Project No: 71-75/CAB/17 Report No: 71-75/CAB/AIA/C

ARBORICULTURAL IMPACT ASSESSMENT

71-75 Cabramatta Avenue
Miller

Prepared for: ST GEORGE COMMUNITY HOUSING

16th November 2017
Revision C

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MANAGING URBAN TREES™

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1.0 INTRODUCTION

1.1 Background

1.1.1 This Arboricultural Impact Assessment Report was prepared for Signature Project Management, on behalf of St George Community Housing, in relation to the proposed redevelopment works at 71-75 Cabramatta Avenue, Miller. The purpose of this Report is to undertake a Visual Tree Assessment[1] (VTA), determine the impact of the proposed works on three (3) trees, and where appropriate, recommend the use of sensitive construction methods to minimise adverse impacts.

1.1.2 In preparing this Report, the author is aware of and has taken into account the objectives of *Liverpool City Council's Tree Management Policy (2011)*, *Australian Standard 4970 Protection of Trees on Development Sites (2009), Australian Standard 4373 Pruning of Amenity Trees (2007)* and *Australian Standard 2303 Tree Stock for Landscape Use (2015).*

Refer to Methodology **(Appendix 1)**

1.1.3 This impact assessment is based on an assessment of the following supplied documentation/plans only:

- Plan showing Selected Detail & Levels 24484, dated 10.03.17 – prepared by Norton Survey Partners
- Site Plan 17_037 DA-A-010, dated 14.11.17 – prepared by Smith & Tzannes
- Demolition Plan 17_037 DA-A-050, dated 14.11.17 – prepared by Smith & Tzannes

Refer to Plans **(Appendix 2)**

1.2 The Proposal

1.2.1 The supplied plans show the works include:

- Demolition of existing structures and pavements
- Construction of new residential units
- Construction of car parking with a new driveway crossover accessing Cabramatta Avenue
- Associated works and landscaping

Refer to Plans **(Appendix 2)**

2.0 RESULTS

2.1 The Site

2.1.1 The site comprises of three (3) residential allotments (nos. 71, 73 and 75) located to the northern side of Cabramatta Avenue, and is bound by residential allotments to the north, east and west.

2.1.2 The site is roughly rectangular in shape and is generally level. A single storey dwelling is located roughly centrally within each separate allotment.

[1] Mattheck & Breloer (2003)

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2.2 The Trees

2.2.1 Three (3) trees were assessed using the Visual Tree Assessment[2] (VTA) criteria and notes. Trees 1 and 2 have been identified as *Lophostemon confertus* (Brush Box) street trees located on the Cabramatta Avenue road reserve and are managed by Liverpool City Council. Tree 3 is a *Psidium* sp. (Guava) located within the property of No. 75 Cabramatta Avenue. Trees 4-6 (*Ailanthus altissima* x 2 & *Citrus* sp.) are not sufficiently large to be covered by Council's tree management controls and have not been assessed.

2.2.2 As required by Clause 2.3.2 of *Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970)*, each tree assessed has been allocated a Retention Value. The Retention Value is based on the tree's Useful Life Expectancy and Landscape Significance with consideration to its health, structural condition and site suitability. The Retention Values do not take into account 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

2.2.3 **Table 1: Tree 1 - *Lophostemon confertus* (Brush Box)**

Diameter at Breast Height:	350mm
Height:	5m
Radial Crown Spread:	4m
Health:	Good
Structural Condition:	Fair
Useful Life Expectancy:	5-15 years
Landscape Significance:	Low
Retention Value:	Consider for Removal
Comments:	Lopped at 2-3m for line clearance works. Small diameter epicomic growth in high volumes. Mechanical damage to exposed surface roots. Poor form.
Radial TPZ:	4.2m
Radial SRZ:	2.2m

2.2.4 **Table 2: Tree 2 - *Lophostemon confertus* (Brush Box)**

Diameter at Breast Height:	200mm + 150mm
Height:	3m
Radial Crown Spread:	2m
Health:	Good
Structural Condition:	Poor
Useful Life Expectancy:	5-15 years
Landscape Significance:	Low
Retention Value:	Consider for Removal
Comments:	Lopped at 2-3m for line clearance works. Small diameter epicomic growth in high volumes. Wound/s no visible signs of decay. Poor form.
Radial TPZ:	3m
Radial SRZ:	1.9m

[2] Mattheck & Breloer (2003)

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2.2.5 **Table 3: Tree 3 - *Psidium* sp. (Guava)**

Diameter at Breast Height:	125mm + 100mm
Height:	4.5m
Radial Crown Spread:	2m
Health:	Fair
Structural Condition:	n/a
Useful Life Expectancy:	<5 years
Landscape Significance:	Low
Retention Value:	Priority for Removal
Comments:	Reduced crown density. No access to base.
Radial TPZ:	2m
Radial SRZ:	1.5m

2.2.6 A search of the BioNet Atlas of NSW Wildlife Database was undertaken in October 2017. No individual threatened tree species that were listed within this database for the area were identified during the current field investigations of the site.[3] The ecological significance and habitat value of the tree has not been assessed and is beyond the scope of this Report.

3.0 ARBORICULTURAL IMPACT ASSESSMENT

3.1 Tree 1

3.1.1 The supplied plans show Tree 1 will need to be removed to accommodate the new driveway and crossover footprint.

3.2 Tree 2

3.2.1 The supplied plans show no works are proposed within the Tree Protection Zone (TPZ) of Tree 2, and the tree could be retained and protected with the establishment of a fenced TPZ. However, the tree is of low quality specimen as a result of repeated lopping for powerline clearance.

3.2.2 If Tree 2 is retained, TPZ fencing (comprising of 1.8m weld mesh site fencing panels supported on concrete feet) should be installed within the grassed section of the nature strip and setback at a radial distance of 3m from the centre of the tree. The existing pavement on Cabramatta Avenue provides adequate ground protection.

3.3 Tree 3

3.3.1 The supplied plans show Tree 3 will need to be removed to accommodate the new building footprint.

3.4 Replacement Planting

3.4.1 Replacement planting is recommended to offset the removal of Trees 1 and 3 (and potentially Tree 2) and maintain the canopy cover within the area. Replacement planting should be supplied in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use.*

3.4.2 Alternative, small species (e.g. *Callistemon viminalis* Weeping Bottlebrush) should be considered as replacement street trees due to the presence of overhead powerlines within the road reserve.

[3] NSW Office of Environment and Heritage (2011)

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4.0 CONCLUSION

4.1 Three (3) trees were assessed in preparation of this Report. The trees have been allocated a low Landscape Significance and Retention Values of *Consider for Removal* and *Priority for Removal.*

4.2 The supplied plans show Trees 1 and 3 will need to be removed to accommodate the proposed development. The supplied plans show no works are proposed within the TPZ of Tree 2. If Tree 2 is retained, TPZ fencing should be installed within the grassed section of the nature strip.

4.3 Trees 1 and 2 have been repeated lopped for powerline clearance which has severely impacted the form of the trees. The removal of both Trees 1 and 2 and their replacement with better quality, alternative, small species (e.g. *Callistemon viminalis* Weeping Bottlebrush) should be considered. Replacement planting should be supplied in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use.*

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

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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*

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7.0 APPENDICES

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Appendix 1: Methodology

1.1 **Site Inspection**: This report was determined as a result of a comprehensive site during July 2017. The comments and recommendations in this report are based on findings from this site inspection.

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.*[4] The inspection was limited to a visual examination of the subject tree(s) from ground level only. No internal diagnostic 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.

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

[4] Mattheck & Breloer (2003)

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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 *Local Environmental Plan* 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 outlines 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 subject site, as defined under the provisions of the *Threatened Species Conservation Act* 1995 (NSW) or the *Environmental Protection and Biodiversity Conservation Act* 1999.
	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.
Insignificant	The subject tree is declared a Noxious Weed under the Noxious Weeds Act

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.

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Appendix 2: Plans

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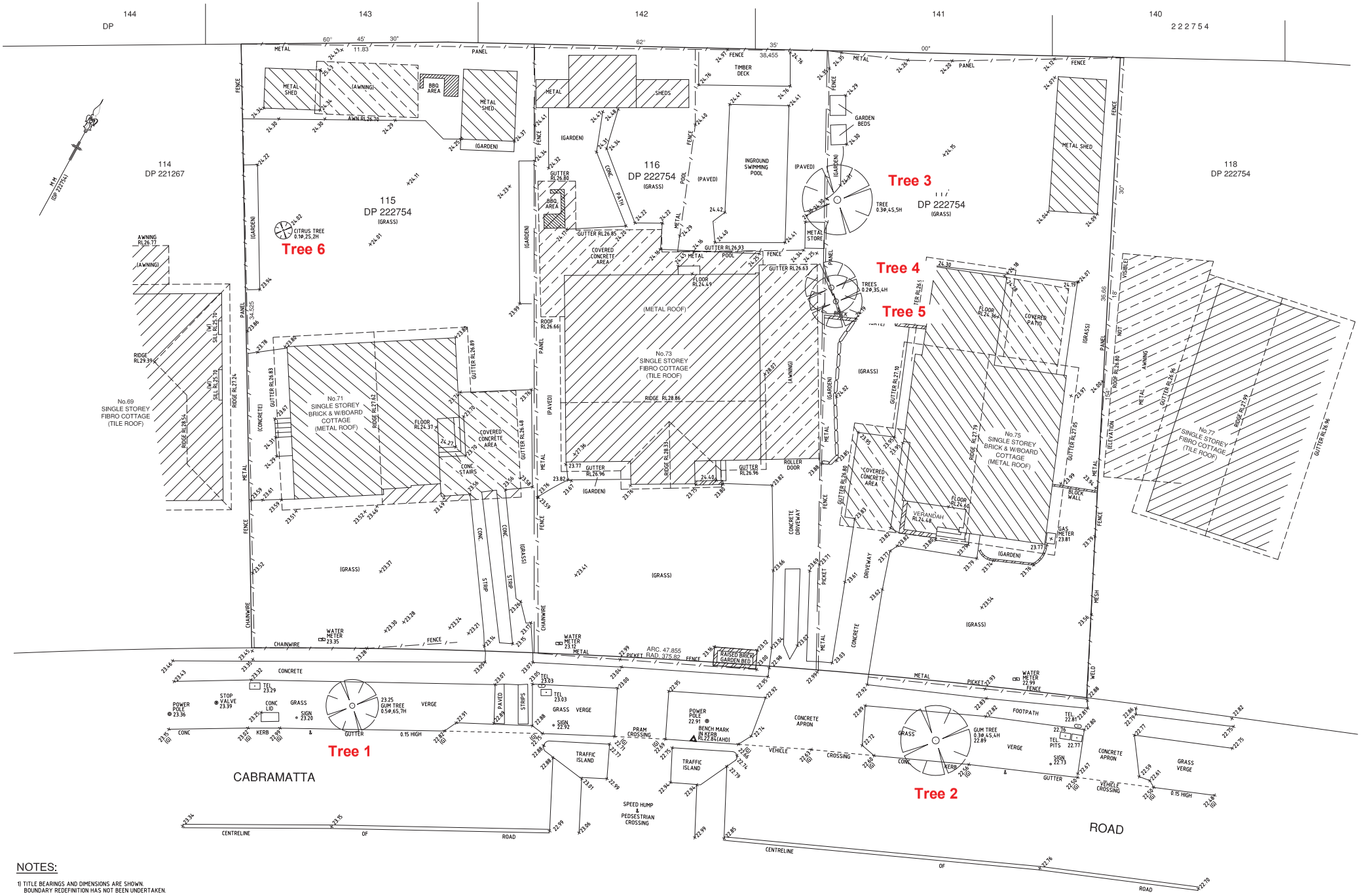

NOTES:

1) TITLE BEARINGS AND DIMENSIONS ARE SHOWN. BOUNDARY REDEFINITION HAS NOT BEEN UNDERTAKEN.

2) ORIGIN OF LEVELS: SSM 36935 RL21.593 (A.H.D.) SCIMS

3) SITE COMPRISES LOTS 115-117 DP 222754

4) SITE AREA 1727.0m² BY TITLE DIMENSIONS.

5) UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED.

6) (G) DENOTES GUTTER LEVEL. 0.3Ø10S,8H DENOTES TREE SIZE 0.3 TRUNK DIAMETER, 10 SPREAD, 8 HIGH.

7) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY. IF TREE SPECIES IDENTIFICATION IS IMPORTANT FOR DESIGN OR HERITAGE REASONS THEY SHOULD BE DETERMINED BY A QUALIFIED ARBORIST.

ISSUE	DATE	AMENDMENT

TITLE: PLAN SHOWING SELECTED DETAIL & LEVELS OVER No.71-75 CABRAMATTA AVENUE, MILLER

LGA: LIVERPOOL		REFERENCE: 24484	
CLIENT: SGCH		DATE: 10.03.17	SHEET 1
SCALE (AT A1) 1:100	DATUM: AHD	SURVEYOR: MA	

Norton Survey Partners
SURVEYORS & LAND TITLE CONSULTANTS
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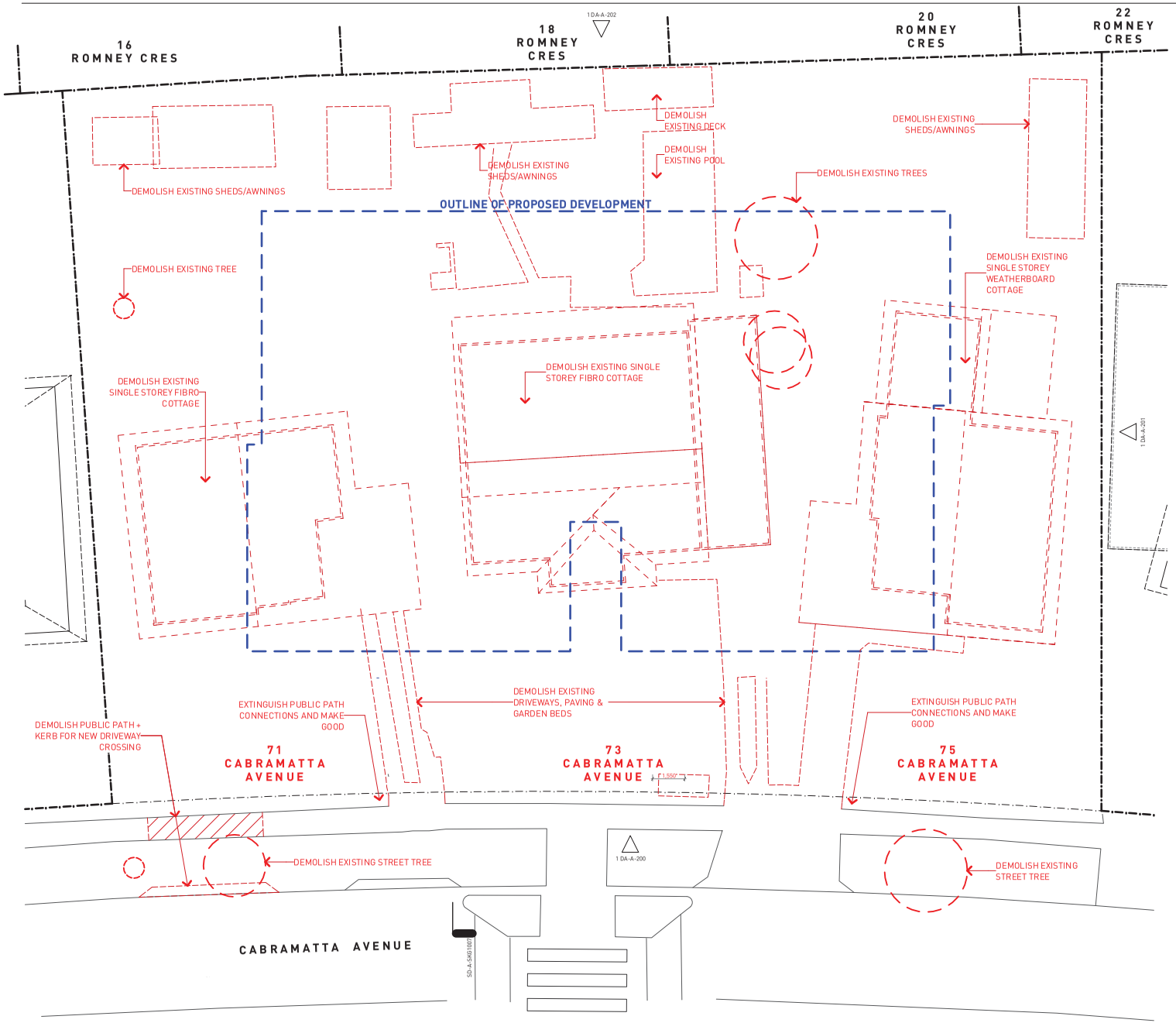


MILLER TECHNOLOGY HIGH SCHOOL

CONSTRUCTION MANAGEMENT

MATERIALS HANDLING
Materials handling and vehicle operations will comply with the Road Transport Act 1999 (NSW) which incorporates the Mass Loading and Access Regulation 1996 and Safety Traffic Management Road Rules Regulations 1999. All loads will be covered to minimise dust and prevent the transfer of sediment onto the roadway.

DILAPIDATION SURVEY
A dilapidation survey is to be undertaken to record the physical condition of any existing structure or situation that may be effected by the proposed development.

TRAFFIC MANAGEMENT PLAN
A traffic management plan to be prepared to meet council and RTA ("Traffic Control Worksite Manual") requirements, by a suitably qualified person (minimum red card' qualification).

WASTE MANAGEMENT
The proposed development will incorporate the waste minimisation principles of Avoid, Reduce, Reuse and Recycle, and conform with the Waste Avoidance and Recovery Act 2001. Specific bins for waste and recycling shall be provided on site.

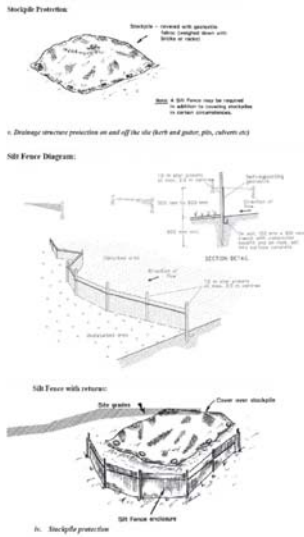
NOISE CONTROL
To reduce noise from construction and demolition sites, all activities should be carried out in accordance with the requirements of Australian Standard Guidelines AS2436-1981 "Guide to noise control on Construction Maintenance and Demolition sites."

OCCUPATIONAL HEALTH AND SAFETY
All site works must comply with the occupational health and safety requirements of the New South Wales Work Cover Authority.

TOILET FACILITIES
During excavation, demolition and construction phases, toilet facilities are to be provided on the site, at the rate of one toilet for every twenty (20) persons or part of twenty (20) persons employed at the site.

SOIL AND WATER MANAGEMENT

1. Minimise the area of soils exposed at any one time.
2. Conserve top soil.
3. Protect proposed stockpile locations. Use only nominated stockpile locations.
4. A durable sign, available from Council must be erected during the works in a prominent location on site, warning of penalties should appropriate measures required by the Soil and Water Management Plan not be maintained.
5. Prevent soil, sand and sediments leaving the site in an uncontrolled manner.
6. Control surface water flows through the site in a manner that:
   i)Diverts clean run-off around disturbed areas
   ii) Minimises slope gradient & flow distance within disturbed areas
   iii) Ensures surface run-off occurs at non-erodable velocities
   iv) Ensures disturbed areas are promptly rehabilitated.
7. Sediment and erosion control measures are to be in place before work commences.
8. Materials are not to be tracked onto the road by vehicles entering or leaving the site.
9. Specified drainage is to be implemented to protect and drain the site during works.



DEVELOPMENT APPLICATION

REV -. 14-11-2017

DEMOLITION & SITE MANAGEMENT PLAN

FOR DA

SGCH MILLER

ST GEORGE COMMUNITY HOUSING LTD

17_037 DA-A-050

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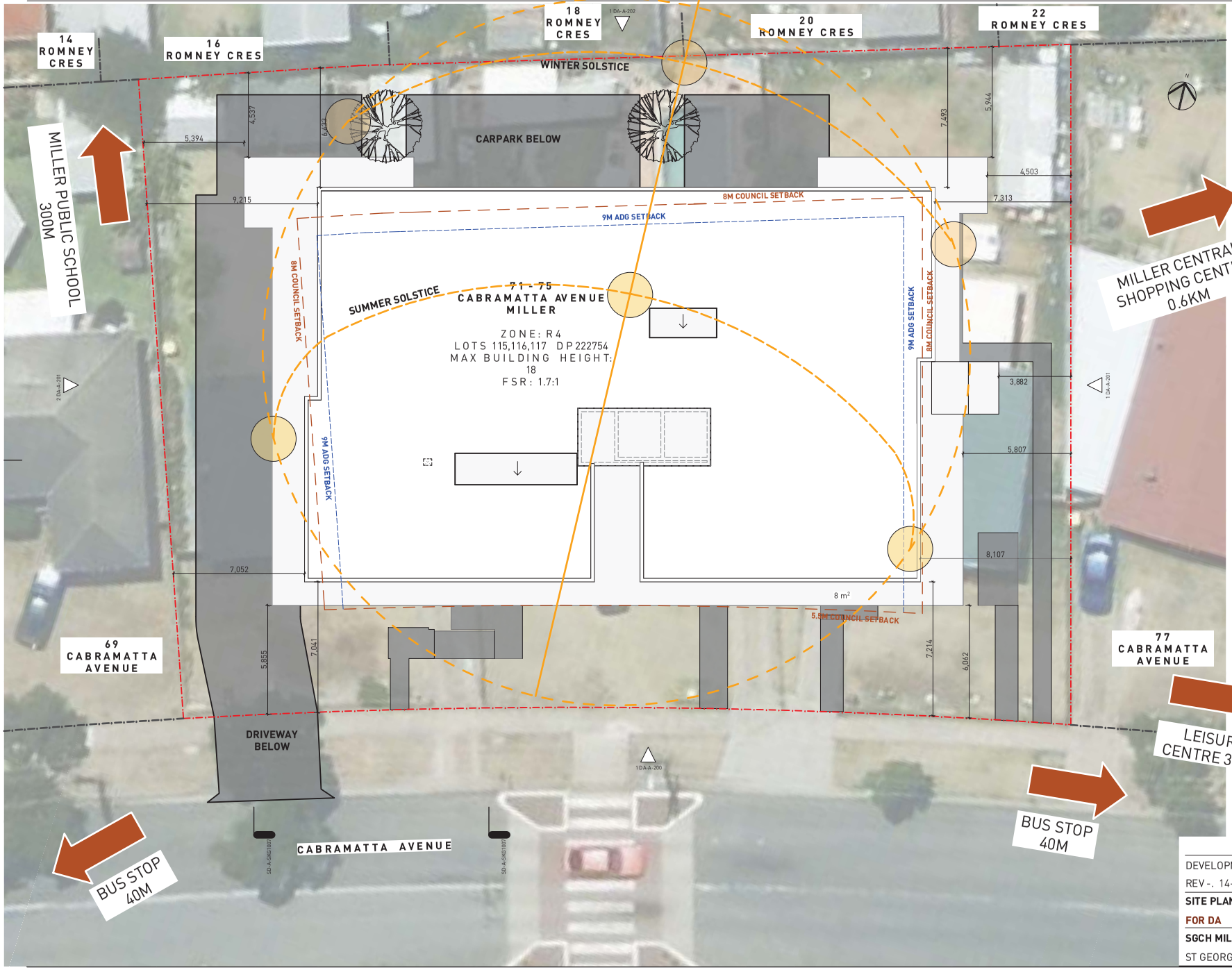
0 | | | | | | 10m - 1:200
5.0m - 1:100
2.5m - 1:50
1.25m - 1:25

ARCHITECTURE URBAN PLANNING
M1/147 McEvoy Street Alexandria NSW 2015
P 02 9516 2022 **E** email@smithtzannes.com.au
smithtzannes.com.au
Nominated Architect: Peter Smith (Reg 7024)

SMITH & TZANNES



LEGEND

AW	ALUMINIUM WINDOW
FB	FACE BRICK
MBAL	POWDERCOATED METAL MESH BALUSTRADE WITH CAP FIXED FRAMING
MC	PROFILED METAL CLADDING
MR	METAL ROOFING
PCON	PRECAST CONRETE
SCN	ALUMINIUM BATTEN SCREENING

MILLER HIGH SCHOOL

DEVELOPMENT APPLICATION

REV -. 14-11-2017

SITE PLAN

FOR DA

SGCH MILLER

ST GEORGE COMMUNITY HOUSING LTD

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0 10m - 1:200 5.0m - 1:100 2.5m - 1:50 1.25m - 1:25

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M1/147 McEvoy Street Alexandria NSW 2015
P 02 9516 2022 **E** email@smithtzannes.com.au
smithtzannes.com.au
Nominated Architect: Peter Smith (Reg 7024)
SMITH & TZANNES

Appendix 3: Plates

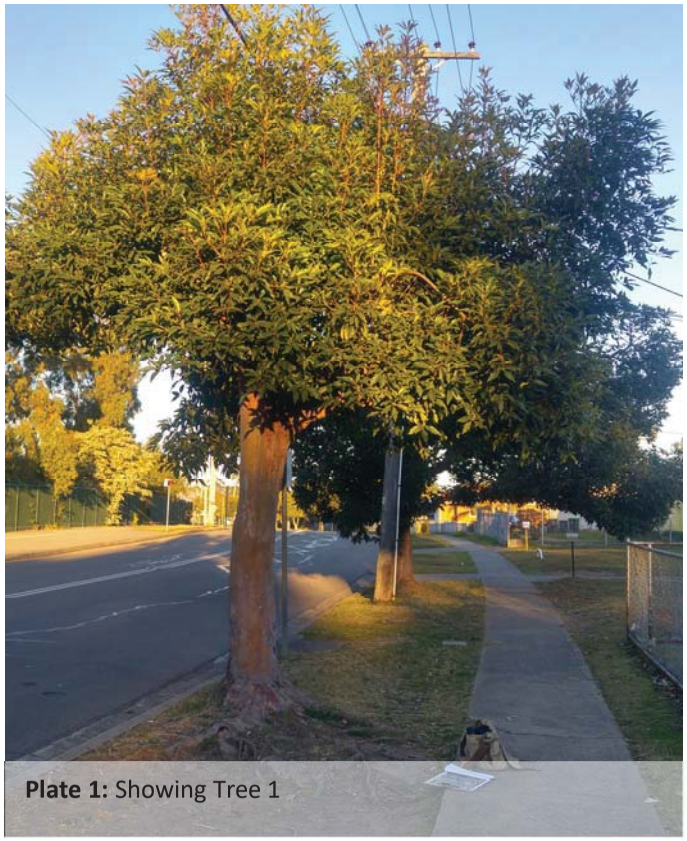

Plate 1: Showing Tree 1

Plate 2: Showing Tree 2

Plate 3: Showing Tree 3