



Arboricultural Impact Assessment Report

Project Title

Swans HQ and Community Centre project

For the site address

Royal Hall of Industries,
Lot 3, (D.P.861843) and Lot 52 (D.P.1041134)
No. 1 Driver Avenue, MOORE PARK

Prepared for

Urbis Pty Ltd.

AUTHOR

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1.0 Introduction

- 1.1** The following Arborist report has been requested by *Urbis Pty Ltd.* for the development proposal related to the Swans HQ and Community Centre project at the Royal Hall of Industries (RHI), located on the corner of Lang and Errol Flynn Boulevard, Moore Park, Sydney. This proposed development is an adaptive reuse of the Hall of Industries and surrounding precinct to a high-performance sport and community facility. This report includes seventy-nine (79) trees located adjacent to the area proposed for development and discusses the viability of these trees based on the proposed works.
- 1.2** This report will address for these trees, the:
- species' identification, location, dimensions, and condition;
 - SULE (Safe Useful Life Expectancy) and STARS (Significance of a Tree Assessment Rating System) rating;
 - discussion and impact of the proposed works on each tree;
 - recommendations for the removal, retention and/or pruning;
 - tree protection zones and protection specifications for trees recommended for retention.
- 1.3** The subject site resides within Moore Park Showgrounds; an identified site under Schedule 2 of the State Environmental Planning Policy (State and Regional Development) 2011. As such, the Minister for Planning is the consent authority for the proposed development.

2.0 Standards

- 2.1** Allied Tree Consultancy provides an ethical and unbiased approach to all assignments, possessing no association with private utility arboriculture or organisations that may reflect a conflict of interest.
- 2.2** This report must be made available to all contractors during the tendering process so that any cost associated with the required works for the protection of trees can be accommodated.
- 2.3** **It is the responsibility of the project manager to provide the requirements outlined in this report relative to the Protection Zones, Measures (Section 7.0) and Specifications (Section 8.0) to all contractors associated with the project before the initiation of work.**
- 2.4** All tree-related work outlined in this report is to be conducted in accordance with the:

- Australian Standard – AS4373; Pruning of Amenity Trees.
- Guide to Managing Risks of Tree Trimming and Removal Work¹.
- All tree works must be carried out at a tertiary level (minimum Certificate-level 3) qualified and experienced (minimum of five years) arboriculturist.
- For any works in the vicinity of electrical lines, the arboriculturist must possess the ISSC26 endorsement (Interim guide for operating cranes and plant in proximity to overhead powerlines).

2.5 As a minimum requirement, all trees recommended for retention in this report must have removed all dead, diseased, and crossing limbs and branch stubs to be pruned to the branch collar. This work must comply with the local government tree policy (Wollongong City Council) and Section 2.4.

2.6 Any tree stock subject to conditions for works carried out in this report must be supplied by a registered Nursery that adheres to the AS 2303; 2015².

- All tree stock must be of at least 'Advanced' size (minimum 75lt) unless otherwise requested.
- All tree stock requested must be planted with adequate protection. This may include tree guards (protect stem and crown) and if planted in a lawn area, a suitable barrier (planter ring) of an area, at least, 1m² to prevent grass from growing within the area adjacent to the stem.

3.0 Disclosure Statement

Trees are living organisms and, for this reason, possess natural variability. This cannot be controlled. However, risks associated with trees can be managed. An arborist cannot guarantee that a tree will be safe under all circumstances, nor predict the time when a tree will fail. To live or work near a tree involves some degree of risk, and this evaluation does not preclude all the possibilities of failure.

4.0 Methodology

4.1 The following tree assessment was undertaken using criteria based on the guidelines laid down by the International Society of Arboriculture.

4.2 The format of the report is summarised below;

¹ Safe Work Australia; July 2016; Guide to Managing Risks of Tree Trimming and Removal Work, Australia

² Australian Standard; 2015, AS2303, Tree stock for landscape use, Australia

4.2.1 Plan 1; Tree Location Relative to Site: This is an unscaled plan reproduced from the Survey Plan as referenced in Section 4.4.1, depicting the area of assessment.

4.2.2 Table 1; This table compiles the tree species, dimensions, brief assessment (history, structure, pest, disease or any other variables subject to the tree), significance, allocation of the zones of protection (i.e., Tree Protection Zone³; TPZ and Structural Root Zone; SRZ) for each tree illustrated in Plan 1, Section 5.0. All measurements are in meters. An 'Action' is included and provides the nomination for retention/removal based on the tree location relative to the proposed design (drawing set, Section 4.4.2).

4.2.3 Discussion relating to the site assessment and proposed works regarding the trees.

4.2.4 Protection Specification; This Section (Section 8.0) details the requirements for that area designated as the Tree Protection Zone (TPZ), for those trees recommended for retention.

4.3 The opinions expressed in this report, and the material, upon which they are based, were obtained from the following process and data supplied:

4.3.1 Site assessment on the 23rd January and 22nd April 2019 using the method of the Visual Tree Assessment⁴. This has included a Level 2 risk assessment, being a *Basic Assessment*⁵. The assessment has been conducted by Warwick Varley⁶ on behalf of *Allied Tree Consultancy*.

4.3.2 Trees included in this report are those that conform to the description of a prescribed tree by the local government policy.

4.3.3 All measurements, unless specified otherwise are taken from the tree centre.

4.3.4 Raw data from the preliminary assessment including the specimen's dimensions were compiled by the use of a diameter tape, height clinometer, angle finder, compass, steel probes, Teflon hammer, binoculars and recording instruments.

³ Australian Standard, 4970; 2009 – Protection of Trees on Development Sites, Australia

⁴ Mattheck, C. Breloer, H., 1994, The Body Language of Trees – A handbook for failure analysis
The Stationary Office, London

⁵ Dunster J.A., 2013, Tree Risk Assessment Manual, International Society of Arboriculture, 2013, USA

⁶ Consulting Arborist, Graduate Certificate and Diploma of Arboriculture (level 8 and 5)

4.4 Documentation provided

The following documentation has been provided to Allied Tree Consultancy and utilised within the report.

4.4.1 Surveyor

Drawings

Drawn by *Veris Australia P/L*

Date: 12 December 2018

Reference: 201062A

Drawing No: Sheets 1-2

Note 1: See Section 4.5.1

4.4.2 Design

Drawings

Drawn by *Populous P/L*

Date: 11 April 2019

Reference: 15.7401.00

Drawing No: SK.01.0001 (B), SK.02.0B10 (C), SK.02.0010 (Q), SK.02.01101 (O)
SK.02.0210 (A), SK.02.0310 (C), SK.05.0001 (A), SK.03.0010 (A),
SK.03.0011 (A), SK.03.0012 (A), SK.03.0013 (A), SK.03.0014 (A),
SK.08.0B10 (A), SK.08.0010 (A), SK.08.0110 (A), SK.08.0310 (A).

4.4.3 Engineering

Drawings (Stormwater)

Drawn by *Taylor Thomas Whitting P/L*

Date: 9 February 2016

Reference: 181978

Drawing No: C01-C05 Issue P1

4.4.4 Landscape

Report

Drawn by *Arcadia Landscape Architecture P/L*

Date: May 2019

Reference: not referenced, Issue D

34 Pages

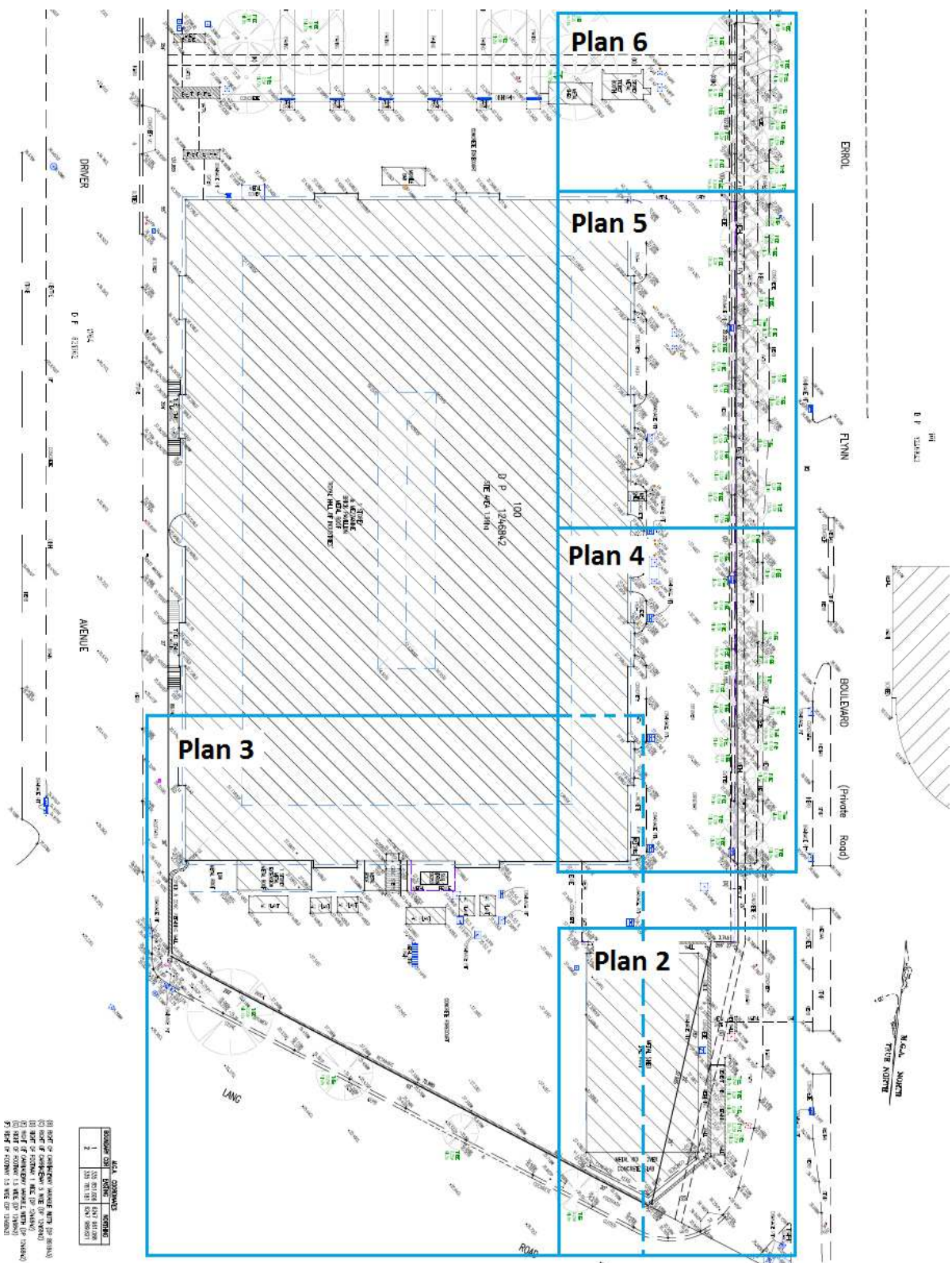
4.5 Limitations of the assessment/discussion process

4.5.1 Trees No. 12, 16, 35, 37, 43, 51, 55, 57, 58, 62 and 67 have been omitted from the plans provided, however, are required for inclusion because they conform to the definition of a prescribed tree within the local government tree policy. The tree location

has been plotted onto the Plan 1 by *Allied Tree Consultancy*. The tree location was established by measuring from known points and scaling onto the drawing. *Allied Tree Consultancy* is not a registered surveyor and, however, the accuracy of the survey is attempted; the true position of the trees may marginally deviate. Any such deviation provides the potential for changing the actual impact (encroachment) provided to a tree.

- 4.5.2** The assessment has considered only those target zones that are apparent to the author and the visually apparent tree conditions, during the time of assessment.
- 4.5.3** Any tree regardless of apparent defects would fail if the forces applied to exceed the strength of the tree or its parts, for example, extreme storm conditions.
- 4.5.4** The assessment has been limited to that part of the tree, which is visible, existing from the ground level to the crown. Root decay can exist, and in some circumstances, provide no symptoms of the presence. This assessment responds to all the symptoms provided by a tree, however, cannot provide a conclusive recommendation regarding any tree that may have extensive root decay that leads to windthrow without the appropriate symptoms.

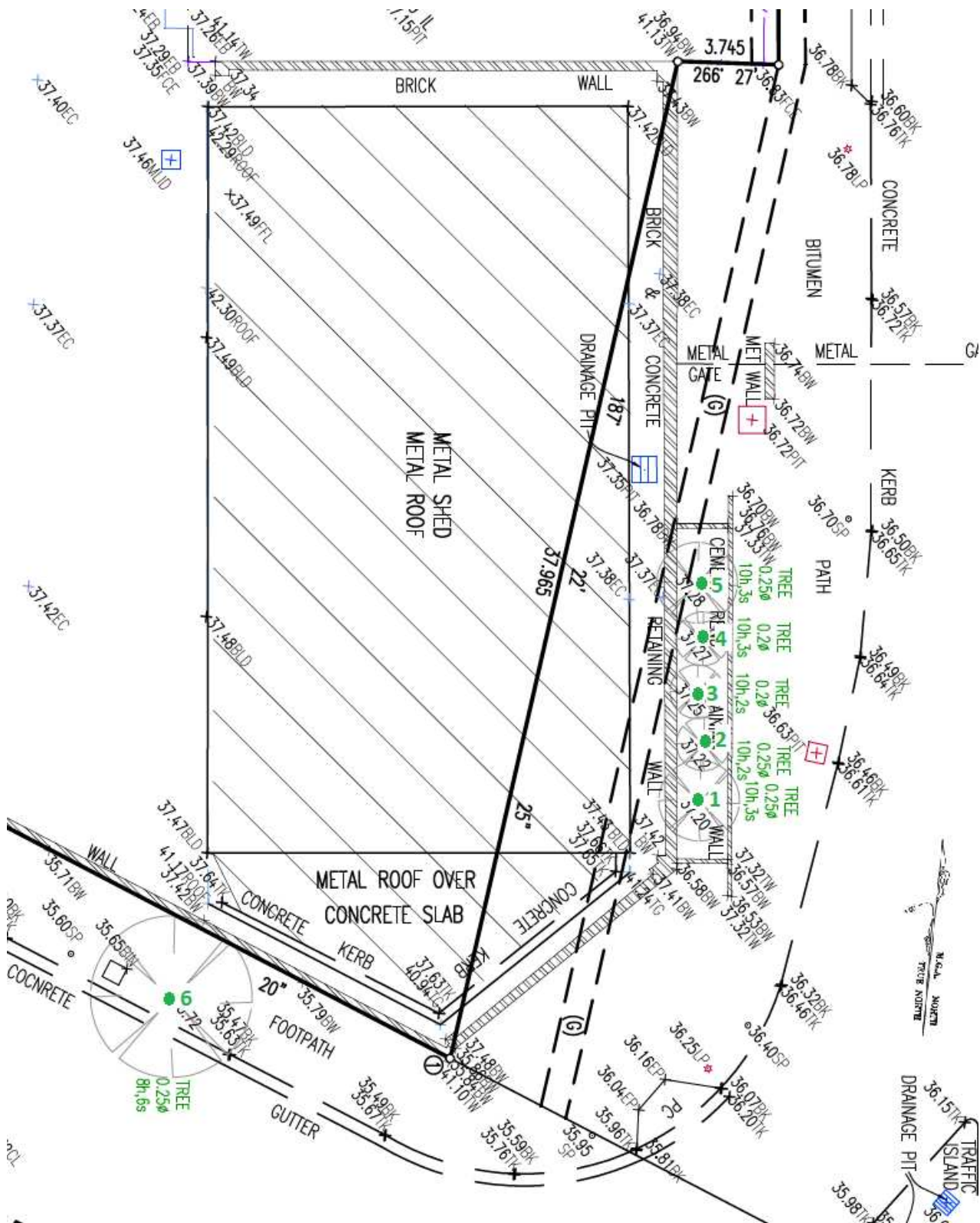
5.0 Plan 1; Areas of assessment



Not to scale

Source: Adapted from Veris Australia P/L, see Section 4.4.1

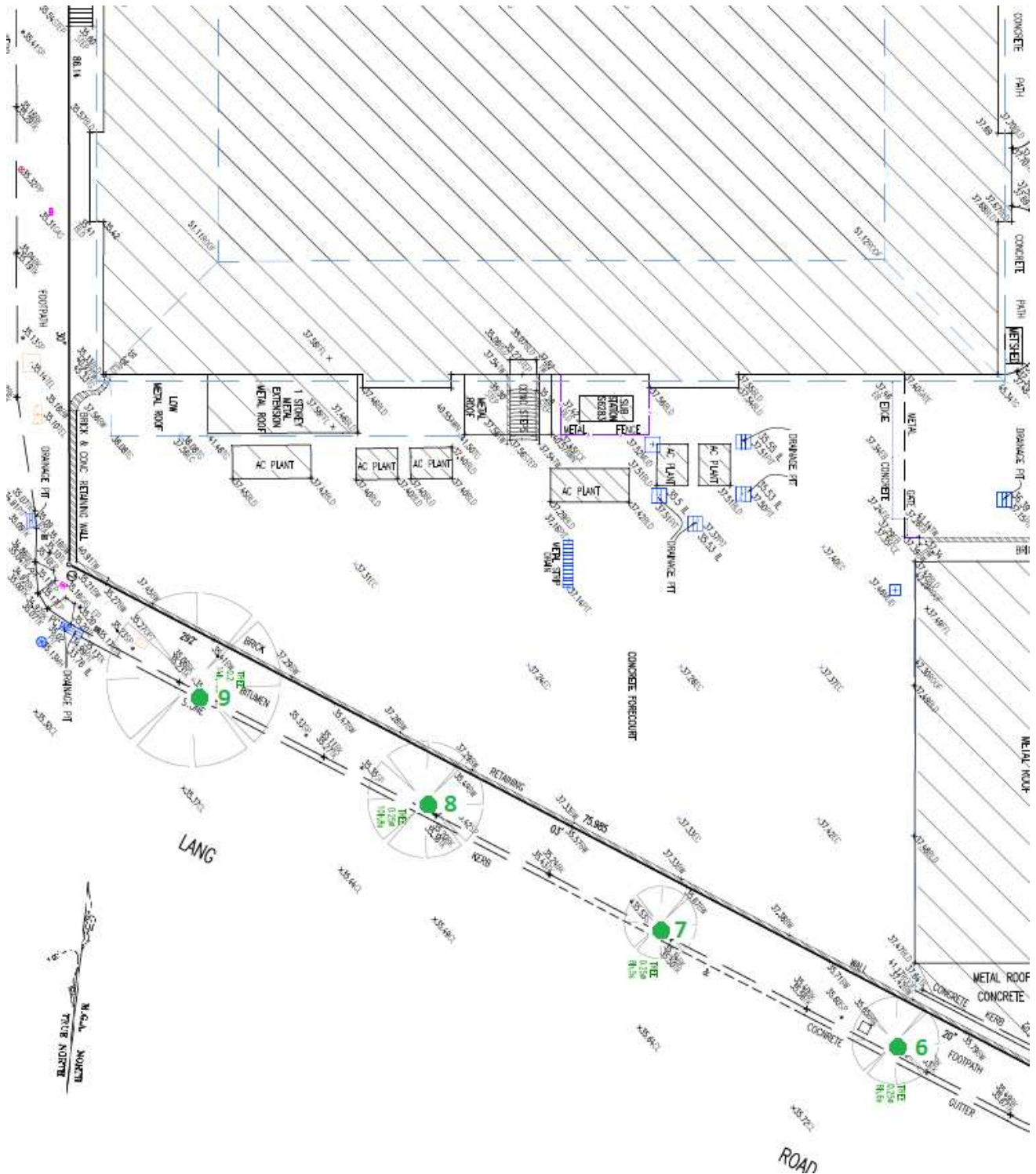
5.1 Plan 2; Area of assessment illustrating tree location



Not to scale

Source: Adapted from *Veris Australia P/L*, see Section 4.4.1

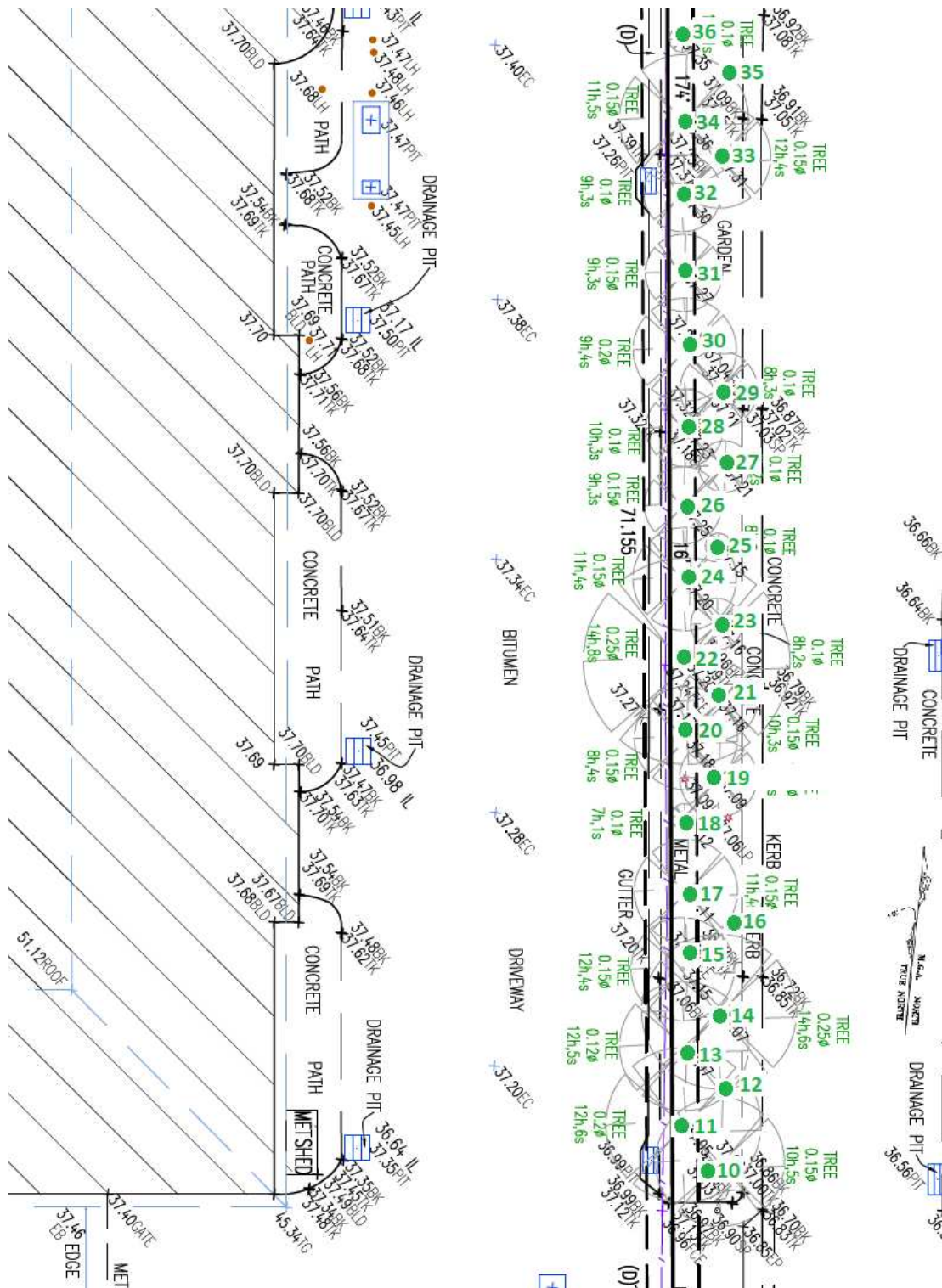
5.2 Plan 3; Area of assessment illustrating tree location



Not to scale

Source: Adapted from *Veris Australia P/L*, see Section 4.4.1

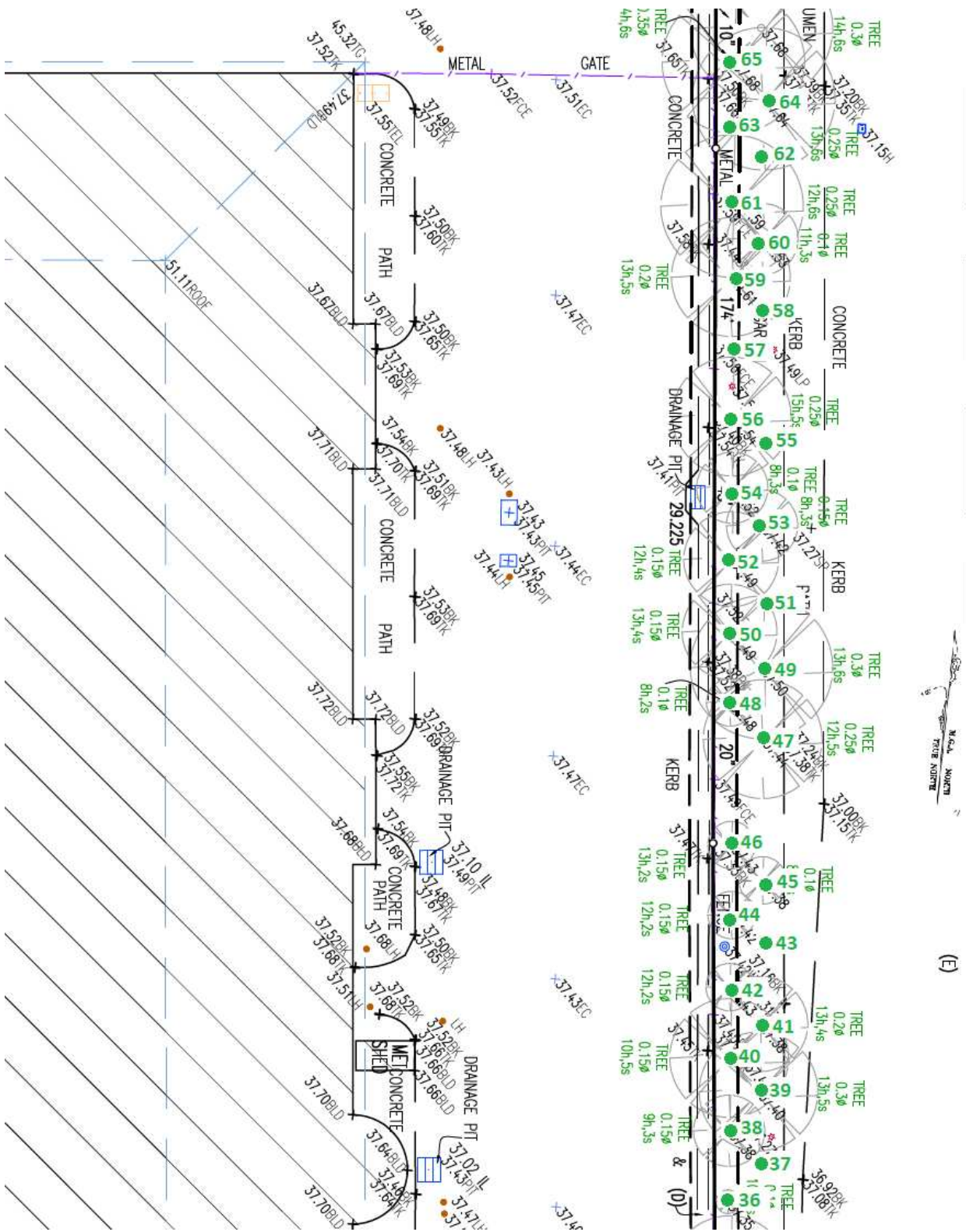
5.3 Plan 4; Area of assessment illustrating tree location



Not to scale

Source: Adapted from Veris Australia P/L, see Section 4.4.1

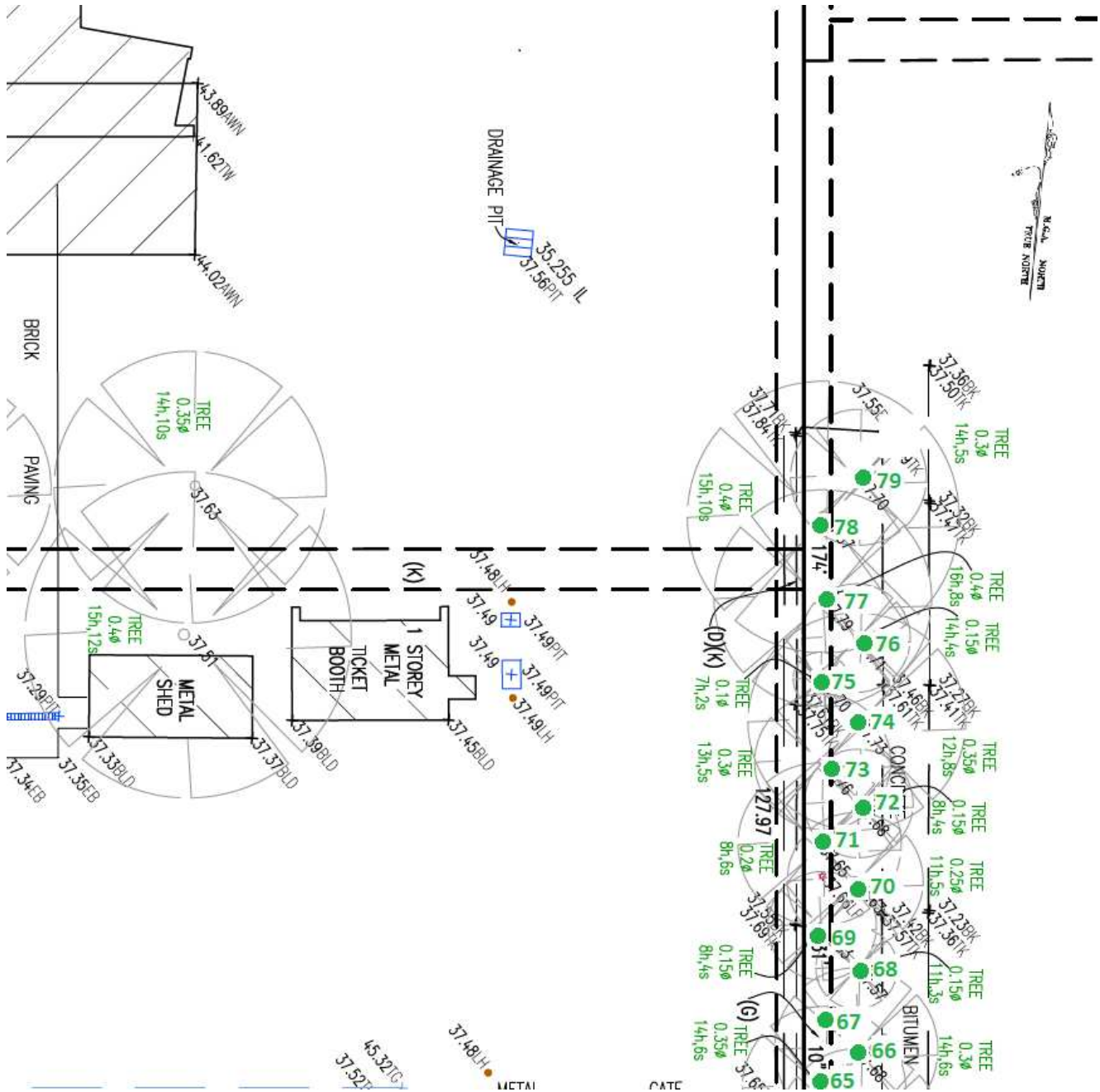
5.4 Plan 5; Area of assessment illustrating tree location



Not to scale

Source: Adapted from Veris Australia P/L, see Section 4.4.1

5.5 Plan 6; Area of assessment illustrating tree location



Not to scale

Source: Adapted from *Veris Australia P/L*, see Section 4.4.1

6.0 Table 1 – Tree Species Data

Terminology/references provided in Appendix A.

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
1	<i>Livistona australis</i> ^A Cabbage-tree Palm	9	0.25	3 x 3	M	D	Sym.	A	A1	HIGH	3.0	1.8
Assessment		Trees No. 1 to 5 are located as a row planting within an elevated planter box. Each tree is typical of species.									See Section 7.1	
2	<i>Livistona australis</i> ^A Cabbage-tree Palm	9	0.26	2 x 2	M	D	Sym.	A	A1	HIGH	3.2	1.8
3	<i>Livistona australis</i> ^A Cabbage-tree Palm	9	0.21	2 x 2	M	D	Sym.	A	A1	HIGH	2.5	1.7
4	<i>Livistona australis</i> ^A Cabbage-tree Palm	9	0.32	2 x 2	M	D	Sym.	A	A1	HIGH	3.8	2.1
5	<i>Livistona australis</i> ^A Cabbage-tree Palm	9	0.27	3 x 3	M	D	Sym.	A	A1	HIGH	3.3	1.9
6	<i>Cupaniopsis anacardioides</i> Tuckeroo	6	0.24	6 x 6	M	D	Sym.	A	A1	HIGH	2.8	1.8
Assessment		Street tree planting. Tree typical of species, some crown lifting, Uplift of kerb by root growth. Dripline well removed from wall.									See Section 7.1	
7	<i>Brachychiton acerifolius</i> Flame Tree	5	0.31	4 x 4	M	D	Sym.	A/B	A2	HIGH	3.7	2.1
Assessment		Street tree planting. Tree typical of species, excurrent habit. Crown lifted close to 60% of height (3m). Leaf size reduced and chlorotic. Tip dieback. Several crossing roots. Uplift of gutter/kerb by root growth. Dripline tangential with wall.									See Section 7.1	
8	<i>Jacaranda mimosifolia</i> Jacaranda	8	0.43	8 x 10	M	D	Sym.	A	A1	HIGH	5.2	2.3
Assessment		Street tree planting. Tree typical of species. Past pruning, pruning wounds exhibit minimal occlusion, no root flare apparent. Asphalt uplift on western side and roadway by root growth. Deadwood appears greater than typical.									See Section 7.1	

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
		Dripline extends past wall by 2.5m.										
9	<i>Liquidambar styraciflua</i> Sweet Gum	9	0.60	10 x 10	M	D	Sym.	A	A1	HIGH	7.2	2.7
Assessment		Street tree planting. Tree typical of species. Prior crown lifting, pruning wounds are occluding, root flare in contact with kerb (slight change to kerb alignment via secondary growth). Several crossing roots over flare. Asphalt uplift on western side by root growth. Dripline extends past wall by 3m.									See Section 7.1	
10	<i>Corymbia maculata</i> Spotted Gum	6	0.18	3 x 3	Y	C	SE	A	A2	MEDIUM	2.2	1.6
Assessment		Trees No. 10-79 are two linear row plantings. The trees are young, and each provides similar habits. They all present typical form, although the predominant suppressed trees exhibit ailing vitality and reflect the A3 and A4 ratings. The remaining trees have been rated as A2, although present typical form, free from structural flaws and normal vitality, the close planting and vicinity of the surrounding kerb/asphalt has limited the life expectancy based on the overcrowding and issues related to root uplift of these structures.									See Section 7.1	
11	<i>Corymbia maculata</i> Spotted Gum	7	0.19	3 x 4	Y	C	W	A	A2	MEDIUM	2.3	1.6
12	<i>Corymbia maculata</i> Spotted Gum	5	0.09	1 x 1	Y	I	Sym.	B	A2	MEDIUM	2.0	1.5
13	<i>Corymbia maculata</i> Spotted Gum	7	0.18	3 x 3	Y	F	Sym.	A	A2	MEDIUM	2.2	1.6
14	<i>Corymbia maculata</i> Spotted Gum	8	0.21	5 x 3	Y	F	Sym.	A	A2	MEDIUM	2.5	1.7
15	<i>Corymbia maculata</i> Spotted Gum	8	0.18	4 x 4	Y	C	W	A	A2	MEDIUM	2.2	1.6
16	<i>Corymbia maculata</i> Spotted Gum	5	0.09	1 x 1	Y	S	Sym.	B	A2	MEDIUM	2.0	1.5
17	<i>Corymbia maculata</i> Spotted Gum	8	0.18	4 x 4	Y	F	Sym.	A	A2	MEDIUM	2.2	1.6

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
18	<i>Corymbia maculata</i> Spotted Gum	6	0.11	1 x 2	Y	S	Sym.	A	A2	MEDIUM	2.0	1.5
19	<i>Corymbia maculata</i> Spotted Gum	8	0.16	2 x 3	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
20	<i>Corymbia maculata</i> Spotted Gum	7	0.18	4 x 3	Y	C	W	A	A2	MEDIUM	2.2	1.6
21	<i>Corymbia maculata</i> Spotted Gum	8	0.16	4 x 2	Y	C	E	A	A2	MEDIUM	2.0	1.5
22	<i>Corymbia maculata</i> Spotted Gum	9	0.28	5 x 5	Y	F	Sym.	A	A2	MEDIUM	3.4	1.9
23	<i>Corymbia maculata</i> Spotted Gum	6	0.14	2 x 3	Y	S	Sym.	A	A2	MEDIUM	2.0	1.5
24	<i>Corymbia maculata</i> Spotted Gum	9	0.17	3 x 3	Y	F	Sym.	A	A2	MEDIUM	2.1	1.6
25	<i>Corymbia maculata</i> Spotted Gum	6	0.13	1 x 3	Y	S	Sym.	A	A2	MEDIUM	2.0	1.5
26	<i>Corymbia maculata</i> Spotted Gum	7	0.15	2 x 3	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
27	<i>Corymbia maculata</i> Spotted Gum	7	0.13	2 x 2	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
28	<i>Corymbia maculata</i> Spotted Gum	9	0.14	2 x 5	Y	F	Sym.	B	A3	LOW	2.0	1.5
29	<i>Corymbia maculata</i> Spotted Gum	7	0.12	2 x 3	Y	F	E	B	A2	MEDIUM	2.0	1.5
30	<i>Corymbia maculata</i> Spotted Gum	9	0.19	4 x 4	Y	F	Sym.	B	A3	LOW	2.3	1.6
31	<i>Corymbia maculata</i> Spotted Gum	8	0.17	3 x 3	Y	F	Sym.	A	A2	MEDIUM	2.1	1.6
32	<i>Corymbia maculata</i> Spotted Gum	7	0.13	1 x 3	Y	C	W	A	A2	MEDIUM	2.0	1.5

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
33	<i>Corymbia maculata</i> Spotted Gum	9	0.17	3 x 2	Y	F	Sym.	A	A2	MEDIUM	2.1	1.6
34	<i>Corymbia maculata</i> Spotted Gum	8	0.19	4 x 4	Y	F	Sym.	A	A2	MEDIUM	2.3	1.6
35	<i>Corymbia maculata</i> Spotted Gum	6	0.07	1 x 1	Y	F	Sym.	B	A3	LOW	2.0	1.5
36	<i>Corymbia maculata</i> Spotted Gum	9	0.13	2 x 1	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
37	<i>Corymbia maculata</i> Spotted Gum	5	0.07	5 x 5	Y	F	Sym.	B	A3	LOW	2.0	1.5
38	<i>Corymbia maculata</i> Spotted Gum	8	0.15	4 x 2	Y	C	W	A	A2	MEDIUM	2.0	1.5
39	<i>Corymbia maculata</i> Spotted Gum	12	0.27	6 x 6	Y	D	Sym.	A	A2	MEDIUM	3.3	1.9
40	<i>Corymbia maculata</i> Spotted Gum	7	0.16	2 x 3	Y	C	W	A	A2	MEDIUM	2.0	1.5
41	<i>Corymbia maculata</i> Spotted Gum	10	0.21	4 x 4	Y	F	Sym.	A	A2	MEDIUM	2.5	1.7
42	<i>Corymbia maculata</i> Spotted Gum	9	0.15	2 x 2	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
43	<i>Corymbia maculata</i> Spotted Gum	6	0.09	1 x 1	Y	C	E	B	A3	LOW	2.0	1.5
44	<i>Corymbia maculata</i> Spotted Gum	9	0.14	1 x 3	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
45	<i>Corymbia maculata</i> Spotted Gum	6	0.13	3 x 3	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
46	<i>Corymbia maculata</i> Spotted Gum	11	0.17	3 x 3	Y	F	Sym.	A	A2	MEDIUM	2.1	1.6
47	<i>Corymbia maculata</i> Spotted Gum	11	0.24	4 x 6	Y	I	Sym.	A	A2	MEDIUM	2.8	1.8

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
48	<i>Corymbia maculata</i> Spotted Gum	7	0.12	2 x 3	Y	C	W	A	A2	MEDIUM	2.0	1.5
49	<i>Corymbia maculata</i> Spotted Gum	12	0.27	5 x 7	Y	I	Sym.	A	A2	MEDIUM	3.3	1.9
50	<i>Corymbia maculata</i> Spotted Gum	12	0.19	3 x 4	Y	F	W	A	A2	MEDIUM	2.3	1.6
51	<i>Corymbia maculata</i> Spotted Gum	6	0.11	1 x 1	Y	I	E	B	A3	LOW	2.0	1.5
52	<i>Corymbia maculata</i> Spotted Gum	10	0.18	4 x 4	Y	F	Sym.	A	A2	MEDIUM	2.2	1.6
53	<i>Corymbia maculata</i> Spotted Gum	7	0.16	3 x 3	Y	C	E	A	A2	MEDIUM	2.0	1.5
54	<i>Corymbia maculata</i> Spotted Gum	7	0.13	2 x 2	Y	F	Sym.	A	A2	MEDIUM	2.0	1.5
55	<i>Corymbia maculata</i> Spotted Gum	5	0.07	1 x 1	Y	C	Sym.	C	A3	LOW	2.0	1.5
56	<i>Corymbia maculata</i> Spotted Gum	13	0.25	5 x 5	Y	D	Sym.	A	A2	MEDIUM	3.0	1.8
57	<i>Corymbia maculata</i> Spotted Gum	7	0.12	5 x 5	Y	I	Sym.	C	A4	LOW	2.0	1.5
58	<i>Corymbia maculata</i> Spotted Gum	9	0.13	1 x 3	Y	C	E	A	A2	MEDIUM	2.0	1.5
59	<i>Corymbia maculata</i> Spotted Gum	12	0.23	4 x 5	Y	C	W	A	A2	MEDIUM	2.7	1.8
60	<i>Corymbia maculata</i> Spotted Gum	8	0.15	1 x 3	Y	C	E	A	A2	MEDIUM	2.0	1.5
61	<i>Corymbia maculata</i> Spotted Gum	10	0.25	3 x 6	Y	F	Sym.	A	A2	MEDIUM	3.0	1.8
62	<i>Corymbia maculata</i> Spotted Gum	5	0.08	-	-	-	-	-	A4	LOW	-	-

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
63	<i>Corymbia maculata</i> Spotted Gum	5	0.07	0.5 x 0.5	Y	S	Sym.	C	A4	LOW	2.0	1.5
64	<i>Corymbia maculata</i> Spotted Gum	12	0.27	4 x 5	Y	C	SE	A	A2	MEDIUM	3.8	1.9
65	<i>Corymbia maculata</i> Spotted Gum	14	0.33	6 x 6	Y	C	NW	A	A2	MEDIUM	3.9	2.1
66	<i>Corymbia maculata</i> Spotted Gum	13	0.31	6 x 5	Y	C	E	A	A2	MEDIUM	3.7	2.1
67	<i>Corymbia maculata</i> Spotted Gum	5	0.07	0.5 x 0.5	Y	S	Sym.	C	A4	LOW	2.0	1.5
68	<i>Corymbia maculata</i> Spotted Gum	9	0.19	4 x 4	Y	S	Sym.	A	A2	MEDIUM	2.3	1.6
69	<i>Corymbia maculata</i> Spotted Gum	7	0.17	3 x 5	Y	S	Sym.	A	A2	MEDIUM	2.1	1.6
70	<i>Corymbia maculata</i> Spotted Gum	12	0.25	4 x 4	Y	S	E	A	A2	MEDIUM	3.0	1.8
71	<i>Corymbia maculata</i> Spotted Gum	9	0.22	3 x 7	Y	C	W	A	A2	MEDIUM	2.6	1.7
72	<i>Corymbia maculata</i> Spotted Gum	8	0.19	3 x 6	Y	C	E	A	A2	MEDIUM	2.3	1.6
73	<i>Corymbia maculata</i> Spotted Gum	14	0.31	5 x 6	Y	C	W	A	A2	MEDIUM	3.7	2.1
74	<i>Corymbia maculata</i> Spotted Gum	15	0.36	8 x 9	Y	C	E	A	A2	MEDIUM	4.3	2.2
75	<i>Corymbia maculata</i> Spotted Gum	6	0.12	4 x 4	Y	S	Sym.	A	A3	LOW	2.0	1.5
76	<i>Corymbia maculata</i> Spotted Gum	9	0.19	4 x 4	Y	S	E	A	A3	LOW	2.3	1.6
77	<i>Corymbia maculata</i> Spotted Gum	15	0.41	7 x 7	Y	I	Sym.	A	A2	MEDIUM	4.9	2.3

Tree No.	Botanical Name Common Name	Height (m)	DBH (m)	Crown Spread (m)	Age	Crown Class	Crown Aspect	Vitality	SULE Rating	STARS Rating	TPZ	SRZ
78	<i>Corymbia maculata</i> Spotted Gum	13	0.37	9 x 7	Y	C	NW	A	A2	MEDIUM	4.4	2.2
79	<i>Corymbia maculata</i> Spotted Gum	9	0.28	6 x 6	Y	C	NE	A	A2	MEDIUM	3.4	1.9

- A. Incomplete identification of species due to insufficiently available plant material
- B. Diameter taken below 1.4m due to low stem bifurcation
- C. estimate due to the overgrown area and/or limited access
- D. deciduous species, void of foliage at the time of assessment
- E. Level 3 assessment required to determine the accurate rating

7.0 Site Assessment

The proposed works relate to the Royal Hall of Industries building and courtyard area located to the immediate south of the building. Therefore all trees that are located within or adjacent to these areas have been included in this report. This area is located in the south-western corner of the Entertainment Quarter precinct, and the street frontage consists of Driver Avenue to the west, Lang Road to the south and Errol Flynn Boulevard to the east. These areas are predominately sealed and contain structures. A 6.95m high brick wall divides the area from Lang Road, where the street tree plantings, No. 6 to 9 occur. All remaining trees are located on Errol Flynn Boulevard. A steel picket fence divides the area containing the street planting of trees No. 10-79 from the area proposed for works, and the planting of trees No. 1 to 5 is a landscape feature for the entrance to the Entertainment Quarter.

Trees No. 1 to 5 are a linear planting located in an elevated garden planter. The masonry constructed planter box is 680mm high, 12800mm long and 2000mm wide. The rear of the planter box is attached to the wall that extends behind trees No. 6-9. The base construction is unknown, as is the extent of potential root extension. That is, if no bottom exists in this planter box, then the root system will likely extend outside of the footprint of the planter box. If this planter box contains a sealed bottom, then so will the root system be contained to this area. The construction of this planter box will retain or modify the calculated zones of protection (SRZ/TPZ). A matching planter containing a similar tree number and species is located opposite the roadway on the entrance.

Trees No. 6 to 9 are a linear planting located on the footpath and flush with the kerb of Lang Road. They form part of an inconsistent avenue planting, where no consistency appears to exist relating to tree age or species. Each tree is contained by a planter rectangle (1300mm by 1400mm) where the predominant root zone is estimated to occur throughout the verge and roadway. The sandstone kerb (averages 150mm high) and concrete gutter exhibit evidence of roots undermining, as does the 2300mm wide verge which is sealed with asphalt. Dividing the area of proposed works (courtyard) is a 6.95m high brick wall. Based on the construction, age and size of this wall, the footing is estimated to be substantial and has acted as a barrier for any root ingress past the wall. That is, the zones of protection are considered to be limited to the verge and roadway. These trees have been included based on crown incursion past the wall into the area of proposed works.

Trees No. 10 to 79 are two linear row plantings located on the verge and flush with the kerb of Errol Flynn Boulevard. They are located in a long garden bed approximately 3000mm wide, fronting the kerb on Errol Flynn Boulevard, and a steel picket fence dividing the asphalt foyer surrounding the RHI building. The trees are approximately 750mm from each side, 1500mm between the rows and each tree is approximately 3000mm apart within each row. Several spaces exist where trees that have formed part of the initial planting have been removed, and within some circumstances, stumps exist. The surface is gravel, and irrigation exists although appears unused based on breaches in the hose. Based on the close planting of these trees and variable sizes that reflect on the zones of protection, a blanket Tree Protection Zone has been applied to the majority of this tree group of 3m radius. The calculated TPZ for the trees numbered 10-63 is less than or equal to 3m, where only three trees marginally exceed this radius, see Observation 2.

7.1 Proposed development

The proposed development is an adaptive reuse of the RHI building and surrounding area, including the courtyard for a high-performance sport and community facility. The development will maintain the facade of the RHI building, although re-purpose the interior. In addition, an extension is proposed for construction in the current service and courtyard area and consists of a two-story mixed-use building containing a netball court, rehabilitation areas, and office areas, and a wet recovery area containing a 25m lap pool and spa. Additional infrastructure consisting of a substation kiosk and fire services and refuse ancillary building are proposed along the eastern boundary.

Observation 1: Estimation of the zones of protection; Trees No. 6-9

The calculations for the zones of protection (TPZ/SRZ) are based on the arbitrary formulae provided in the AS 4970, and this document provides scope for modifying these zones, however with supporting evidence.

The brick dividing wall between these street tree plantings and the area proposed for development is considered to contain a deep footing that would restrict root extension into the area proposed for development. Based on this premise, no root zone (i.e., TPZ) is considered to be subject to encroachment by the proposed works.

Observation 2: Estimation of the zones of protection; Trees No. 10-63

The majority of the TPZ's for these trees are less than 3m, although due to the grafted root zone (based on the proximity) and support required for mature growth, the TPZ has provided a blanket cover for all trees No. 10-63 of 3m that extends west into the area towards the RHI building.

Assumption 1: Estimation of the zones of protection; Trees No. 1-5

The calculations for the zones of protection (TPZ/SRZ) are based on the arbitrary formulae provided in the AS 4970, and this document provides scope for modifying these zones, however with supporting evidence.

These trees are contained to a planter box, and because the structure is unknown, the area of greater protection has been afforded. That is, root extension has been assumed to extend outside of the planter box, although limited from entering the area of proposed works due to the deep footing supporting the brick wall the planter box is attached to.

This report discusses the impact of the proposed design on the trees. Seventy-nine (79) trees have been listed within this report based upon the vicinity of the proposed works. This has included street trees where any part of the zones of protection (TPZ, SRZ) or crown mass encroach into the area proposed for works. Recommendations based on the tree significance and condition, together with the impact on these trees regarding the development for this lot follow.

7.1.1 Trees and zones of protection (TPZ/SRZ) outside of the proposed design**Trees No. 6-16, 20-49, 51, 53-55 and 62-79**

None of the proposed works conflict with the location of these trees or respective zones of protection. These trees can be retained without impact by the proposed design.

Trees No. 8 and 9, Crown conflict

Based on the architectural (Section 4.4.2) drawings, the proposed two-story mixed-use building will conflict with the portion of dripline from trees No. 8 and 9. The height of these proposed structures exceeds the height of the dripline. Therefore pruning would be required to the predominant proportion of the dripline that extends over the wall to avoid conflict. Both tree species, Sweet Gum and Jacaranda, exhibit reasonable tolerance to pruning and based on the estimated crown mass in conflict to be less than 15%, the removal of this proportion of crown is not considered to present an adverse impact on the dynamics or vitality. Although this has not considered the specific branches that would require pruning in accordance with the AS 4373, and whether such pruning would increase the proportion of crown mass that would require removal.

7.1.2 Trees providing a limited useful life expectancy

Trees No. 57, 62 and 67

These trees provide low significance and a SULE rating of A4, based on the habit and ailing condition and could be removed due to the low amenity value and limited useful life expectancy.

7.1.3 Trees directly conflicting with the design

Trees No. 18, 57, 58 and 59

These trees are located in the footprint of the proposed design and would require removal based on this premise alone. The conflict is summarised as follows;

Trees No. 18; based on the landscape drawing (Softworks Plan- Ground Floor, see Section 4.4.4) within the footprint of the crossover servicing the direct entry drive to the RHI building.

Trees No. 57, 58 and 59; based on the landscape drawing (Softworks Plan- Ground Floor, see Section 4.4.4) within the footprint of the crossover servicing the direct exit from the proposed car parking.

7.1.4 Trees subject to a minor encroachment

Trees No. 1-5, 20, 50, 52, 56 and 61

These trees are not directly located in the footprint of the proposed design, however, are subject to a *minor encroachment*. That is, the proportion (<10%) of encroachment provided by design will not adversely impact on the tree. These trees could be retained relative to the design.

Trees No. 1-5, The proposed design has not clarified the impact on these trees. The impact may be divided between a minor to major encroachment pending on the final landscape design and the extent of root extension. Options have been provided that range between retaining these trees in the planter box, which will allow for minimal impact to the other extreme of removal of the trees, and planter boxes and transplanting back into the area with a modified grade. The impact on these trees will be pending the final design and related conditions imposed by the project arborist. The conditions imposed are mandatory, although cannot be specific till a design is confirmed. The design related to these trees will be required to be submitted to the project arborist for conditions to be levied during demolition/construction.

Trees No. 50 and 52 Based on the architectural (Section 4.4.2) and engineering (Section 4.4.3) drawings the proposed substation kiosk, fire services and refuse ancillary building are outside of the zones of protection for all trees, although the landscape drawing (Softworks Plan- Ground

Floor, see Section 4.4.4) has an extension to the design which appears to be a pathway servicing the facility.

Trees No. 20, 56 and 61 Based on the landscape drawing (Softworks Plan-Ground Floor, see Section 4.4.4) the proposed crossover servicing the direct entry drive to the RHI building and carpark present a minor encroachment.

7.1.5 Trees subject to a major encroachment

Trees No. 17, 19 and 60

These trees are not directly located in the footprint of the proposed design, however, are located close and adjacent to the design footprint and subject to a *major encroachment*, that is, in excess of 10% of the TPZ. The extent and type of encroachment for each tree are discussed and the relative implications.

Trees No. 17, 19 and 60: Encroachment: 20%; based on drawing landscape drawing (Softworks Plan- Ground Floor, see Section 4.4.4), the encroachment consists of a proposed crossover servicing the direct entry drive to the RHI building. Details relating to this structure and grades have not been included other than the description for the surface as 'featured paving' (Section 2.4 of the Landscape Report). The tree is located approximately 1000mm from the edge of this design. Although a major encroachment, the tree would likely sustain the excavation required for this crossover, although the limited growing area will occur. The extent of impact could be established via root mapping. The useful life expectancy will be limited based on the vicinity, the grade of this crossover, and surface employed.

7.2 Sub-surface utilities

No drawings have been provided for the proposed route of sub-surface utilities, other than stormwater. Any trenching, other than what has been allowed for should be avoided within the area of the TPZ's for any tree nominated for retention. Any proposed route shall be re-routed outside of the TPZ. Under boring may be required if a limitation for the route of a service is restricted to an area that falls within the TPZ from any tree. Any excavation in the area of a TPZ must be authorised and conditioned by the project arborist.

Based on the architectural and engineering drawings the proposed substation kiosk, fire services and refuse ancillary building are outside of the zones of protection for all trees, although these utilities will require services, consisting of water and electricity. The routes for these services have not been disclosed and

pending on the limitation for these services, vicinity and close planting of the tree group, No. 10-79, further impact is possible and should be mitigated prior to a determination of consent.

7.3 Protection measures

The following protection measures are required to be implemented for the following trees before initiation of site works (including demolition/excavation) and retained until the landscaping works are required unless otherwise specified. The location of these protective structures is illustrated in Plan 7, Appendix B.

7.3.1 Protective fence: Trees No. 10-17, 19-56, 60-66 and 68-79

A protective fence is required to be installed to protect the TPZ from all site-related work and are recommended to be located in accordance with the requirements of the AS 4970, listed in Appendix C. The fence is required to be secured to the ground with pegs to avoid movement during construction. This must be installed prior to the commencement of any demolition, excavation or construction works and shall be maintained throughout the entire construction phase of the development, and until landscaping works and installation of the drive/cross-overs is required.

7.3.2 Conditions of demolition: Trees No. 1-5, 8-17, 19-56, 60-66 and 68-79

The following conditions are required during the demolition stages for the zones of protection.

Proposed crossovers

1. Removal of the ground areas fronting Errol Flynn Boulevard for the proposed crossovers (drive access) to the site must have the project arborist on site during the excavation. As part of this, the project arborist will ensure any root system that is unearthed is cleanly cut.

Removal of asphalt surfaces

2. The demolition process must remove all other site structures before removal of the asphalt surfaces (including the portion of the drive) that are within the TPZ (3.0m radius). These will be the final structures removed from the site. This will require the project arborist on site during removal works.
3. Machinery can be used for part of this removal; however, they must always be retained to a hard surface (asphalt). No machine should on any occasion, work on a soil based surface within the area of the TPZ.
4. That part of the asphalt surface that falls within the area of 1.5m radius from the girth of any tree must be removed via hand tools, e.g., Jackhammers, etc. removal of the remaining asphalt must disturb as

little area beneath the surface as possible. That is, the removal of this area should not carry any soil with it.

5. If machinery is required to enter the TPZ where no hard surface exists, then ground protection methods are required to be employed. Any machinery used within this process must provide for a minimum height of 2500mm, and that sufficient clearance is offered beneath the branch structure and machine to avoid injury. No pruning can occur for access to machinery.

Removal of existing fence

6. The footings for the posts should be retained in the ground to avoid root disturbance. If these require removal, then a separate Arboricultural Method Statement is required to be drafted by the project arborist, and this will likely require the project arborist on site during removal works.

Pruning

7. The trees No. 8 and 9 will require pruning to accommodate the proposed design. The project arborist is required on site before pruning starts and include a discussion with the utility arborist to determine the strategy and proportion of pruning to reduce the impact on the trees.

7.3.3 Conditions for compliance

The following conditions are required before any works proceed on site.

Site induction; All workers related to the construction process and before entering the site must be briefed about the requirements/conditions outlined in this report relative to the zone of protection, measures, and specifications before the initiation of work. This is required as part of the site induction process.

Project Arborist; A project arborist who conforms to the requirements of the AS 4970 is required to be nominated immediately after a *Notice of Determination* is issued, and they are to be provided with all related site documents.

7.4 Compliance Documentation

The following stages will require assessment and documentation (report, letter, certification) by the project arborist or person responsible for the specific work type, and the related documentation is to be issued to the principal certifying agent.

7.4.1 Table 2; Assessment/Certification stages

Hold Points	Work type	Document required
Pre-demolition	Installation of the protection measures, Section 7.4	Certificate*
During demolition	See Section 7.3.2, Condition 1	-
During demolition	See Section 7.3.2, Condition 2-5	-
During demolition	See Section 7.3.2, Condition 6	Arboricultural Method Statement, pending works
During demolition	See Section 7.3.2, Condition 7	Certificate*
During construction	Any <u>further works</u> required within the area of the TPZ, or decline related to the trees that have not been covered by this report.	Report Brief
During construction	Any crown modification including pruning or root disturbance.	Report Brief

Construction refers to the time between the initiation of demolition and until an occupation certificate is issued.

***Mandatory**

8.0 Protection Specification

The retention and protection of trees provide for the requirement of the Tree Protection Zone (TPZ) to conform to the conditions outlined below. These conditions provide the limitations of work permitted within the area of the Tree Protection Zone (TPZ) and must be adhered to unless otherwise stated.

1. Foundation/footing types should not be strip type, but utilise footing types that are sympathetic towards retaining root system that is, screw, pier, etc. Slab on the ground can be accommodated in some circumstances and will be nominated by the project arborist. The extent of encroachment will be dependent upon the tree species, soil type (texture and profile) and gradients.
2. Subsurface utilities can extend through the TPZ and Structural Root Zone (SRZ), however, are limited to the method of installation. That is under boring is permitted, however trenching is limited and depends on the proposed route within the TPZ. No trenching is permitted within the area of the TPZ unless stipulated by the project arborist.

3. Crown pruning can be accommodated, however, must conform to the AS 4373; *Pruning of Amenity Trees*, and not misshape the crown nor remove in excess of 10-15% of the existing crown, pending on the species, and vitality. The opportunity for, type and proportion of pruning will be required to be nominated by the project arborist.
4. Soil levels within the TPZ must remain the same. Any excavation within the TPZ must have been previously specified and allowed for by the project arborist:
 - a) So it does not alter the drainage to the tree.
 - b) Under specified circumstances,
 - o Added fill soil does not exceed 100mm in depth over the natural grade. Construction methodologies exist that can allow grade increases in excess of 100mm, via the use of an impervious cover, an approved permeable material or permanent aeration system or other approved methods.
 - o Excavation cannot exceed a depth of more than 50mm within the area of the TPZ, not including the SRZ. The grade within the SRZ cannot be reduced without the consent from a project arborist.
5. No form of material or structure, solid or liquid, is to be stored or disposed of within the TPZ.
6. No lighting of fires is permitted within the TPZ.
7. All drainage runoff, sediment, concrete, mortar slurry, paints, washings, toilet effluent, petroleum products, and any other toxic wastes must be prevented from entering the TPZ.
8. No activity that will cause excessive soil compaction is permitted within the TPZ. That is, machinery, excavators, etc. must refrain from entering the area of the TPZ unless measures have been taken, and with consultation with the project, arborist to protect the root zone.
9. No site sheds, amenities or similar site structures are permitted to be located or extend into the area of the TPZ unless the project arborist provides prior consent.
10. No form of construction work or related activity such as the mixing of concrete, cutting, grinding, generator storage or cleaning of tools is permitted within the TPZ.

11. No part of any tree may be used as an anchorage point, nor should any noticeboard, telephone cable, rope, guy, framework, etc. be attached to any part of a tree.
12.
 - (a) All excavation work within the TPZ will utilise methods to preserve root systems intact and undamaged. Examples of methods permitted are by hand tools, hydraulic, or pneumatic air excavation technology.
 - (b) Any root unearthed which is less than 50mm in diameter must be cleanly cut and dusted with a fungicide, and not allowed to dry out, with minimum exposure to the air as possible.
 - (c) Any root unearthed which is greater than 50mm in diameter must be located regarding their directional spread and potential impact. A project arborist will be required to assess the situation and determine future action regarding retaining the tree in a healthy state.

Project Arborist: person nominated as responsible for the provision of the tree assessment, arborist report, consultation with stakeholders, and certification for the development project. This person will be adequately experienced and qualified with a minimum of a level 5 (AQF); Diploma in Horticulture (Arboriculture)⁷.

⁷ Based upon the definition of a 'consulting arborist' from the AS 4970; Protection of trees on development sites; 2009, section 1.4.4, p 6.

9.0 Summary of tree impact

Based on the design supplied, the following summary provides the impacts imposed on the trees included in this report.

9.1 Trees No. 1-17, 19-56, 60-66 and 68-79

These trees can be retained relative to the nominated zones of protection (TPZ, SRZ) and based on the requirements of the Protection Specification, Section 8.0. The proposed design does not adversely affect these trees. The following conditions are required for specific trees;

9.1.1 Tree No. 1-5

The proposed design has not clarified the impact on these trees. The impact on these trees will be pending the final design and related conditions imposed by the project arborist. The design related to these trees will be required to be submitted to the project arborist for conditions to be levied during demolition/construction.

9.1.2 Tree No. 8 and 9

Based on the architectural (Section 4.4.2) drawings, the proposed two-story mixed-use building (containing a netball court, rehabilitation areas, office areas, and a wet recovery area) will conflict, and the predominant proportion of the dripline that extends over the wall will require pruning. The estimated crown mass in conflict is less than 15%, although this has not considered the specific branches that would require pruning in accordance with the AS 4373, and whether such pruning will increase the proportion of crown mass for removal.

9.1.3 Tree No. 17, 19 and 60

The encroachment consists of proposed crossovers servicing the direct entry drive to the RHI building. The trees are located approximately 1000mm from the edge of this design. The extent of impact could be established via root mapping. The useful life expectancy will be limited based on the vicinity of these crossovers.

9.2 Trees No. 18, 57, 58 and 59

The proposed design will require the removal of these trees.

9.3 Trees No. 57, 62 and 67

These trees provide low significance and a SULE rating of A4, based on the habit and ailing condition and could be removed due to the low amenity value and limited useful life expectancy.

9.4 Sub-surface utilities

No drawings have been provided for the proposed route of sub-surface utilities, other than stormwater. Any trenching, other than what has been allowed for should be avoided within the area of the TPZ's for any tree nominated for retention. Any proposed route shall be re-routed outside of the TPZ. Under boring may be required if a limitation for the route of a service is restricted to an area that falls within the TPZ from any tree. Any excavation in the area of a TPZ must be authorised and conditioned by the project arborist.

Based on the architectural and engineering drawings the proposed substation kiosk, fire services and refuse ancillary building are outside of the zones of protection for all trees, although these utilities will require services, consisting of water and electricity. The routes for these services have not been disclosed and pending on the limitation for these services, vicinity and close planting of the tree group, No. 10-79, further impact is possible, and should be mitigated prior to a determination of consent.

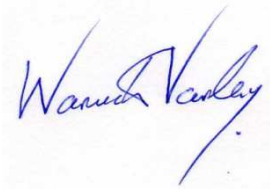
9.5 Protection measures

Protection measures (outlined in Section 7.3 and 7.4) are required to be implemented for the trees nominated for retention (referenced in Section 9.1) and installed before initiation of site works (including demolition/excavation) and retained until the landscaping works are required unless otherwise specified.

All workers related to the construction process and before entering the site must be briefed about the requirements/conditions outlined in this report relative to the zone of protection, measures, and specifications before the initiation of work.

A project arborist is required to be nominated, and the stages and related certification or similar documentation is to be issued to the principal certifying agent.

The opinions expressed in this report by the author have been provided within the capacity of a Consulting Arborist. Any further explanation or details can be provided by contacting the author.



Warwick Varley
Consulting Arborist
Level 5 and 8; Arboriculture
MIACA; Reg. #18
MISA
MIAH; Reg. # 32



10.0 Appendix A- Terminology Defined

Height

Is a measure of the vertical distance from the average ground level around the root crown to the top surface of the crown, and on palms - to the apical growth point.

DBH

Diameter at Breast Height – being the stem diameter in meters, measured at 1.4m from ground level, including the thickness of the bark.; Mult. refers to multiple stems, that is in excess of 4 stems.

Crown Spread

A two-dimension linear measurement (in metres) of the crown plan. The first figure is the north-south span, the second being the east-west measurement.

Age

Is the estimate of the specimen's age based upon the expected lifespan of the species. This is divided into three stages.

Young (Y)	Trees less than 20% of life expectancy.
Mature (M)	Trees aged between 20% to 80% life expectancy.
Over-mature (O)	Trees aged over 80% of life expectancy with probable symptoms of senescence.

Crown Aspect

In relation to the root crown, this refers to the aspect the majority of the crown resides in. This will be either termed Symmetrical (Sym.) where the centre of the crown resides over the root crown or the cardinal direction the centre of the crown is biased towards, being either North (N), South (S), East (E) or West (W).

Vitality Rating

Is a rating of the health of the tree, irrespective and independent of the structural integrity, and defined by the 'ability for a tree to sustain its life processes' ((Draper, Richards, 2009). This is divided between three variables, and based on the assessment of symptoms including, but not limited to; leaf size, colour, crown density, woundwood development, adaptive growth formation, and epicormic growth.

A: Normal vitality, typical for the species

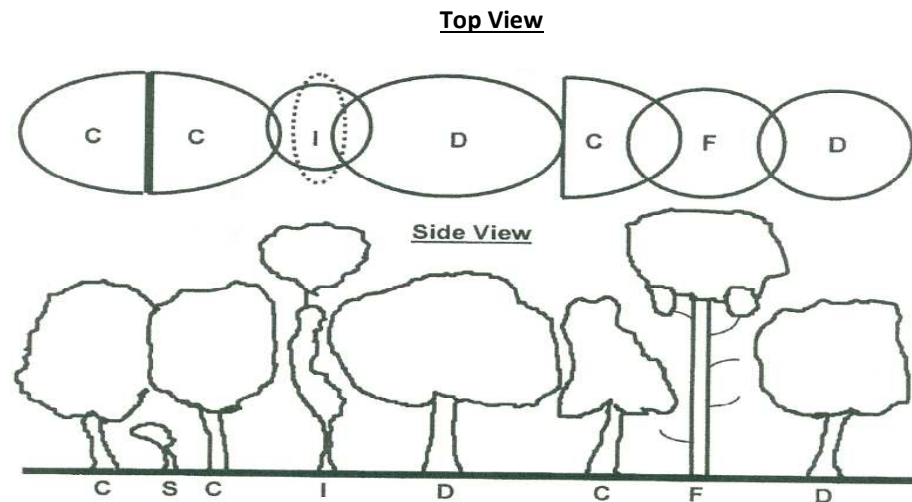
B: Below average vitality, possibly temporary loss of health, partial symptoms.

C: Poor vitality; obvious decline, potentially irreversible

Crown Class

Is the differing crown habits as influenced by the external variables within the surrounding environment. They are:

D – <i>Dominant</i>	Crown is receiving uninterrupted light from above and sides, also known as emergent.
C – <i>Codominant</i>	Crown is receiving light from above and one side of the crown.
I – <i>Intermediate</i>	Crown is receiving light from above but not the sides of the crown.
S – <i>Suppressed</i>	Crown has been shadowed by the surrounding elements and receives no light from above or sides.
F – <i>Forest</i>	Characterised by an erect, straight stem (usually excurrent) with little stem taper and virtually no branching over the majority of the stem except for the top of the tree which has a small concentrated branch structure making up the crown.



D C, I & S, and side view, after (Matheny, N. & Clark, J. R. 1998, Trees Development, Published by International Society of Arboriculture, P.O. Box 3129, Champaign IL 61826-3129 USA, p.20, adapted from the Hazard Tree Assessment Program, Recreation and Park Department, City of San Francisco, California).

Levels of assessment

Level 1: Limited visual: a visual tree assessment to manage large populations of trees within a limited period and in order to identify obvious faults which would be considered imminent.

Level 2: Basic assessment: a standard performed assessment providing for a detailed visual assessment including all parts of the tree and surrounding environment and via the use of simple tools.

Level 3: Advanced assessment: specific type assessments conducted by either arborist who specialise with specific areas of assessment or via the use of specialised equipment. For example, aerial assessment by use of an EWP or rope/harness, or decay detection equipment.

All other definitions are referenced from;

Draper D.B., Richards P.A., 2009, Dictionary for Managing Trees in Urban Environments
CSIRO Pub., Australia

Significance Rating, Significance of a Tree Assessment Rating System (S.T.A.R.S), IACA, 2010⁸Tree Significance – Assessment Criteria**1. High Significance in landscape**

- The tree is in good condition and good vitality;
- 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 vitality;
- 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 vitality;
- 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,

⁸ IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

- 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.

Table 3; 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					
<u>Legend for Matrix Assessment</u>						
		Priority for Retention (High) - 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.				
		Consider for Retention (Medium) - 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.				
		Consider for Removal (Low) - 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.				

Safe Useful Life Expectancy – S.U.L.E (Barell 1995)

	1. Long	2. Medium	3. Short	4. Removal	5. Moved or Replaced
	Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 15 – 40 years with an acceptable level of risk.	Trees that appeared to be retainable at the time of assessment for 5 – 15 years with an acceptable level of risk.	Trees that should be removed within the next 5 years.	Trees which can be reliably moved or replaced.
A	Structurally sound trees located in positions that can accommodate future growth.	Trees that may only live between 15 and 40 years.	Trees that may only live between 5 and 15 more years.	Dead, dying, suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5m in height.
B	Trees that could be made suitable for retention in the long term by remedial tree care.	Trees that may live for more than 40 years but would be removed for safety or nuisance reasons.	Trees that may live for more than 15 years but would be removed for safety or nuisance reasons.	Dangerous trees through instability on recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in heights
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	Trees that may live for more than 40 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting.	Trees that may live for more than 15 years but should be removed to prevent interference with more suitable individuals or to provide space for new planting.	Damaged trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been pruned to artificially control growth.
D		Trees that could be made suitable for retention in the medium term by remedial tree care.	Trees that require substantial remedial tree care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
E				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings.	
F				Trees that are damaging or may cause damage to existing structures within 5 years.	
G				Trees that will become dangerous after removal of other trees for reasons given in (A) to (F).	

TPZ; Tree Protection Zone

Is an area of protection required for maintaining the trees vitality and long-term viability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

The size of the Tree Protection Zone (TPZ) has been calculated from the *Australian Standard, 4970; 2009 – Protection of Trees on Development Sites*

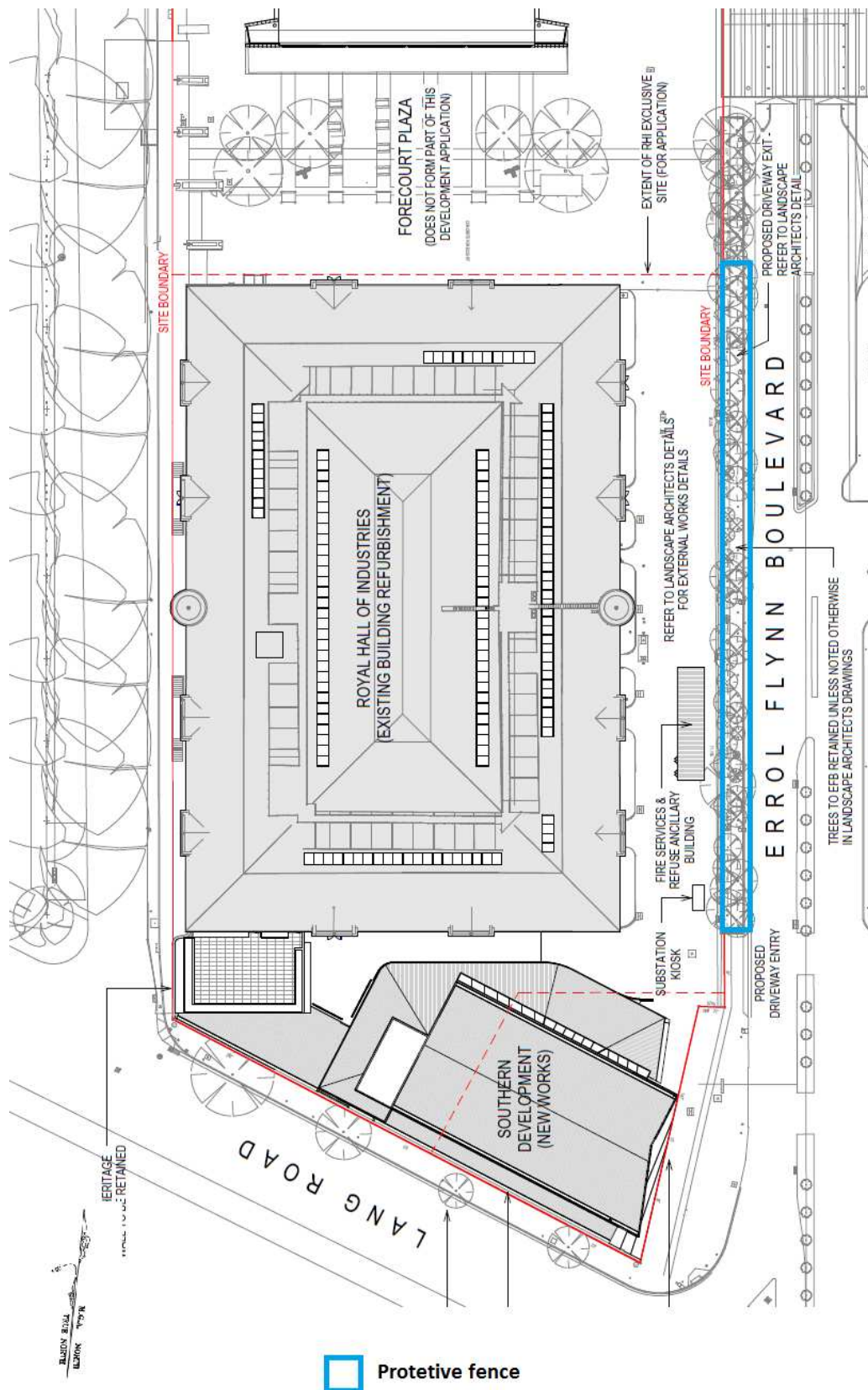
The TPZ does not provide the limit of root extension, however, offers an area of the root zone that requires predominate protection from development works. The allocated TPZ can be modified by some circumstances; however will require compensation equivalent to the area loss, elsewhere and adjacent to the TPZ.

SRZ; Structural Root Zone

Is the area around the tree containing the woody roots necessary for stability. Measured in meters as a radius from the trees centre. The requirements of this zone are outlined within the Protection Specification, Section 8.0, and are to be adhered to unless otherwise stated.

Protection Measures

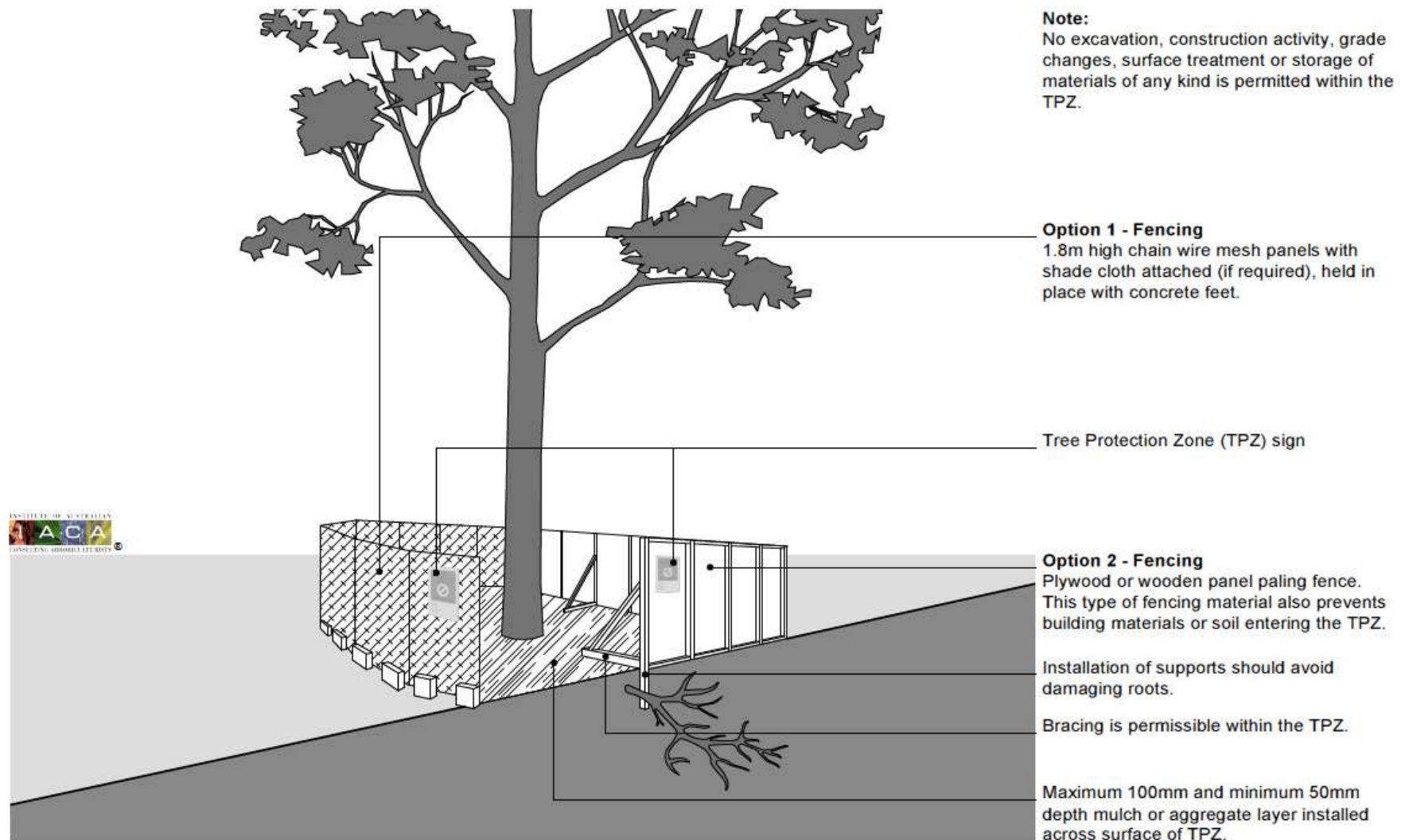
These are required for the protection of trees during demolition/construction activities. Protective barriers are required to be installed before the initiation of demolition and/or construction and are to be maintained up to the time of landscaping. Samples of the recommended protection measures are illustrated in Appendix C.

Appendix B- Location of Protection measures

Not to scale

Source: Adapted from *Populous P/L*, Drawing SK.01.0001 (B), see Section 4.4.1

Appendix C- Protection measures; Protective fence



Stem and Ground protection

