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PRELIMINARY ARBORICULTURAL REPORT

23 Dalcassia Street Hurstville

Prepared for: THE SALVATION ARMY AUSTRALIA

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Revision A

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1.0 INTRODUCTION

1.1 Background

1.1.1 This Preliminary Arboricultural Report was prepared for The Salvation Army in relation to the proposed development works at 23 Dalcassia Street, Hurstville. The purpose of this Report is to undertake a Visual Tree Assessment¹ (VTA), provide an overview of the quality and value of the trees on site, determine Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) areas in accordance with *Australian Standard 4970 Protection of Trees on Development Sites (2009)*, and provide arboricultural advice early in the planning stages of the project.

1.1.2 In preparing this Report, the author has considered the objectives of the following:

- *State Environmental Planning Policy Vegetation in Non-Rural Areas (2017)*
- *Hurstville Local Environmental Plan (2012)*
- *Hurstville DCP No. 1 – Appendix 1 Section 9 – Preservation of Trees and Vegetation*
- *Georges River Council Tree Management Fact Sheet*
- *Australian Standard 4970 Protection of Trees on Development Sites (2009)*
- *Australian Standard 4373 Pruning of Amenity Trees (2007)*
- *Australian Standard 2303 Tree Stock for Landscape Use (2015)*
- *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)*

Refer to Methodology (**Appendix 1**)

2.0 RESULTS

2.1 The Site

2.1.1 The site is located at 23 Dalcassia Street and is an L-shaped allotment. The site is bound by the footpath and carriageway of Dalcassia Street, Bond Street and Dora Street to the north, south and west. The site borders residential flat buildings (19-20 Dalcassia Street & 22 Bond Street) to the east.

2.1.2 The site contains a number of buildings including:

- A single storey brick building on the Dalcassia frontage
- A two-storey rendered building on the corner of Dora Street and Bond Street
- Two (2) single storey buildings on the Bond Street frontage

2.1.3 The site is serviced by two (2) vehicular access points; one from Dora Street and another from Bond Street.

2.1.4 The site has a moderate slope with a fall of approximately 2m from the southern corner to the low point in the northern corner.

Refer to Tree Location Plan (**Appendix 2**)

¹ Mattheck & Breloer (2003)

2.2 The Trees

2.2.1 Six (6) trees have been addressed within this Report and comprise of a mix of Australian native and exotic species. Tree 1 is located within 23 Dalcassia Street, Trees 2-4 are street trees in the located Dora Street road reserve, Tree 5 is located within 22 Bond Street and Tree 6 is located within 19-20 Dalcassia Street.

Refer to Tree Assessment Schedule (**Appendix 3**)

2.2.2 None of the trees are listed in the *Hurstville Local Environmental Plan (Schedule 5) Environmental Heritage (2012)* or are visible in 1943 aerial photographs of the site.²

2.2.3 A search of the BioNet Atlas of NSW Wildlife Database was undertaken in August 2020. No individual threatened tree species listed within this database for the locality were identified during the field investigations of the site.³ The ecological significance and habitat value of the trees has not been assessed and is beyond the scope of this Report.

2.2.4 As required by Clause 2.3.2 of *Australian Standard 4970 Protection of Trees on Development Sites (2009)*, each of the trees assessed has been allocated a Retention Value. TreeIQ allocates one of four Retention Value categories based on a combination of Landscape Significance and Useful Life Expectancy (ULE). The assessment of Landscape Significance and ULE involves a degree of subjectivity and there will be a range of tree quality and value within each of the Retention Value categories. The Retention Values do not consider any proposed development works and are not a schedule for tree retention or removal. The trees have been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

Refer to Tree Assessment Schedule (**Appendix 3**)

3.0 DISCUSSION

3.1 Tree Assessment

3.1.1 Tree 1

Tree 1 was identified as *Camellia japonica* (Japanese Camellia) and is located in the north-eastern corner of 23 Dalcassia Street in close proximity to the existing building. The tree is in good health and structural condition. Tree 1 is of low Landscape Significance and has been allocated a Retention Value of *Consider for Removal*.

3.1.2 Tree 2

Tree 2 was identified as *Lophostemon confertus* (Brush Box) and is located within the Bond Street road reserve. The tree is a mature specimen which has been subject to repeated 'gully cutting' to maintain powerline clearances. These works have had a significant impact on the form of the tree and has reduced its amenity value. Tree 2 is of moderate Landscape Significance and has been allocated a Retention Value of *Consider for Retention*.

² Georges River Council (2012); NSW Government Spatial Services (2016)

³ NSW Office of Environment and Heritage (2011)

3.1.3 Trees 3-4

Trees 3-4 were identified as *Lophostemon confertus* (Brush Box) and are located within the Bond Street road reserve. The trees are mature specimens which have been subject to repeated 'gully cutting' to maintain powerline clearances. They have also been pruned on the eastern side of their crowns for building clearance.

3.1.4 Tree 5

Tree 5 was identified as *Callistemon salignus* (White Bottlebrush) and is located within 22 Bond Street, adjacent to the eastern site boundary. The tree is a late-mature specimen which is in fair health as evidenced by a reduced crown density and presence of deadwood. Tree 5 is in fair structural condition due to the development of included bark at the junction of first order branches. The tree is of low Landscape Significance and has been allocated a Retention Value of *Consider for Removal*.

3.1.5 Tree 6

Tree 6 was identified as *Eucalyptus microcorys* (Tallowwood) and is located within 19-20 Dalcassia Street, adjacent to the eastern site boundary. A VTA was not undertaken for Tree 6 due to limited access. Species and trunk diameter measurements were recorded for the purposes of determining Tree Protection Zone (TPZ) calculations only.

3.2 Development Works

3.2.1 *Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970)* outlines that a Tree Protection Zone (TPZ) is the principal means of protecting trees on development sites. It is an area isolated from construction disturbance so that the tree remains viable.⁴ The TPZ is calculated as a radial measurement based on twelve (12) times the tree's Diameter at Breast Height (DBH). This formula is based on extensive research and are generally accepted within the arboricultural industry as being suitable for calculating areas designed to maintain the long-term viability of trees on development sites.

3.2.2 AS-4970 also provides calculations to determine a tree's Structural Root Zone (SRZ). The SRZ is described in AS-4970 as the area around the base of a tree required for the tree's stability in the ground. This zone considers a tree's structural stability only, not the root zone required for its vigor and long-term viability, which will usually be a much larger area. Severance of structural roots (>25mmØ) within the SRZ is generally not recommended as it may lead to the destabilisation and/or decline of the tree.

Refer to Tree Assessment Schedule (**Appendix 3**)

3.2.3 Ideally, works should be avoided within the TPZ. A *Minor Encroachment* is less than 10% of the TPZ and is outside the SRZ. A *Minor Encroachment* is considered acceptable by AS-4970 when it is compensated for elsewhere and contiguous within the TPZ. A *Major Encroachment* is greater than 10% of the TPZ or inside the SRZ. *Major Encroachments* generally require root investigations undertaken by non-destructive methods or the use of tree sensitive construction methods.

3.2.4 AS-4970 outlines that the TPZ may need to be modified (extended) to provide additional protection to the above ground parts of the tree. Where conflict between branches, new structures and construction machinery could occur, 3D laser surveying of the tree's crown may be required to accurately determine potential impacts. Branches may be temporarily protected with padding and timber battens or tied back, or in some cases pruning may be possible to provide additional clearances where these works would not impact the tree's ULE or form. Pruning requirements should be outlined within a Pruning Specification prepared in accordance with *Australian Standard 4373 Pruning of Amenity Trees (2007)*.

⁴ Standards Australia (2009)

4.0 SUMMARY & CONCLUSION

- 4.1.1 Six (6) trees have been addressed within this Report and comprise of a mix of Australian native and exotic species.
- 4.1.2 Tree 1 is a small tree with low Landscape Significance and should not be considered a constraint to the development works. A new, advanced size tree could replace the loss of amenity resultant from tree removal within a short timeframe.
- 4.1.3 Tree 2 is a street tree with moderate Landscape Significance. However, approximately 40% of the tree's crown extends into the site. Any significant pruning of the tree to provide building clearances will further impact the form of the tree and tree removal and replacement would be required. A new, advanced size tree could replace the loss of amenity resultant from tree removal within a medium timeframe.
- 4.1.4 Trees 3 and 4 are street trees with moderate Landscape Significance. The footings from the existing building will have restricted (at least partially) root spread into the site and construction works within the footprint of the existing building is unlikely to impact the trees.
- 4.1.5 Trees 5 and 6 are located on the adjacent properties to the north. As they are located outside of the site, they should be retained and protected in accordance with AS-4970. The crowns of both trees extend into the site. Selective Reduction Pruning/Crown Lifting may be required to provide building clearance. Tree pruning work would require consent from the tree owner.
- 4.1.6 An Arboricultural Impact Assessment and Tree Protection Plan should be prepared to examine the potential impact of any proposed works on the trees at 80% completion of the plans. The report should also detail the proposed design and construction methods, and tree protection measures to minimise impacts on the trees.

5.0 LIMITATIONS & DISCLAIMER

TreeiQ takes care to obtain information from reliable sources. However, TreeiQ can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Report are visual aids only and are not necessarily to scale. This Report provides recommendations relating to tree management only. Advice should be sought from appropriately qualified consultants regarding design/construction/ecological/heritage etc issues.

This Report has been prepared for exclusive use by the client. This Report shall not be used by others or for any other reason outside its intended target or without the prior written consent of TreeiQ. Unauthorised alteration or separate use of any section of the Report invalidates the Report.

Many factors may contribute to tree failure and cannot always be predicted. TreeiQ takes care to accurately assess tree health and structural condition. However, a tree's internal structural condition may not always correlate to visible external indicators. There is no warranty or guarantee, expressed or implied that problems or deficiencies regarding the trees or site may not arise in the future. Information contained in this report covers only the trees assessed and reflects the condition of the trees at the time of inspection. Additional information regarding the methodology used in the preparation of this Report is attached as Appendix 1. A comprehensive tree risk assessment and management plan for the trees is beyond the scope of this Report.

Reference should be made to any relevant legislation including Tree Management Controls. All recommendations contained within this Report are subject to approval from the relevant Consent Authority.

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6.0 BIBLIOGRAPHY & REFERENCES

Barrell (1995), 'Pre-development Tree Assessments', in *Trees & Building Sites, Proceedings of an International Conference Held in the Interest of Developing a Scientific Basis for Managing Trees in Proximity to Buildings*, International Society of Arboriculture, Illinois, USA, pp. 132-142

Matheny & Clark (1994), *A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas*, International Society of Arboriculture, USA

Mattheck & Breloer (2003), *The Body Language of Trees: A Handbook for Failure Analysis*, The Stationary Office, London

NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), *BioNet Atlas of NSW Wildlife*

Simon, Dormer & Hartshorne (1973), *Lowson's Botany*, Bell & Hyman, London

Standards Australia (2009), *Protection of Trees on Development Sites AS-4970*

Standards Australia (2007), *Pruning of Amenity Trees AS-4373*

Standards Australia (2015), *Tree Stock for Landscape Use AS-2303*

Appendix 1: Methodology

- 1.1 Site Inspection:** This report was determined as a result of a comprehensive site inspection during September 2020.
- 1.2 Visual Tree Assessment (VTA):** The subject tree(s) was assessed using the Visual Tree Assessment criteria and notes as described in *The Body Language of Trees – A Handbook for Failure Analysis*.⁵ The inspection was limited to a visual examination of the subject tree(s) from ground level only. The inspection was limited to a visual examination of the subject tree(s) from ground level only. No internal diagnostic or tissue testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.
- 1.3 Tree Dimensions:** The dimensions of the subject tree(s) are approximate only.
- 1.4 Tree Locations:** The location of the subject tree(s) was determined from the supplied plans. Trees not shown on the supplied plans have been plotted in their **approximate location only**.
- 1.5 Trees & Development:** Tree Protection Zones, Tree Protection Measures and Sensitive Construction Methods for the subject tree were based on methods outlined in *Australian Standard 4970-2009 Protection of Trees on Development Sites*.
- The *Tree Protection Zone* (TPZ) is described in AS-4970 as a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.
- The *Structural Root Zone* (SRZ) is described in AS-4970 as the area around the base of a tree required for the tree's stability in the ground. Severance of structural roots within the SRZ is not recommended as it may lead to the destabilisation and/or demise of the tree.
- In some cases it may be possible to encroach into or make variations to the theoretical TPZ. A *Minor Encroachment* is less than 10% of the area of the TPZ and is outside the SRZ. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. A *Major Encroachment* is greater than 10% of the TPZ or inside the SRZ. In this situation the Project Arborist must demonstrate that the tree would remain viable. This may require root investigation by non-destructive methods or the use of sensitive construction methods.
- 1.6 Tree Health:** The health of the subject tree(s) was determined by assessing:
- I. Foliage size and colour
 - II. Pest and disease infestation
 - III. Extension growth
 - IV. Crown density
 - V. Deadwood size and volume
 - VI. Presence of epicormic growth
- 1.7 Tree Structural Condition:** The structural condition of the subject tree(s) was assessed by:
- I. Assessment of branching structure
(i.e co-dominant/bark inclusions, crossing branches, branch taper, terminal loading, previous branch failures)
 - II. Visible evidence of structural defects or instability
(i.e root plate movement, wounds, decay, cavities, fungal brackets, adaptive growth)
 - III. Evidence of previous pruning or physical damage
(root severance/damage, lopping, flush-cutting, lions tailing, mechanical damage)
- 1.8 Useful Life Expectancy (ULE):** The ULE is an estimate of the longevity of the subject tree(s) in its growing environment. The ULE is modified where necessary to take in consideration tree(s) health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (Modified from Barrell, 2001):
- I. 40 years +
 - II. 15-40 years
 - III. 5-15 years
 - IV. Less than 5 years

⁵ Mattheck & Breloer (2003)

1.9 Landscape Significance: Landscape Significance was determined by assessing the combination of the cultural, environmental and aesthetic values of the subject tree(s). Whilst these values are subjective, a rating of high, moderate, low or insignificant has been allocated to the tree(s). This provides a relative value of the tree's Landscape Significance which may aid in determining its Retention Value. If the tree(s) can be categorized into more than one value, the higher value has been allocated.

Landscape Significance	Description
Very High	The subject tree is listed as a Heritage Item under the <i>Local Environmental Plan</i> with a local or state level of significance.
	The subject tree is listed on Council's Significant Tree Register or is considered to meet the criteria for significance assessment of trees and/or landscapes by a suitably qualified professional. The criteria are based on general principles outlined in the Burra Charter and on criteria from the Register of the National Estate.
	The subject tree is a remnant tree.
High	The subject tree creates a 'sense of place' or is considered 'landmark' tree.
	The subject tree is of local, cultural or historical importance or is widely known.
	The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species or forms part of an Endangered Ecological Community associated with the site, as defined under the provisions of the NSW <i>Biodiversity Conservation Act (2016)</i> or the Commonwealth <i>Environmental Protection and Biodiversity Conservation Act (1999)</i> .
	The subject tree is known to provide habitat to a threatened species.
	The subject tree is an excellent representative of the species in terms of aesthetic value.
	The subject tree is of significant size, scale or makes a significant contribution to the canopy cover of the locality.
	The subject tree forms part of the curtilage of a heritage item with a known or documented association with that item.
Moderate	The subject tree makes a positive contribution to the visual character or amenity of the area.
	The subject tree provides a specific function such as screening or minimising the scale of a building.
	The subject tree has a known habitat value.
	The subject tree is a good representative of the species in terms of aesthetic value.
Low	The subject tree is an environmental pest species or is exempt under the provisions of the local Council's Tree Management Controls
	The subject tree makes little or no contribution to the amenity of the locality.
	The subject tree is a poor representative of the species in terms of aesthetic value.
	The subject tree is a recognised environmental weed species for the area.

1.10 Retention Value: Retention Value was based on the subject tree's Useful Life Expectancy and Landscape Significance. The Retention Value was modified where necessary to take in consideration the subject tree's health, structural condition and site suitability. The subject tree(s) has been allocated one of the following Retention Values:

- I. Priority for Retention
- II. Consider for Retention
- III. Consider for Removal
- IV. Priority for Removal

ULE	Landscape Significance				
	Very High	High	Moderate	Low	Insignificant
40 years +	Priority for Retention	Priority for Retention		Consider for Removal	Priority for Removal
15-40 years		Priority for Retention	Consider for Retention		
5-15 years		Consider for Retention			
Less than 5 years	Consider for Removal	Priority for Removal			

The above table has been modified from the Footprint Green Tree Significance and Retention Value Matrix.

Appendix 2: Tree Assessment Schedule

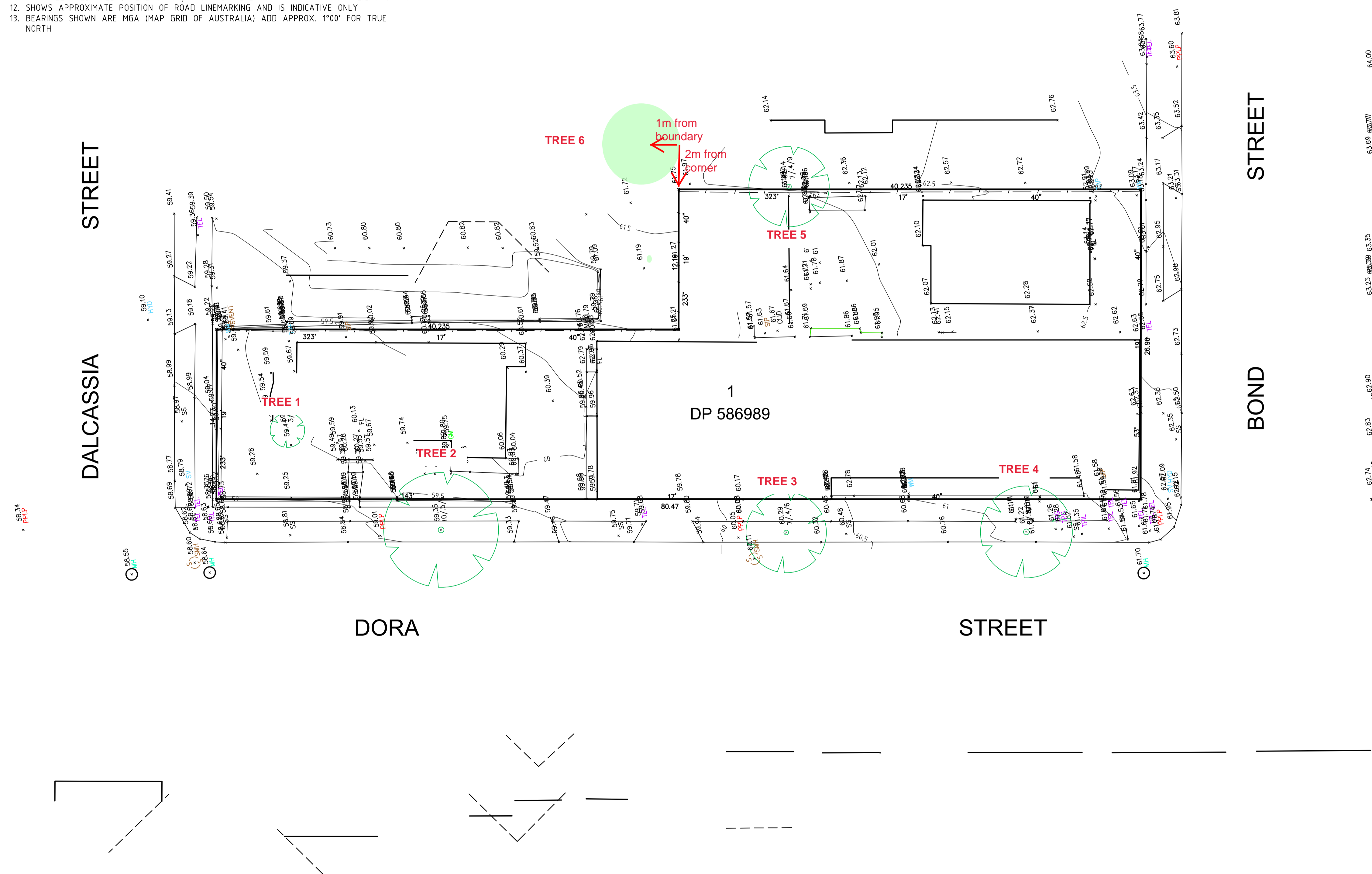
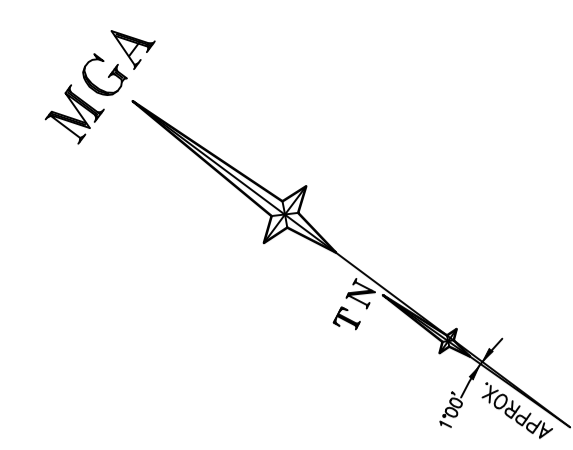
Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)
1	<i>Camellia japonica</i> (Japanese Camillia)	250	4	2	Good	Good		Mature	15-40	Low	Consider for Removal	3	1.9
2	<i>Lophostemon confertus</i> (Brush Box)	600	8	9	Good	Fair	Small (<25mm \emptyset) deadwood in low volumes. Pruning for powerline clearance has impacted for the tree.	Mature	15-40	Moderate	Consider for Retention	7.2	2.7
3	<i>Lophostemon confertus</i> (Brush Box)	450	8	9	Good	Fair	Small (<25mm \emptyset) deadwood in low volumes. Pruning for powerline clearance has impacted for the tree.	Mature	5-15	Moderate	Consider for Retention	5.4	2.4
4	<i>Lophostemon confertus</i> (Brush Box)	600	4	3	Fair	Good	Small (<25mm \emptyset) deadwood in low volumes.	Mature	15-40	Low	Consider for Removal	7.2	2.7
5	<i>Callistomon salignus</i> (White Bottle Brush)	450	7	8	Fair	Fair	Partially suppressed. Crown density 50-75%. Small (<25mm \emptyset) deadwood in moderate volumes. Branch inclusion.	Late Mature	5-15	Low	Consider for Removal	5.4	2.4
6	<i>Eucalyptus microcorys</i> (Tallowood)	600	10	18								7.2	2.7

LEGEND

BENCH MARK	▲
OPTUS PIT	OP
TELSTRA PILLAR	TP
COMMS PIT	COM
TELSTRA PIT	TEL
ELECTRIC LIGHT POLE	ELP
ELECTRIC LIGHT BOLLARD	LB
ELECTRICITY PIT	EPIT
ELECTRICITY BOX	EL
POWER POLE	PP
SERVICE PIT	PIT
PIT WITH CONCRETE LID	CLID
PIT WITH METAL LID	MLID
TRAFFIC LIGHT	TL
STREET SIGN	SS
BOLLARD	BOL
ROADS & MARITIME SERVICES	RMS
GRADED INLET PIT	GIP
KERB INLET PIT	KIP
SEWER INSPECTION POINT	SIP
SEWER VENT	SEV
SEWER MANHOLE	SMH
STOP VALVE	SV
HYDRANT	HYD
WATER METER	WM
WATER TAP	TAP
WATER VALVE	WV
GAS METER	GM
GAS VALVE	GAS
VEHICLE CROSSING	(VC)
PRAM CROSSING	(PC)
WINDOW	W
DOOR	D
HEAD/SILL	H/S
GAS (DBYD)	G
COMMUNICATIONS (DBYD)	C
WATER (DBYD)	W
SEWER (DBYD)	S
ROADS & MARITIME (DBYD)	RMS
ELECTRICITY (U'GROUND) (DBYD)	E
ELECTRICITY (OVERHEAD)	P
STORMWATER	SW
GAS (DETECTED)	G(D)
TELSTRA (DETECTED)	T(D)
OPTICAL FIBRE (DETECTED)	OF(D)
COMMUNICATIONS (DETECTED)	C(D)
WATER (DETECTED)	W(D)
STORMWATER (DETECTED)	SW(D)
SEWER (DETECTED)	S(D)
ELECTRICITY (DETECTED)	E(D)
UNKNOWN SERVICE (DETECTED)	UD

NOTES

1. THE BOUNDARIES HAVE NOT BEEN MARKED ON GROUND
2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY NSW LAND REGISTRY SERVICES AND ARE SUBJECT TO FINAL SURVEY
3. BOUNDARIES WITHIN THIS FILE HAVE BEEN ADDED FROM DCDB DATA OBTAINED FROM NSW LAND REGISTRY SERVICES AND ARE APPROXIMATE ONLY
4. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM SSM 80826 R.L. 63.559 (A.H.D.) IN FOREST ROAD
5. CONTOUR INTERVAL 1.0 m
6. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
7. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
8. KERB LEVELS ARE TO THE TOP OF KERB UNLESS SHOWN OTHERWISE
9. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
10. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
11. 8/4/7 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
12. SHOWS APPROXIMATE POSITION OF ROAD LINEMARKING AND IS INDICATIVE ONLY
13. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH



PRELIMINARY

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SCALE 1:200 @ A1

Revision	Date	Description	Reference
H	00/00/00	-	00
G	00/00/00	-	00
F	00/00/00	-	00
E	00/00/00	-	00

Revision	Date	Description	Reference
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B	00/00/00	-	00
A	00/00/00	-	00

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Registered Surveyor NSW

Client THE SALVATION ARMY (NSW SOUTH WALES) PROPERTY TRUST

Drawing title PLAN OF DETAIL AND LEVELS OVER LOT 1 IN DP 586989 KNOWN AS No.23 DALCASSIA STREET, HURSTVILLE

datum AHD	reference number 51124 001DT
site Area 1679m ²	scale 1:200
LGA GEORGES RIVER	date of survey 03/09/2020
	SHEET OF 1

Appendix 4: Plates

