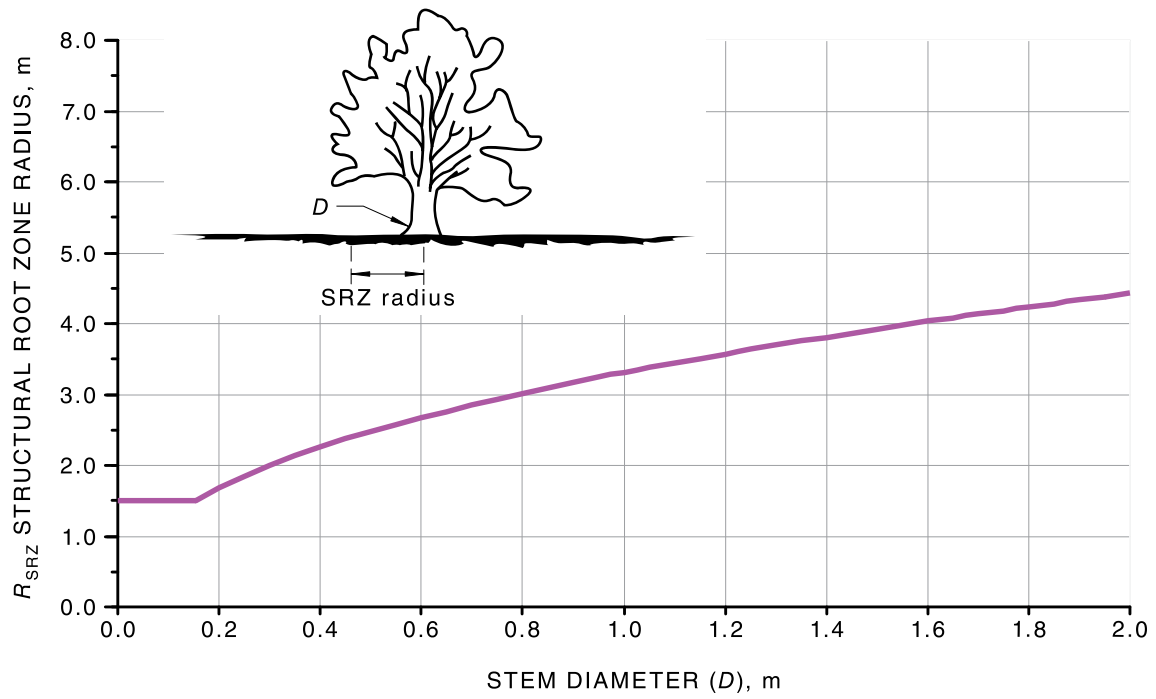
$$\text{SRZ radius} = (D \times 50)^{0.42} \times 0.64$$

where

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

Where the tree is multi-stemmed, the project arborist should determine if they will measure around all stems or work out the cross-sectional area, as noted in [Figure A.1](#), and provide their reasons for the method selected. The SRZ calculation does not apply to palms, cycads, tree ferns and the like.

NOTE The SRZ for trees with trunk diameters less than 0.15 m is 1.5 m, as shown in [Figure 2](#).



The curve can be expressed by the following formula:  
 $R_{SRZ} = (D \times 50)^{0.42} \times 0.64$

**Figure 2 — Structural Root Zone (SRZ) calculation**