URBAN FORESTRY AUSTRALIA

TREE MANAGEMENT CONSULTING ARBORICULTURISTS

ADDENDUM TO ARBORICULTURAL IMPACT ASSESSMENT

for

Andrew Elmslie
Thompson Health Care
Suite 20 L4, 924 Pacific Highway
GORDON NSW 2072

SITE ADDRESS

23-25 BASSETT STREET
MONA VALE NSW 2106

MARCH 2021

Prepared by
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MANAGING URBAN TREES™

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1 INTRODUCTION

1.1 This Arboricultural Impact Assessment (AIA) prepared by Chantalle Hughes of Urban Forestry Australia (UFA), was commissioned by Sean Gartner of Gartner Trovato Architects, on behalf of the owners of the subject site. 'The site' is identified as the grass bank on the corner of Bassett Street and Barrenjoey Road outside Lot 38 of DP 7236 and Lot 2 of DP 748426, known as 23-25 Bassett Street, Mona Vale, New South Wales.

1.2 This AIA is to provide additional information to Northern Beaches Council in relation to Development Application number DA2020/0816 and is an addendum to Urban Forestry Australia's Arboricultural Impact Assessment dated February 2020.

1.3 The purpose of this report is to assess the *vigour* and *condition* of the additional trees, and identify the potential impacts the proposed development may have on those trees to be retained in proximity to the works.

1.4 This report gives recommendations for tree retention or removal and provides guidelines for tree protection and maintenance.

1.5 Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible; however, I can neither guarantee nor be responsible for the accuracy of information provided by others.

1.6 This AIA is not intended as an assessment of any impacts on trees by any proposed future development of the site, other than the current development application.

1.7 This report is not intended to be a comprehensive tree *risk* assessment; however, the report may make recommendations, where appropriate, for further assessment, treatment or testing of trees where potential structural problems have been identified, or where below ground investigation may be required.

2 METHODOLOGY

2.1 In preparation for this report, ground level, *visual tree assessments*[1] of twenty (20) trees was undertaken by Chantalle Hughes on 24th March 2021. Inspection details of these trees are provided in Appendix C—*Schedule of Assessed Trees.*

2.2 This AIA takes account of prescribed trees pursuant to Pittwater 21 Development Control Plan DCP 2014 – Section B4.22 Preservation of Trees or Bushland Vegetation.

2.3 Tree heights and canopy spreads were visually estimated or measured using a Nikon ForestryPro Laser measurer. Unless otherwise noted in Appendix C, all trunk diameters were measured at approximately 1.4 metres above ground level ("the DBH"), using a Yamiyo diameter tape.

2.4 Field observations were written down, and photographs of the site and trees were taken using an iPhone SE.

2.5 No *aerial inspections*, *root mapping* or woody tissue testing were undertaken as part of this tree assessment. Information contained in this tree report covers only the trees that were examined and reflects the condition of those trees at the time of inspection.

2.6 Plans and documents referenced for the preparation of this report include:

- Survey Plan, Job Ref. 15006, dated 4/3/2016, Rev 1, prepared by Bee and Lethbridge Pty Ltd;
- Bus Stop Access Path, Drawing no A-12, Revision A dated 20/1/2021 prepared by Gartner Trovato Architects.
- AS4970-2009 *Protection of trees on development sites*, Standards Australia.
- Section B4.22 Preservation of Trees or Bushland Vegetation of Pittwater 21 Development Control Plan 2014.

2.7 No hydraulic service or landscape plans have been reviewed in preparation of this report.

2.8 The subject trees are shown on a marked-up excerpt of the survey plan. This marked-up plan is attached as Appendix D—Tree Location Plan.

[1] Visual Tree Assessment (VTA) is a procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.

3 OBSERVATIONS AND DISCUSSION

3.1 Assessed Trees

3.1.1 Twenty (20) trees located on Council managed property were assessed or identified and are included in this report. Details of these are included in the Schedule of Assessed Trees—Appendix C.

3.1.2 The trees and their respective *Retention Value* (RV) are identified in Table 1, below. Note: Refer to Appendix B of the UFA AIA dated February 2020 for the methodology used to assess the Retention Value of a tree.

Table 1—Tree Identification and Retention Value, where L = Low, M = Medium, H = High. R = proposed removal.

Tree No.	*Genus & species* **Common Name**	RV	Tree No.	*Genus & species* **Common Name**	RV	Tree No.	*Genus & species* **Common Name**	RV
35	*Casuarina glauca* **Swamp She-oak**	H	42	*Banksia integrifolia* **Coast Banksia**	H	49	*Casuarina glauca* **Swamp She-oak**	H
36	*Banksia integrifolia* **Coast Banksia**	H	43	*Banksia integrifolia* **Coast Banksia**	H	50	*Eucalyptus botryoides* **Bangalay**	M
37	*Ulmus parvifolia* **Chinese Elm**	H	44	*Banksia integrifolia* **Coast Banksia**	H	51	*Casuarina glauca* **Swamp She-oak**	M
38	*Ulmus parvifolia* **Chinese Elm**	L	45	*Banksia integrifolia* **Coast Banksia**	H	52	*Cupaniopsis anacardioides* **Tuckaroo**	M
39	*Lagunaria patersonia* **Norfolk Island Hibiscus**	M	46	*Angophora costata* **Sydney Red Gum**	H	53	*Cupaniopsis anacardioides* **Tuckaroo**	M
40	*Banksia integrifolia* **Coast Banksia**	L	47	*Casuarina glauca* **Swamp She-oak**	H	54	*Acacia longifolia* **Sydney Golden Wattle**	L
41	*Ulmus parvifolia* **Chinese Elm**	M	48	*Casuarina glauca* **Swamp She-oak**	H			

3.1.3 No assessed tree is considered threatened or endangered under Australian and State Government legislation (i.e. NSW *Biodiversity Conservation Act* 2016, and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*).

3.2 Proposed Removal of Prescribed Trees for Site Development

3.2.1 Four (4) assessed trees are proposed to be removed:

- Tree 50— Bangalay – Medium RV. This locally native species is located too close to the proposed footpath, excavation within the calculated Structural Root Zone is proposed and this tree would require removal to accommodate works.
- Tree 51— Swamp She-oak – Medium RV. This locally native species is located too close to the proposed footpath and excavation within the calculated Structural Root Zone is proposed. This tree would require removal to accommodate works.
- Tree 52— Tuckaroo – Medium RV. This locally native species is located too close to the proposed footpath, again, excavation within the calculated Structural Root Zone is proposed and extensive pruning would be required. This tree would require removal to accommodate works.
- Tree 54— Sydney Golden Wattle – Low RV. This locally native species is located too close to the proposed footpath, excavation within the calculated Structural Root Zone is proposed, the canopy and stem extends directly in the way of the proposed path. This tree would require removal to accommodate works.

3.3 Potential Impacts on Trees Proposed for Retention

3.3.1 Sixteen (16) assessed trees are proposed to be retained, potential impacts on these trees are outlined below in Table 2 and further discussion is provided in Section 3.3.4-3.3.9.

3.3.2 Under the Australian Standard 4970-2009 *Protection of trees on development sites* (AS4970), encroachments less than 10% of the *Tree Protection Zone* (TPZ) are considered to be minor. No specifications are provided in AS4970 for potential impacts of 10% or greater. This 10% is interpreted as the threshold figure, and the trigger where arboricultural investigations into TPZ encroachments beyond this figure need to be considered.

3.3.3 Disturbance within the *Structural Root Zone* (SRZ), and extent of encroachments into the TPZ's of prescribed trees to be retained are summarised in Table 2, below/next page.

Table 2: *Estimated encroachments into the SRZ and TPZ of trees proposed for retention*. Note 1: These figures are based on the SRZ and TPZ's offsets of the trees as calculated under AS4970 and do not necessarily reflect the actual root zones of the trees. Existing at or below ground structures, site topography and soil hydrology will influence the presence, spread and direction of tree root growth.

Tree No.	Tree	SRZ affected	TPZ area (m^2)	TPZ encroachment (approx. m^2)	TPZ encroachment (approx. %)
35	Swamp She-oak	×	163	9.3	5.6
36	Coast Banksia	×	163	4.9	3.0
37	Chinese Elm	×	366	24.1	6.6
38	Chinese Elm	×	41	0	0
39	Norfolk Island Hibiscus	×	113	0	0
40	Coast Banksia	×	55	0.8	1.5
41	Chinese Elm	×	48	0	0
42	Coast Banksia	×	35	0	0
43	Coast Banksia	×	41	0	0
44	Coast Banksia	×	18	0	0
45	Coast Banksia	×	15	0	0
46	Sydney Red Gum	×	48	0	0
47	Swamp She-oak	×	58	0	0
48	Swamp She-oak	×	55	0	0
49	Swamp She-oak	×	241	32.7	13.6
53	Tuckaroo	×	15	0	0

3.3.4 **Tree 38, 39, 41-48 & 53**—Various species.

Structural Root Zone impacts:

- All proposed works are located outside these trees SRZ.

Tree Protection Zone impacts:

- All proposed works are located outside the TPZ of these trees.

Pruning impacts:

- No pruning of these trees will be required to accommodate the proposed works.

3.3.5 **Tree 35**—Swamp She-oak

Structural Root Zone impacts:

- All proposed works are located outside the tree's SRZ.

Tree Protection Zone impacts:

- The proposed pedestrian ramp falls within the calculated TPZ of this tree, this equates to a 9.3m^2 or 5.6% encroachment (see Figure 1 for further details) of the TPZ.

- This considered a *minor* level of encroachment under AS4970 and impacts on tree health or long-term condition is considered unlikely.

Pruning impacts:

- Crown lifting may be required to allow pedestrian access along the pathway, it is likely only minor pruning will be required.

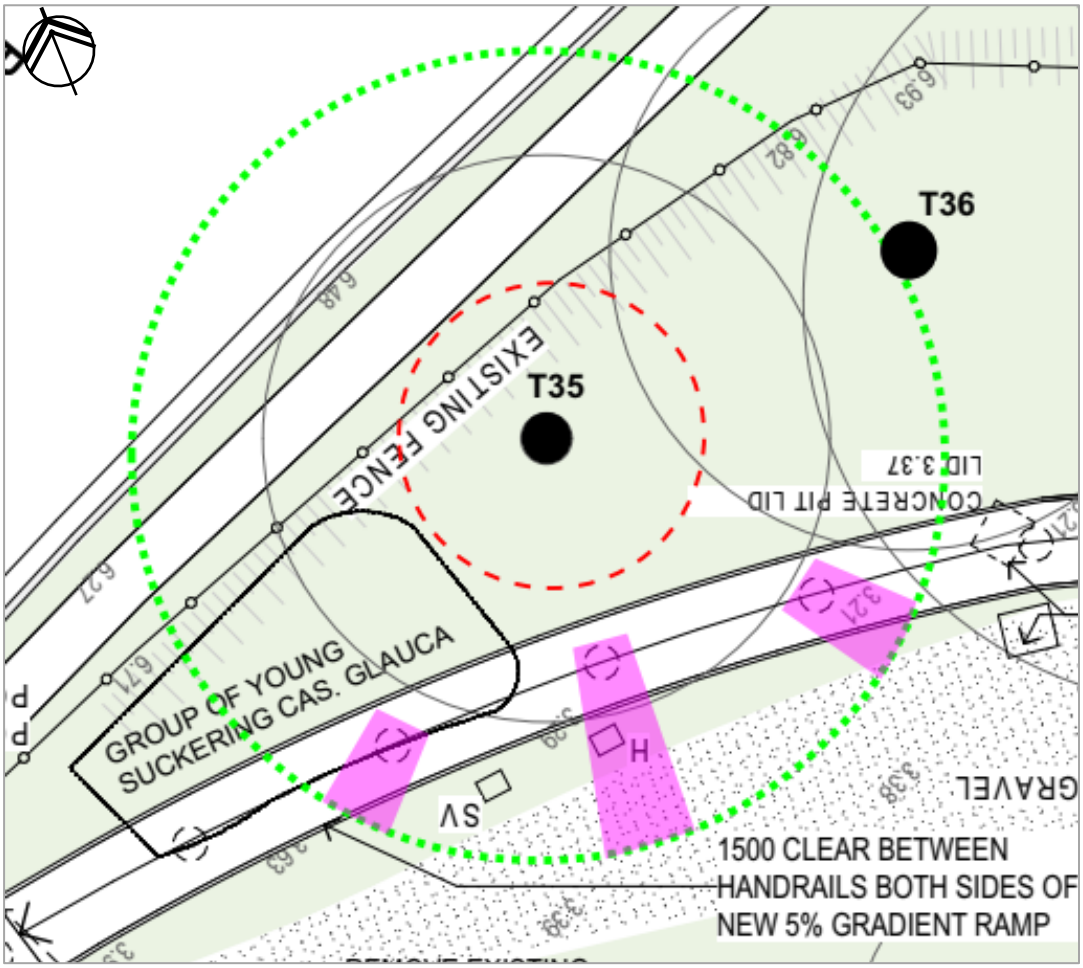

Figure 1 – Tree 35 - Red hashed circle represents SRZ, green dotted circle represents TPZ, Bright pink shading denotes approximate encroachment. Not to scale. Excerpt of Plan A-12 dated 31/3/21 by Gartner & Trovato. Marked up by C Hughes.

3.3.6 **Tree 36**—Coast Banksia

Structural Root Zone impacts:

- All proposed works are located outside the tree's SRZ.

Tree Protection Zone impacts:

- The proposed pedestrian ramp falls within the calculated TPZ of this tree, this equates to a 4.9m^2 or 3.0% encroachment (see Figure 2 for further details) of the TPZ.
- This considered a *minor* level of encroachment under AS4970 and impacts on tree health or long-term condition is considered unlikely.

Pruning impacts:

- Crown lifting may be required to allow pedestrian access along the pathway, it is likely only minor pruning will be required.

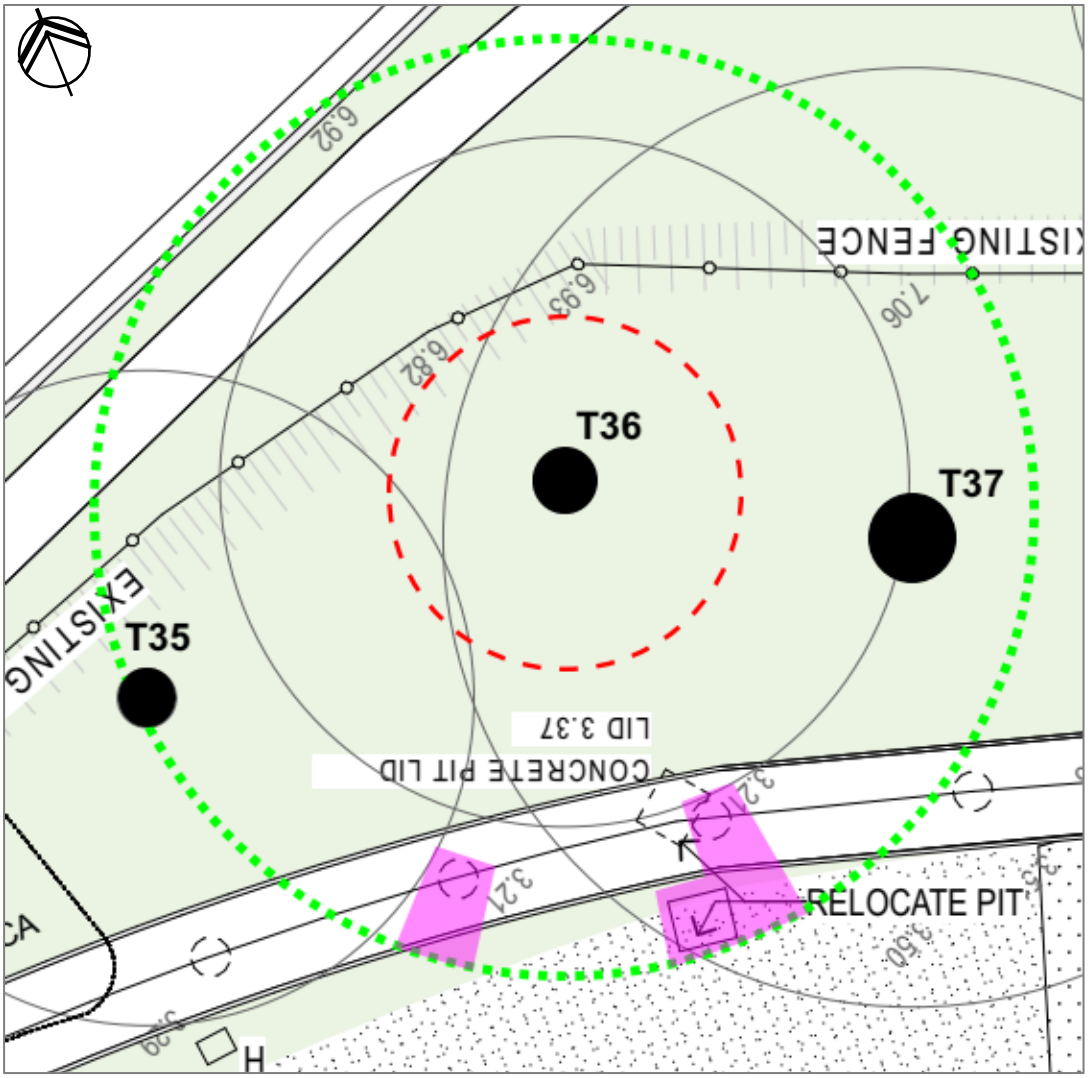

Figure 2 – Tree 36 - Red hashed circle represents SRZ, green dotted circle represents TPZ, Bright pink shading denotes approximate encroachment. Not to scale. Excerpt of Plan A-12 dated 31/3/21 by Gartner & Trovato. Marked up by C Hughes.

3.3.7 **Tree 37**— Chinese Elm

Structural Root Zone impacts:

- All proposed works are located outside the tree's SRZ.

Tree Protection Zone impacts:

- The proposed pedestrian ramp falls within the calculated TPZ of this tree, this equates to a 24.1m^2 or 6.6% encroachment (see Figure 3 for details) of the TPZ.

- This considered a *minor* level of encroachment under AS4970 and impacts on tree health or long-term condition is considered unlikely.

Pruning impacts:

- Crown lifting may be required to allow pedestrian access along the pathway, it is likely only minor pruning will be required.

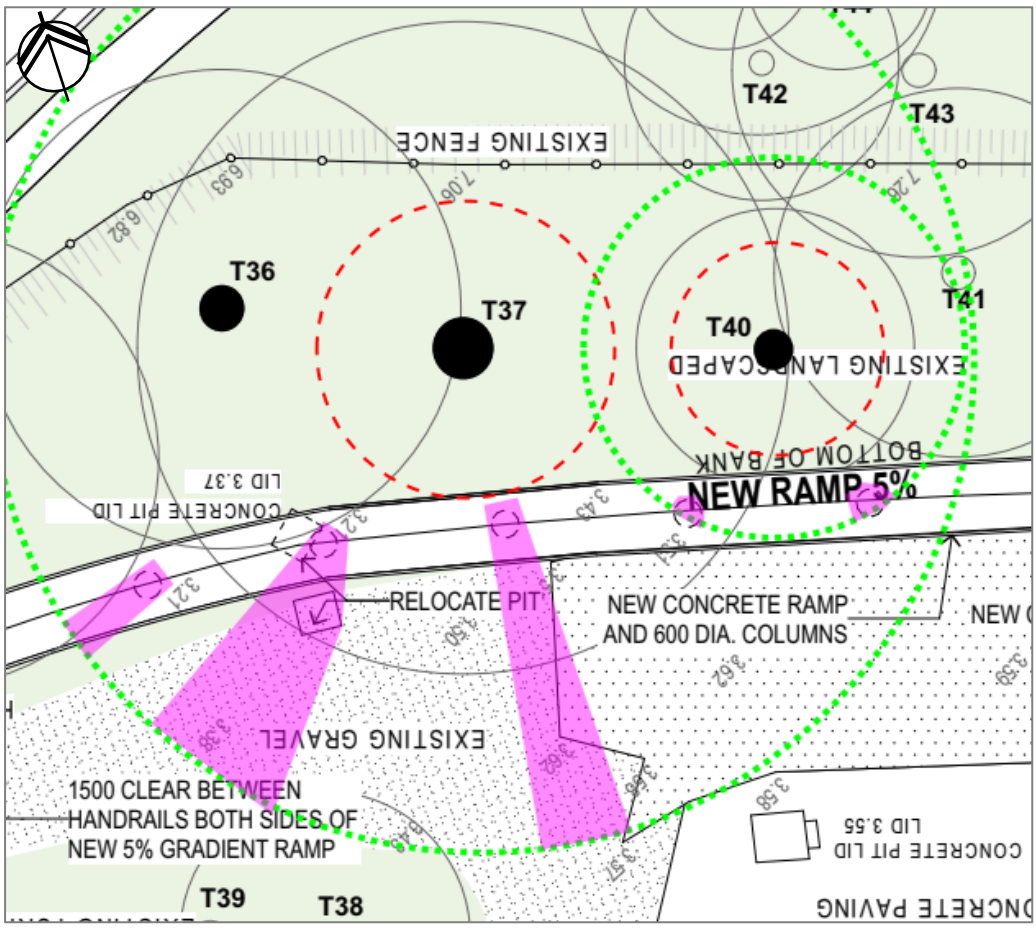

Figure 3 – Tree 37 - Red hashed circle represents SRZ, green dotted circle represents TPZ, Bright pink shading denotes approximate encroachment. Not to scale. Excerpt of Plan A-12, dated 31/3/21 by Gartner & Trovato. Marked up by C Hughes.

3.3.8 **Tree 40**— Coast Banksia

Structural Root Zone impacts:

- All proposed works are located outside the tree's SRZ.

Tree Protection Zone impacts:

- The proposed pedestrian ramp falls within the calculated TPZ of this tree, this equates to a 0.8m^2 or 1.5% encroachment of the TPZ.
- This considered a *minor* level of encroachment under AS4970 and impacts on tree health or long-term condition is considered unlikely.

Pruning impacts:

- Crown lifting may be required to allow pedestrian access along the pathway, it is likely only minor pruning will be required.

3.3.9 **Tree 49**— Swamp She-oak

Structural Root Zone impacts:

- All proposed works are located outside the tree's SRZ.

Tree Protection Zone impacts:

- The proposed pedestrian ramp falls within the calculated TPZ of this tree, this equates to a 32.7m^2 or 13.6% encroachment of the TPZ.
- This considered a *major* level of encroachment under AS4970 however this species is highly tolerant of root disturbance and in my opinion is unlikely to be affected by this level of encroachment.

Pruning impacts:

- No pruning is foreseen to accommodate the proposed works.

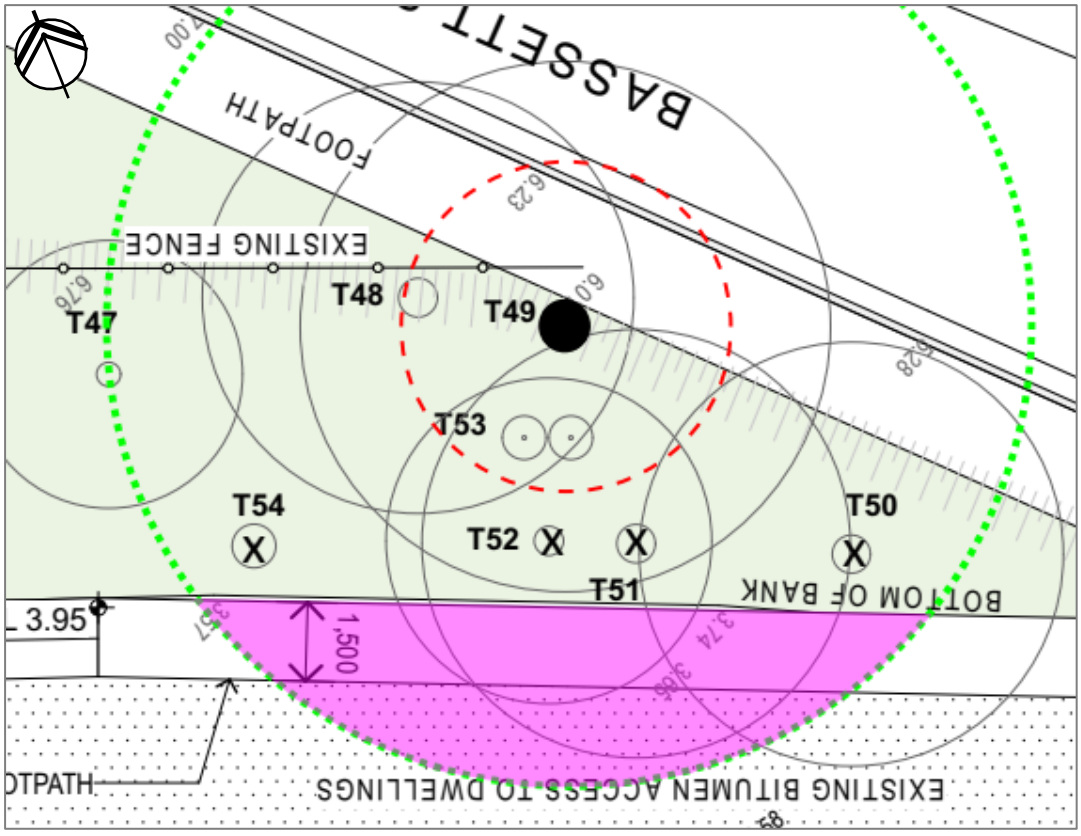

Figure 4 – Tree 35 - Red hashed circle represents SRZ, green dotted circle represents TPZ, Bright pink shading denotes approximate encroachment. Not to scale. Excerpt of Plan A-12 dated 31/3/21 by Gartner & Trovato. Marked up by C Hughes.

4 CONCLUSIONS

- A total of twenty (20) trees are included in this Arboricultural Impact Assessment. Of these:
  - Four (4) assessed trees are proposed for removal to accommodate the proposal —Tree 50-52 & 54.
  - Eleven (11) assessed site trees will be likely unaffected from the development—Tree 38, 39, 41-48 & 53.
  - Five (5) assessed trees (Tree 35-37, 40 & 49) have encroachments calculated and are considered to be within acceptable thresholds.
- No assessed trees have been identified as endangered or threatened under Federal and State Government legislation.
- Provided the recommendations of this report are adopted, adverse impacts on the vigour and structural condition of trees to be retained are unlikely.

5 RECOMMENDATIONS

5.1 Tree Removal

5.1.1 Removal of four (4) trees - Tree 50, 51, 52 and 54 are subject to authority review of this report, and approval is to be obtained (e.g. by Consent) before any tree is removed.

5.1.2 All tree removals are to be undertaken in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998) and the Guide to Managing Risks of Tree Trimming and Removal Work 2016 by Safe Work Australia.

5.1.3 Tree removals shall be in accordance with the Work Health and Safety Act 2011 and the Work Health and Safety (WHS) Regulations 2017 and shall comply with Section 5.5 of AS 4373-2007 Pruning of amenity trees.

5.1 Project Arboriculturist

5.1.1 A Project Arboriculturist (PA) shall be engaged prior to works commencing on the site, including demolition of structures, site clearing and the like.

5.1.2 The PA must have a minimum Australian Qualification Framework Level 5 (AQF5) or above in Arboriculture.

5.1.3 Duties of the PA shall include, but not be limited to:

- Liaising with the Project Manager/Head Contractor/Site Manager to confirm the tree protection fencing locations, construction access, and other specific tree protection requirements prior to site works commencing.
- Inspection of Tree Protection Devices and supervision of works as recommended in this report or as specified in any Conditions of Consent associated with an approved development application.
- Provision of Compliance Certification as and when required.

5.2 Minimising Impacts on Trees to be Retained

5.2.1 TREE 35 SWAMP SHE-OAK

- Protect Tree 35 by placing temporary fencing as per Appendix A—Tree Protection Plan (TPP). Tree protection devices are to be as those detailed in UFA AIA dated February 2020, Section 5.4 and 5.5 and Appendix C.
- Any works within the calculated TPZ are to be supervised by the Project Arborist/Council.
- Pruning works are to comply with AS4373 Pruning of Amenity Trees and are to be carried out by experienced minimum AQF 3 Level Arborists. A maximum 10% of total live canopy is to be removed and limited to a maximum 60mm branch diameter.

5.2.2 TREE 36 COAST BANKSIA

- Protect Tree 36 by placing temporary fencing as per Appendix A—Tree Protection Plan (TPP). Tree protection devices are to be as those detailed in UFA AIA dated February 2020, Section 5.4 and 5.5 and Appendix C.
- Any works within the calculated TPZ are to be supervised by the Project Arborist/Council.
- Pruning works are to comply with AS4373 Pruning of Amenity Trees and are to be carried out by experienced minimum AQF 3 Level Arborists. A maximum 10% of total live canopy is to be removed and limited to a maximum 60mm branch.

5.2.3 TREE 37 CHINESE ELM

- Protect Tree 37 by placing temporary fencing as per Appendix A—Tree Protection Plan (TPP). Tree protection devices are to be as those detailed in UFA AIA dated February 2020, Section 5.4 and 5.5 and Appendix C.
- Any works within the calculated TPZ are to be supervised by the Project Arborist/Council.
- Any pruning works are to comply with AS4373 Pruning of Amenity Trees and are to be carried out by experience minimum AQF 3 Level Arborists. A maximum 10% of total live canopy is to be removed and limited to a maximum 60mm branch.

5.2.4 TREE 40 COAST BANKSIA

- Protect Tree 40 by placing temporary fencing as per Appendix A—Tree Protection Plan (TPP). Tree protection devices are to be as those detailed in UFA AIA dated February 2020, Section 5.4 and 5.5 and Appendix C.
- Any works within the calculated TPZ are to be supervised by the Project Arborist/Council.).
- No canopy pruning is considered necessary.

5.2.5 TREE 49 SWAMP SHE-OAK

- Protect Tree 49 by placing temporary fencing as per Appendix A—Tree Protection Plan (TPP).

- Any works within the calculated TPZ are to be supervised by the Project Arborist/Council.

5.2.6 TREE 38, 39, 41-48 & 53

- Protect these trees by placing temporary fencing as per Appendix A—Tree Protection Plan (TPP). Tree protection devices are to be as those detailed in UFA AIA dated February 2020, Section 5.4 and 5.5 and Appendix C.
- Any pruning works are to comply with AS4373 Pruning of Amenity Trees and are to be carried out by experienced minimum AQF 3 Level Arborists. A maximum 10% of total live canopy is to be removed and limited to a maximum 100mm branch.

Report prepared by Chantalle Hughes.

March, 2021.

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Tree Surgery Certificate
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6 BIBLIOGRAPHY

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Barrell, J (1995) *Pre-development Tree Assessment* from *Trees and Building Sites*, Eds. Watson & Neely, International Society of Arboriculture, Illinois.

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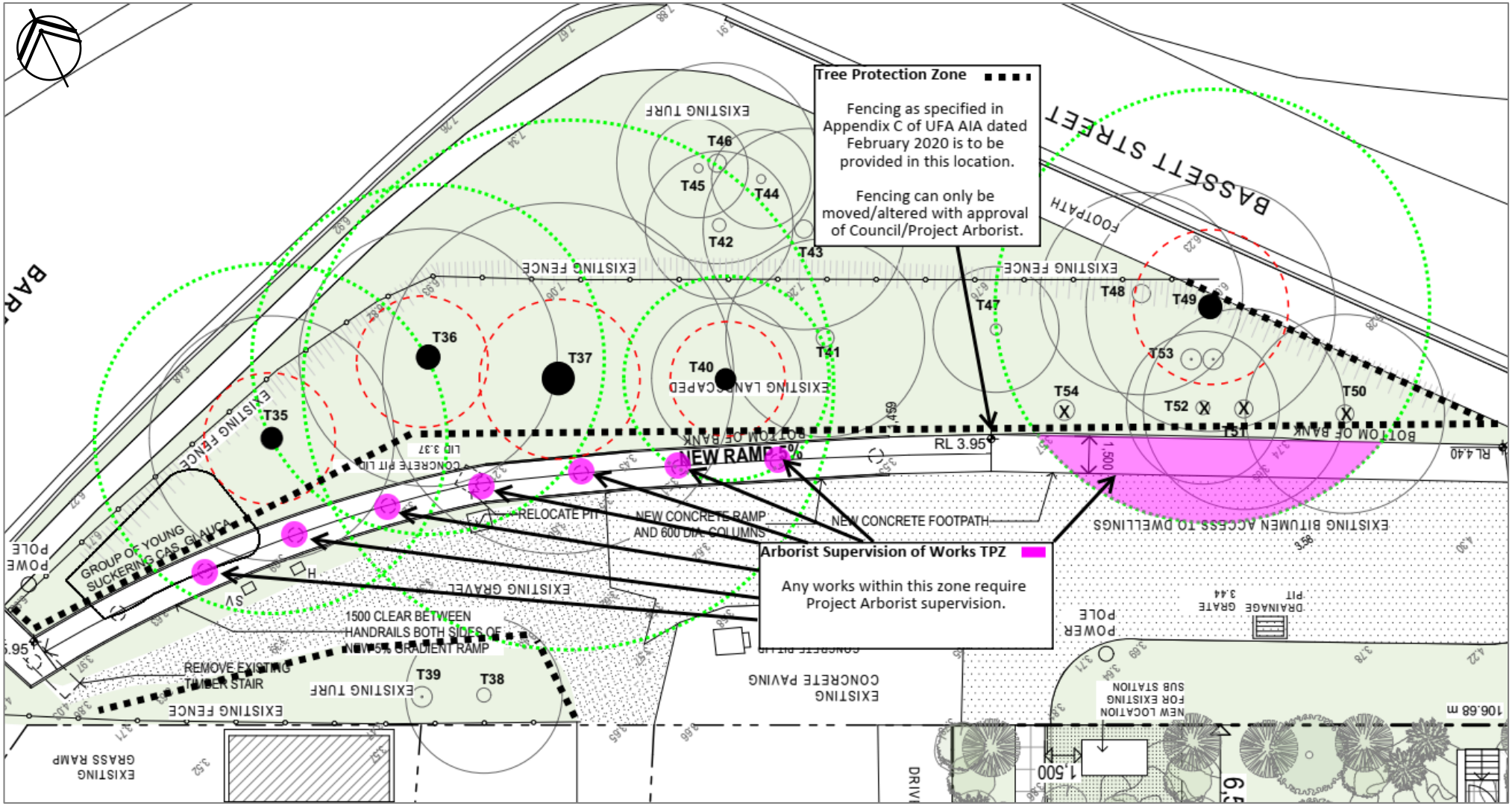
APPENDIX A

TREE PROTECTION PLAN



Not to scale. Excerpt of Plan A-12 dated 31/3/21 by Gartner & Trovato. Marked up by C Hughes.

APPENDIX B

PHOTOGRAPHS

Plate 1 - Overall view of area which proposed bus stop access path will be located.

Plate 2 - Tree 38 – Over hanging branches noted with arrow.

APPENDIX C

SCHEDULE OF ASSESSED TREES

Schedule of Assessed Trees—Council trees located outside 23-35 Bassett Street, Mona Vale. Site inspection 24 March 2021.

Addendum to UFA Arboricultural Impact Assessment dated February 2020 – tree numbers continued.

Tree No.	*Genus & species* **Common Name**	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
35	*Casuarina glauca* **Swamp She-oak**	14	8	AB 600	M	G	G	Locally native species. Poorly pruned for power line clearance.	2A	H	H	2.7	7.2	163
36	*Banksia integrifolia* **Coast Banksia**	15	10	AB 600	M	G	G	Locally native species. Sprawling specimen. Old Bougainvillea vine up stem, cut 2m AGL.	2A	H	H	2.7	7.2	163
37	*Ulmus parvifolia* **Chinese Elm**	15	16	AB 900	LM	G	G	Introduced exotic species. Multiple stems @ ground level.	2A	H	H	3.2	10.8	366
38	*Ulmus parvifolia* **Chinese Elm**	6	7	AB 300	M	P	P	Introduced exotic species. Located outside no. 39 Bassett Street. Low lying, dead/dying limbs noted.	4A	L	L	2.0	3.6	41
39	*Lagunaria patersonia* **Norfolk Island Hibiscus**	11	14	500	M	G	G	Introduced native species. Poorly pruned for power line clearance.	2B	M	M	2.7	6.0	113
40	*Banksia integrifolia* **Coast Banksia**	16	10	350	M	G	F	Introduced exotic species. Pathogen noted on stem, possibly Slime Flux.	3A	M	L	2.3	4.2	55
41	*Ulmus parvifolia* **Chinese Elm**	14	10	325	M	G	G	Introduced exotic species. Low branches noted.	2A	M	M	2.2	3.9	48
42	*Banksia integrifolia* **Coast Banksia**	8	6	275	M	G	G	Locally native species. Canopy sweeps to the east.	2A	H	H	2.1	3.3	35
43	*Banksia integrifolia* **Coast Banksia**	8	6	300	M	G	G	Locally native species. Canopy sweeps to the east.	2A	H	H	2.2	3.6	41
44	*Banksia integrifolia* **Coast Banksia**	8	6	200	M	G	G	Locally native species. No special problems noted at time of assessment.	2A	H	H	1.8	2.4	18
45	*Banksia integrifolia* **Coast Banksia**	8	6	175	M	G	G	Locally native species. No special problems noted at time of assessment.	2A	H	H	1.7	2.2	15
46	*Angophora costata* **Sydney Red Gum**	9	6	325	M	G	G	Locally native species. Pruned for power lines.	2A	H	H	2.2	3.9	48

Tree No.	*Genus & species* **Common Name**	Ht (m)	Sp (m)	DBH (mm)	Age	V	C	Observations/Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
47	*Casuarina glauca* **Swamp She-oak**	16	6	300/125/150 (360)	M	G	G	Locally native species. No special problems noted at time of assessment.	2A	H	H	2.3	4.3	58
48	*Casuarina glauca* **Swamp She-oak**	14	8	250/250 (350)	M	G	G	Locally native species. Codominant stems @ 1m AGL with possible inclusion noted.	2A	H	H	2.3	4.2	55
49	*Casuarina glauca* **Swamp She-oak**	14	12	@ 0.8m AGL 725	M-LM	G	G	Locally native species. Trifurcate @ 3m AGL with possible cavity into union. Deadwood to 20mm in diameter noted.	2A	H	H	3.1	8.8	241
50	*Eucalyptus botryoides* **Bangalay**	12	9	400	M	G	G	Locally native species. Canopy orientated to the east. Twiggy deadwood noted.	2A	M	M	2.5	4.8	72
51	*Casuarina glauca* **Swamp She-oak**	13	9	375	M	G	G	Locally native species. Twiggy deadwood noted. Codominant @ 6m AGL.	2A	M	M	2.4	4.5	64
52	*Cupaniopsis anacardioides* **Tuckaroo**	6.5	6	@ 0.5m AGL 150	EM	G	G	Locally native species. No special problems noted at time of assessment.	2A	M	M	1.6	2.0	13
53	*Cupaniopsis anacardioides* **Tuckaroo**	6.5	6	125 & 125 (180)	M	G	G	Locally native species. Two trees sharing a root crown.	2A	M	M	1.7	2.2	15
54	*Acacia longifolia* **Sydney Golden Wattle**	6	6	150	M	F	P	Locally native species. Leans to south-west. Torn out limb noted. Under insect attack at time of assessment.	3A	L	L	1.6	2.0	13

KEY

Prescribed trees to be retained

Prescribed trees proposed to be removed.

Non-prescribed trees exempt from tree preservation controls under P21DCP.

L — LOW Retention Value-These trees are not considered important for retention.

M — MEDIUM Retention Value-These trees may be retained and protected.

H — HIGH Retention Value -These trees are considered important for retention and should be retained and protected.

DETAILS FOR HEADINGS AND SYMBOLS USED IN TREE SCHEDULE

***** Denotes those situations where the tree's Diameter at Breast Height (DBH) has been *visually* estimated (usually adjoining trees or those that are hard to access and/or physically measure).

? used to highlight a tentative condition assessment and subsequent ULE and RV rating where the tree cannot be visually assessed 'in-the-round' (usually adjoining trees or those that are hard to access).

# Denotes when the tree's Diameter at Breast Height (DBH) has been taken from the stated measurement from the provided survey plan (usually adjoining trees where access limits visual estimation).

( ) The numerical figure in parentheses is the calculated DBH for a multiple stemmed tree, using the AS4970 formula, *or,* is the calculated DBH where the measurement cannot be made at the standard 1.4m above ground level, e.g. where the diameter of the stem is measured at ground level (DGL) or above the buttress (DAB). All calculated figures are rounded up to the nearest 25mm to determine the tree's TPZ offsets.

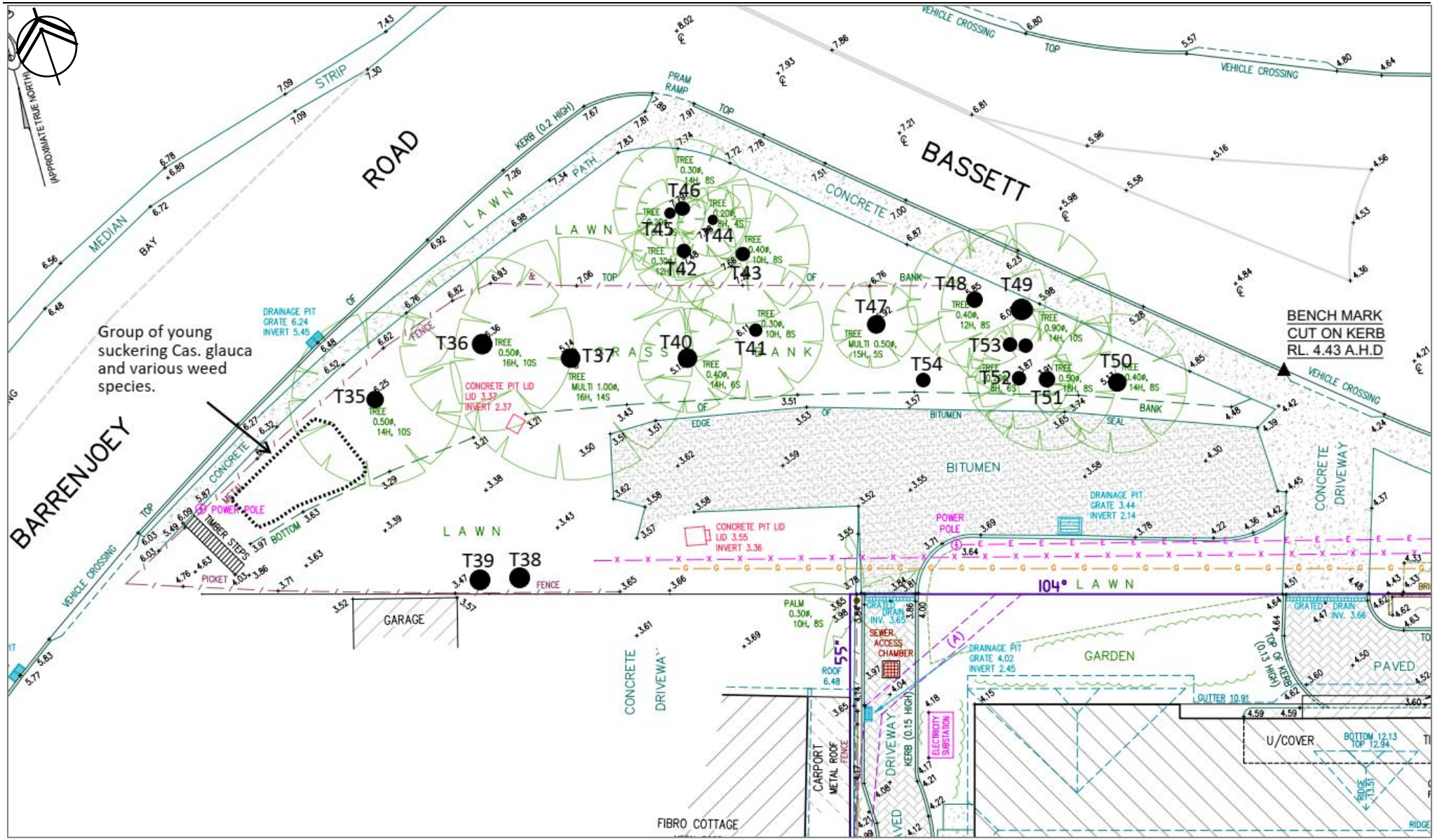
NOTE: According to AS4970, the TPZ of palms, other monocots, cycads and tree ferns should not be less than 1m outside the crown projection. The AS4970 formula for calculating the SRZ of a tree does not apply to palms, other monocots, cycads and tree ferns.

DAB—The trunk/stem diameter measured *above the buttress* (i.e. root and trunk confluence), using a diameter tape
DGL—The trunk/stem diameter measured *at ground level*, using a diameter tape.
AGL—*above* ground level.
GL—*at* ground level.

H refers to the approximate height of a tree in metres, from base of stem to top of tree crown.
Sp refers to the approximate and/or average diameter spread in metres of branches/canopy (the 'crown') of a tree.
DBH refers to the approximate diameter of tree stem at breast height i.e. 1.4 metres above ground (unless otherwise noted) and expressed in millimetres.
Age refer to Appendix A -Terms and Definitions for more detail.
V refers to the tree's vigour (health) Refer to Appendix A -Terms and Definitions for more detail.
C refers to the tree's structural condition. Refer to Appendix A -Terms and Definitions for more detail.
ULE refers to the estimated *Useful Life Expectancy* of a tree. Refer to Appendices A and B for details.
TSR The *Tree Significance Rating* considers the importance of the tree as a result of its prominence in the landscape and its amenity value, from the point of public benefit. Refer to Appendix B – Significance of a Tree Assessment Rating for more detail.
RV Refers to the retention value of a tree, based on the tree's ULE *and* Tree Significance. Refer to Appendix B – Significance of a Tree Assessment Rating for more detail.
SRZ Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Refer to Appendix A -Terms and Definitions for more detail.
TPZ Tree Protection Zone (TPZ) refers to the *tree protection zones* for trees to be retained. Refer to Appendix A -Terms and Definitions for more detail.
ILR Impact Level rating. Refer to Appendix A -Terms and Definitions for more detail.

APPENDIX D

TREE LOCATION PLAN



Not to scale (Excerpt of site survey plan by Bee & Lethbridge Pty Ltd, Reft48 no. 15006, marked up by C. Hughes)