Upgrades to Chatswood Public School and Chatswood High School

Appendix 11 - Arborist Report - Public School

SSD 9483
Prepared by Eco Logical Australia
For School Infrastructure NSW, Department of Education

Artists impression of upgrades to Chatswood Public School

Upgrades to Chatswood Public School - Arboricultural Impact Assessment

Architectus on behalf of Department of Education

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DOCUMENT TRACKING

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Template 2.8.1

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Abbreviations

Abbreviation	Description
AQF	Australian Qualifications Framework
AS	Australian Standards
DBH	Diameter at Breast Height
ELA	Eco Logical Australia
m	Metre
mm	Millimetre
NDE	Non-Destructive Excavation
NO	Number
NSW	New South Wales
SP	Species
SRZ	Structural Root Zone
TPZ	Tree Protection Zone
VTA	Visual Tree Assessment

1. Background

1.1 Proposed activity

Eco Logical Australia Pty Ltd (ELA) was engaged by Architectus on behalf of the Department of Education (DoE) to prepare an Arboricultural Impact Assessment (AIA) for the proposed Upgrades to the Chatswood Public School project. This report assesses trees on the Chatswood Public School site.

The Department of Education (DoE) propose to upgrade the teaching facilities of the Chatswood Public School (referred to as 'the development site'). This will include the redevelopment of the Chatswood Public School. The proposed redevelopment is a School Infrastructure (SI) project, which will be governed by the NSW Government Gateway Review Process and assessed as State Significant Development (SSD) (application SSD 18_9483) in accordance with both the State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 and NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The works will be carried out over multiple stages.

The key features of the proposed development that are likely to negatively affect the subject trees (trees within the study area) can be summarised as follows:

- excavation works
- plant movement
- changes in soil grades
- installation of underground services.

1.2 The study area

Chatswood Public School is located at 5 Centennial Avenue adjacent to the Pacific Highway at Chatswood. The total land area of the Chatswood Public School site is 1.34 ha (excluding the 'bush campus', situated on the Chatswood High School site). It is located within the local government area of Willoughby. The study area is mapped in Figure 1.

1.3 Purpose of report

The purpose of this report is to:

- identify the trees within the study area that are likely to be affected by the proposed works
- assess the current overall health and condition of the subject trees
- evaluate the retention value of the subject trees
- determine the likely impact to the subject trees.

Figure 1: Development site location

2. Method

2.1 Definitions used in this assessment

2.1.1 Definition of a tree

Willoughby City Council (2012) defines a tree as having:

"a height exceeding 4 metres or; a trunk girth (circumference) exceeding 600 millimetres measured at 1.2 metres above ground level or exceeding 3 metres"

2.1.2 Tree protection zone (TPZ)

The TPZ is the combination of crown and root area (as defined by AS 4970-2009) that requires restriction of access during the construction process. Tree sensitive construction measures must be implemented if works are to proceed within the Tree Protection Zone.

2.1.3 Structural root zone (SRZ)

The SRZ is the area of the root system (as defined by AS 4970-2009) used for stability, mechanical support and anchorage of the tree. It is critical for the support and stability of trees. Severance of roots within the SRZ is not recommended as it may lead to the destabilisation and/or decline of the tree.

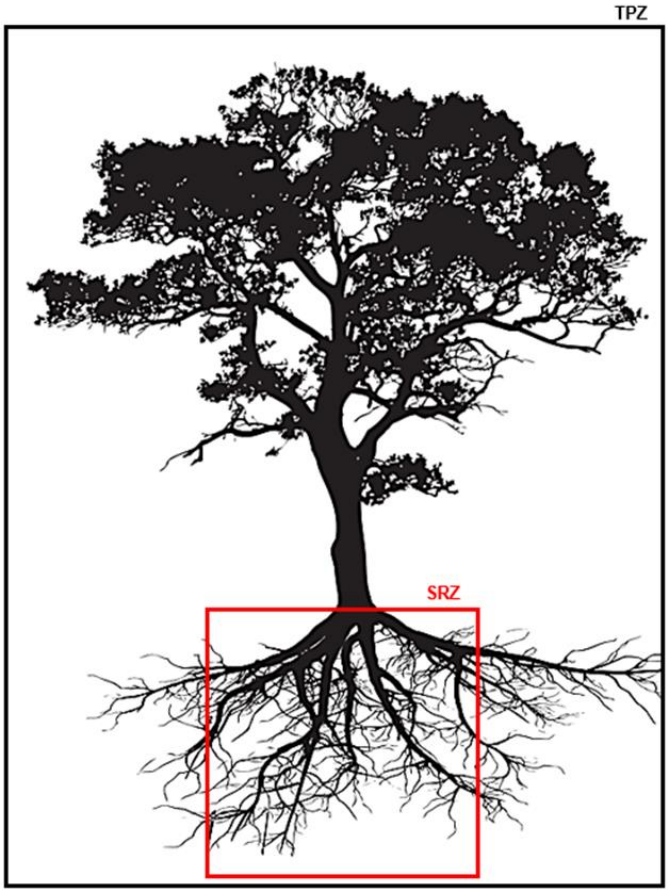

Figure 2: Indicative TPZ and SRZ

2.2 Tree assessment

The health and structure of the subject trees was assessed in accordance with a stage one visual tree assessment (VTA) as formulated by Mattheck and Breloer (1994), and practices consistent with modern arboriculture. Measurements to determine the tree protection zone were carried out in accordance with Clause 3.2 and 3.3.5 of AS4970-2000 Protection of Trees on Development Sites (Standards Australia 2009).

A total of **61 trees** were inspected in February 2020 by AQF Level 5 Consulting Arborist, David Bidwell. This updates an assessment done in 2018 by AQF 5 Consulting Arborist Elizabeth Hannon.

The following applies to this methodology:

- Trees were inspected from ground level, without the use of any invasive or diagnostic tools and testing. Trees that met the definition of a tree in Willoughby Council's guidelines (WLEP 2012 and WDCP C9)
- No aerial inspections or root mapping was undertaken.
- Tree heights were determined using a clinometer 15 m from the base of the tree
- Canopy spread was determined using a measured stride out on site.
- The diameter at breast height (DBH) was measured by placing a diameter tape around the trunk of the tree at 1.4 m above ground and recording the measurement. The DBH measurements were used to determine the area for the tree protection zone (which also incorporates the structural root zone).
- The structural root zone (SRZ) was calculated by an estimated measurement of the trunk diameter taken above the root buttress
- Tree identification to species level was based on broad taxonomical features present and visible from ground level at the time of inspection.
- Previously assessed trees 54, 55, 56 and 57 were not found on site and are therefore not included in this report.

2.3 Retention value

The retention value/importance of a tree or group of trees is determined using a combination of environmental, cultural, physical and social values. This tree retention assessment has been undertaken in accordance with the Institute of Australian Consulting Arboriculturists (IACA) *Significance of a Tree, Assessment Rating System (STARS©)*. The following categories were used:

- Low: These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
- Medium: These trees are moderately important for retention. Their removal should only be considered if adversely affected by the proposed works and all other alternatives have been considered and exhausted.
- High: These trees are considered important and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by Australian Standard AS4970 - Protection of trees on development sites.

Further details and assessment criteria are in Appendix A.

2.4 Potential impacts

Trees may be impacted by cutting or damaging roots or branches. Impacts to the tree protection zones are determined by the percentage of the area that the development incurs into the tree protection zone. The following are the definition of these impacts:

- High impact: The SRZ may be impacted if the proposed encroachment is greater than 20 % of the TPZ. Trees may not remain viable if they are subject to high impact.
- Medium impact: If the proposed encroachment is greater than 10% of the TPZ and outside of the SRZ, the project arborist may require detailed root investigation to demonstrate that the tree(s) would remain viable.
- Low impact: If the proposed encroachment is less than 10% (total area) of the TPZ, and outside of the SRZ, detailed root investigations should not be required.
- No impact: No likely or foreseeable encroachment within the TPZ.

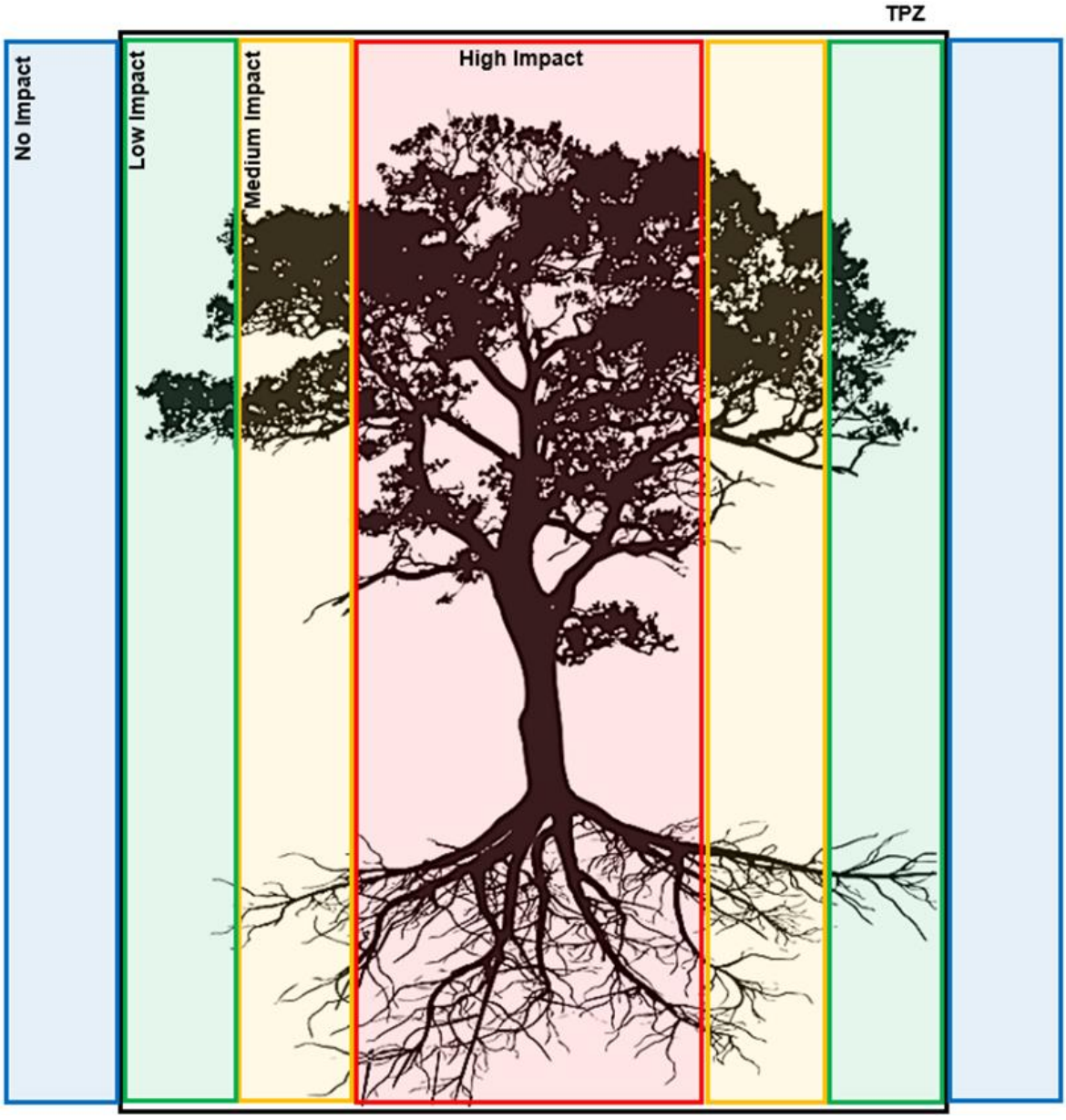

Figure 3: Indicative zones of impact

2.5 Proposed action

The proposed actions to either retain or remove each tree are determined by the impact from the proposed design footprint, conversations of intent with the client and corresponding mitigation measures. The following are the definition of these actions:

- **Remove:** Trees that are to be impacted by the proposed development to the extent whereby retention is not suitable and / or not compatible if the current plans are approved. All tree removal must comply with guidelines specified in section 4 of this report and subject to regulatory approval.
- **Retain:** Trees that are suitable for retention granted they follow the specific mitigation measures discussed in section 3 and / or the tree protection measures outlined in section 4 and / or the tree protection guidelines outlined in Appendix B.

3. Results and discussion

Results of the arboricultural impact assessment are mapped in Appendix C and tabulated in Appendix D. Tree locations and retention values are mapped in Appendix C. A summary of the arboricultural impact assessment is outlined in Table 1 below.

Table 1: Summary of tree impacts and their retention values

Retention value	High Impact	Medium Impact	Low Impact	No Impact	Total
Priority for retention (High)		2			**2**
Consider for retention (Medium)	28	3	3	7	**41**
Consider for removal (Low)	11		3	4	**18**
Total	**39**	**5**	**6**	**11**	**61**

3.1 Trees to be retained

A total of 23 trees have been identified for retention.

- Trees 1- 3, 23, 24 – 30, 32, 34, 45, – 51, 53, 63 and 65

Any construction works occurring within the TPZ of trees to be retained must be in consultation and under the supervision of an AQF Level 5 Consulting Arborist. Further information on these trees is outlined in Appendix D. All tree protection measures must comply with section 4 and Appendix B of this report.

To ensure the retention of tree 34 is viable the tree need to undergo a Tree Risk Assessment by an AQF Level 5 consulting arborist prior to construction commencing. This is outlined as a hold point in section 4.

Tree 46 should be protected using standard tree protection methods. Care should be taken within the TPZ on the north side of the tree and excavations should be carried out by hand. This stage is as a hold point in section 4 and the project arborist should be present.

3.2 Trees proposed for removal under the current footprint

A total of 38 trees have been identified for removal. The following trees are recommended for removal based on the proposed footprint and conversations of intent with the client:

- Trees 4 – 22, 31, 33, 35– 44, 52, 58 – 62, and 64

All tree pruning and removal should be carried out in accordance with section 4.

4. Tree protection plan

Following the approval of a proposed building envelope, the following measures are to be implemented to protect trees to be retained:

4.1 Tree pruning and removal

- All tree work is to be carried out by an arborist with a minimum AQF Level 3 qualification in Arboriculture.
- All tree work must be in accordance with *Australian Standard AS 4373-2007, Pruning of Amenity Trees* and the *NSW WorkCover Code of Practice for the Amenity Tree Industry* (1998).
- Permission must be granted from the relevant consent authority prior to removing or pruning of any of the subject trees.

4.2 Tree protection measures

Encroachment within the TPZ must be offset with a range of mitigation measures to ensure that impacts to the subject tree(s) are reduced or restricted wherever possible. Mitigation must be increased relative to the level of encroachment within the TPZ to ensure the subject tree remains viable. Table 2 outlines mitigation requirements under AS 4970-2009 within each category of encroachment. Tree protection measures should be implemented by the contractor and would include:

- Tree protection fencing must be established around the perimeter of the TPZ (Table 2). If the protective fencing requires temporary removal, trunk, branch and ground protection must be installed and must comply with *AS 4970-2009 - Protection of trees on development sites*. Existing fencing and site hoarding may be used as tree protection fencing.
- If temporary access for machinery is required within the TPZ, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Ground protection may include a permeable membrane such as geotextile fabric beneath a layer of mulch, crushed rock or rumble boards.
- Any additional construction activities within the TPZ of the subject trees must be assessed and approved by an AQF Level 5 Consulting Arborist and must comply with *AS 4970-2009 - Protection of trees on development sites*.

Further information and guidelines on tree protection are in **Appendix B**.

4.3 Hold points, inspection and certification

A copy of this report must be available on-site prior to the commencement of works, and throughout the entirety of the project. Hold points have been specified in the schedule of works below to ensure trees are adequately protected during construction. It is the responsibility of the principal contractor to complete each of the tasks.

- Pre-construction
    - A Tree Risk Assessment to be completed on tree 34 to ensure retention is viable.

  - The methodology of construction works around Trees 1, 45 and 63 will need to be in consultation with the project arborist (AQF Level 5 consulting arborist) to ensure retention is viable.
  - Indicate clearly (with spray paint on trunks) trees marked for removal.
- During construction
  - Any construction works occurring within the TPZ of trees to be retained must be in consultation and under the supervision of an AQF Level 5 Consulting Arborist.
  - Tree 46 should be protected using standard tree protection methods. Particular care should be taken within the TPZ on the north side of the tree and excavation should be carried out by hand. An AQF Level 5 Consulting Arborist needs to be present to oversee these works.
  - Monthly inspection of trees by the project arborist (or other timing as agreed with the project arborist)
  - Notification to be given prior to the commencement of work within the tree protection zone, with supervision by the project arborist of any work undertaken in this zone.
- Post-construction
  - Final inspection of trees by project arborist after all major construction has ceased and following the removal of tree protection measures.

Once each stage is reached, the work will be inspected and certified by the project arborist and the next stage may commence. Alterations to this schedule may be required due to necessity, however, this shall be through consultation with the project arborist only.

4.4 Replacement planting

Any loss of trees should be offset with replacement planting in accordance with the relevant offset policy and in consultation with Willoughby City Council.

Table 2: Mitigation measures

Impact	Requirements under AS 4970-2009	Mitigation (design phase)	Mitigation (construction phase)
Low impact (<10%)	The area lost to this encroachment should be compensated for elsewhere, contiguous with the TPZ. Detailed root investigations should not be required.	N/A	The area lost to this encroachment should be compensated for elsewhere, contiguous with the TPZ. Tree protection must be installed.
Medium impact (<20%)	The project arborist must demonstrate the tree(s) would remain viable. Root investigation by non-destructive methods may be required. Consideration of relevant factors including: Root location and distribution, tree species, condition, site constraints and design factors.	The following design changes should be considered to retain trees where practicable, considering the retention value of the tree and the complexity and cost of the change. Relocate services/pathways outside of tree protection zones Design services to be installed at a minimum depth of 1200mm below ground to avoid impact to the root zones of trees. Design pathways to be installed on or above grade, minimising/eliminating excavation within tree protection zones. Design pathways using porous materials (eco-paving, porous asphalt, decomposed granite) to allow water and oxygen to reach the root zone. Design pathways using tree sensitive techniques (pier and beam, suspended slabs). The area lost to this encroachment should be compensated for elsewhere, contiguous with the TPZ.	The area lost to this encroachment should be compensated for elsewhere, contiguous with the TPZ. The project arborist would be consulted for any works within the TPZ. Tree protection must be installed. Tree sensitive techniques can be used to install services within the TPZ. Horizontal directional drilling (HDD), boring, non-destructive excavation (NDE). Location and distribution of roots may be determined through non-destructive excavation (NDE) methods such as hydro-vacuum excavation (sucker truck), air spade and manual excavation.

High impact (>20%)	The project arborist must demonstrate the tree(s) would remain viable. Root investigation by non-destructive methods may be required. Consideration of relevant factors including: Root location and distribution, tree species, condition, site constraints and design factors. The area lost to this encroachment should be compensated for elsewhere, contiguous with the TPZ.	Relocate services/pathways outside of tree protection zones Design services to be installed at a minimum depth of 1200mm below ground to avoid impact to the root zones of trees. Design pathways to be installed on or above grade, minimising/eliminating excavation within tree protection zones. Design pathways using porous materials (eco-paving, porous asphalt, decomposed granite) to allow water and oxygen to reach the root zone. Design pathway using tree sensitive techniques (pier and beam, suspended slabs). The area lost to this encroachment should be compensated for elsewhere, contiguous with the TPZ.	As above Removal of existing hard surfaces should be undertaken manually to avoid root damage. Tree sensitive techniques can be used to install the services: Horizontal directional drilling (HDD), boring, non-destructive excavation (NDE).

5. References

5.1 General references

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Robinson L, 2003. *Field Guide to the Native Plants of Sydney*, 3rd ed, Kangaroo Press, East Roseville NSW

Standards Australia 2007. *Australian Standard: Pruning of amenity trees, AS 4373 (2007)*, Standards Australia, Sydney.

Standards Australia 2009. *Australian Standard: Protection of trees on development sites, AS 4970 (2009).* Standards Australia, Sydney.

5.2 Project specific references

Architectus, *Pacific Highway Site, Site Plan Proposed (Final), Drawing No. SD-BX-A0012*, no date

CMS Surveyors Pty Limited, *Survey Plan showing Detail & Levels over Lot 1 in DP 812207 & Lot C in DP346499 Chatswood Primary School 5 Centennial Avenue Chatswood NSW 2067 Revision 2* dated 21/01/19

City of Sydney Council *Sydney Development Control Plan 2012 Section 3 – General Provisions*

Appendix A Tree retention assessment method

A1 Tree Significance Assessment Criteria - STARS©

Low	Medium	High
The tree is in fair-poor condition and good or low vigour.	The tree is in fair to good condition	The tree is in good condition and good vigour
The tree has form atypical of the species	The tree has form typical or atypical of the species	The tree has a form typical for the species
The tree is not visible or is partly visible from the surrounding properties or obstructed by other vegetation or buildings	The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area	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 provides a minor contribution or has a negative impact on the visual character and amenity of 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 is listed as a heritage item, threatened species or part of an endangered ecological community or listed on Council's significant tree register
The tree is a young specimen which may or may not have reached dimensions to be protected by local Tree Preservation Orders or similar protection mechanisms and can easily be replaced with a suitable specimen	The tree provides a fair contribution to the visual character and amenity of the local area	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'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's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ	The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values.
The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms		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.
The tree has a wound or defect that has the potential to become structurally unsound.		
The tree is an environmental pest species due to its invasiveness or poisonous/allergenic properties.		
The tree is a declared noxious weed by legislation		

A2 Matrix assessment

		Tree significance				
		High	Medium	Low		
Useful Life Expectancy	Long >40 years					
	Medium 15-40 years					
	Short <1-15 years					
	Dead					

Legend:

	Priority for retention (High): Tree considered important so should be retained and protected. Design modification or re-location of structure should be considered to accommodate the setbacks as prescribed by the *Australian Standard AS4970 Protection of trees on development sites*. Tree sensitive construction measures must be implemented if works are to proceed within the Tree Protection Zone.
	Consider for retention (Medium): Tree considered less important, however**,** retention should remain priority. Removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for removal (Low): Tree not considered important for retention, nor requiring special works or design modification to be implemented for their retention.
	Consider for removal (Low): Tree not considered important for retention, nor requiring special works or design modification to be implemented for their retention.

Appendix B Tree protection guidelines

The following tree protection guidelines must be implemented during the construction period if no tree-specific recommendations are detailed.

B1 Tree protection fencing

The TPZ is a restricted area delineated by protective fencing or the use of an existing structure (such as a wall or fence).

Trees that are to be retained must have protective fencing erected around the TPZ (or as specified in the body of the report) to protect and isolate it from the construction works. Fencing must comply with the Australian Standard, AS 4687-2007, Temporary fencing and hoardings.

Tree protection fencing must be installed prior to site establishment and remain intact until completion of works. Once erected, protective fencing must not be removed or altered without the approval of the project arborist.

If the protective fencing requires temporary removal, trunk, branch and ground protection must be installed and must comply with AS 4970-2009, Protection of Trees on Development Sites.

Tree protection fencing shall be:

- Enclosed to the full extent of the TPZ (or as specified in the Recommendations and Tree Protection Plan).
- Cyclone chain wire link fence or similar, with lockable access gates.
- Certified and Inspected by the Project Arborist.
- Installed prior to the commencement of works.
- Prominently signposted with 300mm x 450mm boards stating “NO ACCESS - TREE PROTECTION ZONE”.

B2 Crown protection

Tree crowns/canopy may be injured or damaged by machinery such as; excavators, drilling rigs, trucks, cranes, plant and vehicles. Where crown protection is required, it will usually be located at least one meter outside the perimeter of the crown.

Crown protection may include the installation of a physical barrier, pruning selected branches to establish clearance, or the tying/bracing of branches.

B3 Trunk protection

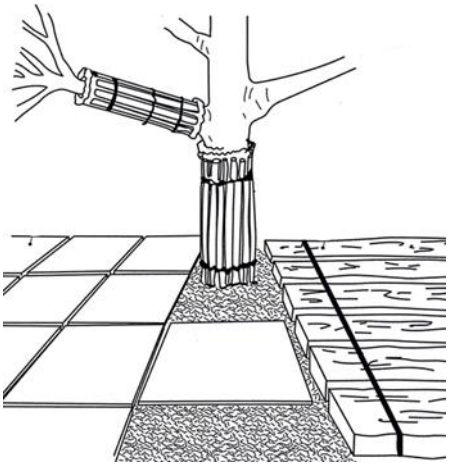
Where provision of tree protection fencing is impractical or must be temporarily removed, truck protection shall be installed for the nominated trees to avoid accidental mechanical damage.

The removal of bark or branches allows the potential ingress of micro-organisms which may cause decay. Furthermore, the removal of bark restricts the trees’ ability to distribute water, mineral ions (solutes), and glucose.

Trunk protection shall consist of a layer of either carpet underfelt, geotextile fabric or similar wrapped around the trunk, followed by 1.8 m lengths of softwood timbers aligned vertically and spaced evenly around the trunk (with an approx. 50 mm gap between the timbers).

The timbers must be secured using galvanised hoop strap (aluminium strapping). The timbers shall be wrapped around the trunk but not fixed to the tree, as this will cause injury/damage to the tree.

Tree protection fencing



Trunk protection fencing

B4 Ground protection

Tree roots are essential for the uptake/absorption of water, oxygen and mineral ions (solutes). It is essential to prevent the disturbance of the soil beneath the dripline and within the TPZ of trees that are to be retained. Soil compaction within the TPZ will adversely affect the ability of roots to function correctly.

If temporary access for machinery is required within the TPZ ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Ground protection may include a permeable membrane such as geotextile fabric beneath a layer of mulch, crushed rock or rumble boards.

If the grade is to be raised within the TPZ, the material should be coarser or more porous than the underlying material.

B5 Root protection and investigation

If incursions/excavation within the TPZ are unavoidable, root investigation may be needed to determine the extent and location of roots within the area of construction activity. The location and distribution of roots are found through non-destructive excavation (NDE) methods such as hydro-vacuum excavation (sucker truck), air spade and manual excavation. Root investigation does not guarantee the retention of the tree.

If the project arborist identifies conflicting roots that requiring pruning, they must be pruned with a sharp implement such as; secateurs, pruners, handsaws or a chainsaw back to undamaged tissue. The final cut must be a clean cut.

B6 Underground services

All underground services should be routed outside of the TPZ. If underground services need to be installed within the TPZ, they should be installed using horizontal directional drilling (HDD). The horizontal drilling/boring must be at minimum depth of 600 mm below grade. Trenching for services is to be regarded as “excavation”.

Appendix C Maps

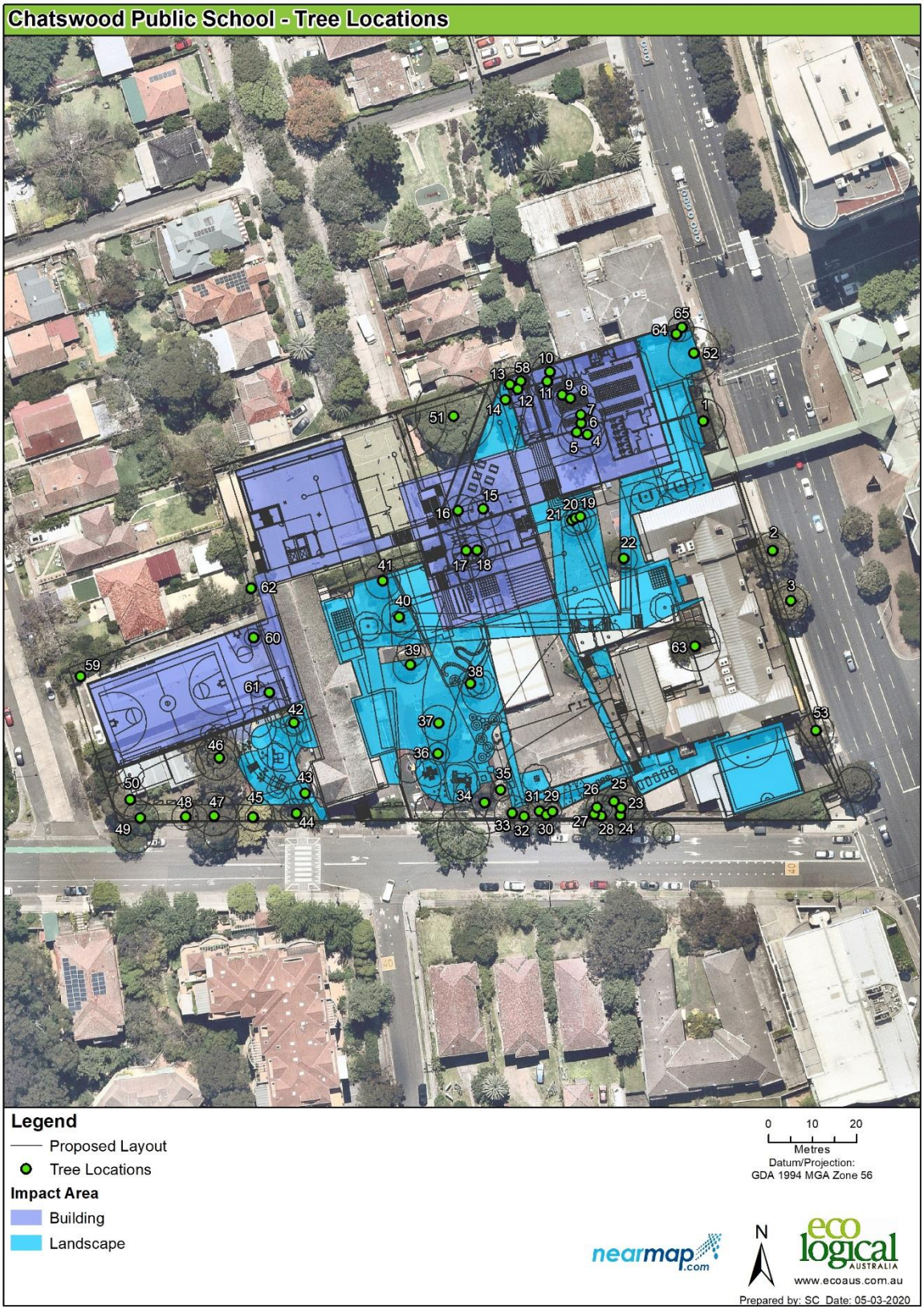


Figure 4: Tree locations of the subject trees within the development site

Figure 5: Retention values of the subject trees within the development site

Figure 6: Arboricultural impact assessment of the subject trees

Appendix D Tabulated arboricultural impact assessment

Tree	Botanical Name	Height (m)	Spread (m)	DHB (mm)	Health	Structure	Retention Value	TPZ (mm)	SRZ (mm)	Impacts	Notes	Proposed action
1	*Eucalyptus punctata*	16	10	400	Fair	Fair	**Medium**	4.8	2.3	High Impact: >20%	Twin stemmed	**Retain as per section 3/4**
2	*Eucalyptus microcorys*	18	12	430	Fair	Fair	**Medium**	5.2	2.3	No Impact: 0%	Street tree	**Retain**
3	*Eucalyptus microcorys*	18	11	400	Fair	Fair	**Medium**	4.8	2.3	No Impact: 0%	Street tree	**Retain**
4	*Casuarina cunninghamiana*	7	5	280	Fair	Fair	**Medium**	3.4	1.9	High Impact: >20%	Leaning	**Remove**
5	*Casuarina cunninghamiana*	18	10	480	Fair	Fair	**Medium**	5.8	2.4	High Impact: >20%		**Remove**
6	*Casuarina cunninghamiana*	19	10	400	Fair	Fair	**Medium**	4.8	2.3	High Impact: >20%		**Remove**
7	*Eucalyptus saligna*	18	10	350	Fair	Fair	**Medium**	4.2	2.1	High Impact: >20%	Leaning	**Remove**
8	*Casuarina cunninghamiana*	20	10	380	Fair	Fair	**Medium**	4.6	2.2	High Impact: >20%		**Remove**
9	*Casuarina cunninghamiana*	18	5	300	Fair	Fair	**Medium**	3.6	2.0	High Impact: >20%		**Remove**
10	*Casuarina cunninghamiana*	22	10	500	Fair	Fair	**Medium**	6.0	2.5	High Impact: >20%		**Remove**
11	*Casuarina cunninghamiana*	20	10	400	Fair	Fair	**Medium**	4.8	2.3	High Impact: >20%		**Remove**
12	*Casuarina cunninghamiana*	22	10	480	Fair	Fair	**Medium**	5.8	2.4	High Impact: >20%		**Remove**
13	*Casuarina cunninghamiana*	24	10	500	Fair	Fair	**Medium**	6.0	2.5	High Impact: >20%		**Remove**
14	*Eucalyptus sp.*	20	7	480	Fair	Poor	**Medium**	5.8	2.4	High Impact: >20%	Basal wound, leaning	**Remove**
15	*Casuarina cunninghamiana*	24	15	800	Fair	Fair	**Medium**	9.6	3.0	High Impact: >20%		**Remove**
16	*Casuarina cunninghamiana*	12	10	320	Fair	Fair	**Medium**	3.8	2.1	High Impact: >20%		**Remove**
17	*Casuarina cunninghamiana*	18	12	480	Fair	Fair	**Medium**	5.8	2.4	High Impact: >20%		**Remove**
18	*Casuarina cunninghamiana*	20	10	600	Fair	Fair	**Medium**	7.2	2.7	High Impact: >20%		**Remove**
19	*Callistemon viminalis*	5	5	200	Fair	Fair	**Low**	2.4	1.7	High Impact: >20%		**Remove**
20	*Callistemon viminalis*	6	5	200	Fair	Fair	**Low**	2.4	1.7	High Impact: >20%		**Remove**
21	*Brachychiton acerifolius*	7	5	300	Fair	Fair	**Low**	3.6	2.0	High Impact: >20%	Bifurcation	**Remove**

Tree	Botanical Name	Height (m)	Spread (m)	DHB (mm)	Health	Structure	Retention Value	TPZ (mm)	SRZ (mm)	Impacts	Notes	Proposed action
22	*Leptospermum petersonii*	5	8	300	Fair	Fair	**Medium**	3.6	2.0	High Impact: >20%		**Remove**
23	*Casuarina cunninghamiana*	25	12	480	Fair	Good	**Medium**	5.8	2.4	Low Impact: <10%		**Retain**
24	*Casuarina cunninghamiana*	22	10	490	Fair	Good	**Medium**	5.9	2.5	Low Impact: <10%		**Retain**
25	*Casuarina cunninghamiana*	18	10	470	Fair	Fair	**Medium**	5.6	2.4	Medium Impact: <20%		**Retain**
26	*Casuarina cunninghamiana*	11	5	300	Poor	Fair	**Medium**	3.6	2.0	Low Impact: <10%		**Retain**
27	*Casuarina cunninghamiana*	10	4	230	Fair	Fair	**Low**	2.8	1.8	No Impact: 0%		**Retain**
28	*Casuarina cunninghamiana*	12	8	320	Fair	Fair	**Medium**	3.8	2.1	No Impact: 0%		**Retain**
29	*Casuarina cunninghamiana*	15	4	240	Poor	Fair	**Low**	2.9	1.8	Low Impact: <10%		**Retain**
30	*Casuarina cunninghamiana*	9	3	150	Poor	Fair	**Low**	2.0	1.5	No Impact: 0%		**Retain**
31	*Casuarina cunninghamiana*	16	10	330	Poor	Fair	**Medium**	4.0	2.1	Medium Impact: <20%		**Remove**
32	*Casuarina cunninghamiana*	12	6	290	Fair	Fair	**Low**	3.5	2.0	Low Impact: <10%	Basal wound, decay	**Retain**
33	*Eucalyptus sp.*	17	11	510	Fair	Fair	**Medium**	6.1	2.5	High Impact: >20%	Leaning	**Remove**
34	*Eucalyptus sp.*	18	13	650	Fair	Fair	**Medium**	7.8	2.8	High Impact: >20%	Leaning	**Retain**
35	*Eucalyptus sp.*	12	8	380	Poor	Poor	**Low**	4.6	2.2	High Impact: >20%	Leaning	**Remove**
36	*Waterhousea floribunda*	10	6	260	Good	Fair	**Medium**	3.1	1.9	High Impact: >20%	Bifurcation	**Remove**
37	*Lophostemon confertus*	18	10	550	Fair	Fair	**Medium**	6.6	2.6	High Impact: >20%	Wounds on trunk	**Remove**
38	*Ficus rubiginosa*	5	6	300	Fair	Fair	**Medium**	3.6	2.0	High Impact: >20%	Basal wound	**Remove**
39	*Elaeocarpus eumundii*	5	6	250	Good	Fair	**Medium**	3.0	1.8	High Impact: >20%	Multi trunked	**Remove**
40	*Waterhousea floribunda*	8	8	300	Fair	Poor	**Low**	3.6	2.0	High Impact: >20%	Active split	**Remove**
41	*Eucalyptus sp.*	12	6	309	Fair	Fair	**Medium**	3.7	2.0	High Impact: >20%	Possibly E. propinqua	**Remove**
42	*Pittosporum undulatum*	11	9	419	Good	Fair	**Medium**	5.0	2.3	High Impact: >20%	Twin stems	**Remove**
43	*Melaleuca quinquenervia*	12	6	350	Fair	Fair	**Medium**	4.2	2.1	High Impact: >20%		**Remove**
44	*Leptospermum petersonii*	6	4	130	Poor	Fair	**Low**	2.0	1.5	High Impact: >20%		**Remove due to regrading**

Tree	Botanical Name	Height (m)	Spread (m)	DHB (mm)	Health	Structure	Retention Value	TPZ (mm)	SRZ (mm)	Impacts	Notes	Proposed action
												as per section 3/4
45	*Cupressus sp.*	12	12	900	Fair	Fair	**Medium**	10.8	3.2	Medium Impact: <20%		Retain as per section 3/4
46	*Corymbia citriodora*	24	18	600	Good	Fair	**High**	7.2	2.7	Medium Impact: <20%		Retain as per section 3
47	*Eucalyptus saligna Xbotryoides*	16	15	460	Fair	Fair	**Medium**	5.5	2.4	No Impact: 0%		Retain
48	*Eucalyptus robusta*	8	5	260	Poor	Poor	**Low**	3.1	1.9	No Impact: 0%	Previously identified as *Acacia sp*	Retain
49	*Arbutus unedo*	8	7	400	Good	Fair	**Medium**	4.8	2.3	No Impact: 0%		Retain
50	*Eucalyptus nicholii*	7	1	650	Poor	Poor	**Low**	7.8	2.8	Low Impact: <10%	Top of tree failed in storms February 2020	Retain
51	*Lophostemon confertus*	18	15	909	Good	Fair	**High**	10.9	3.2	Medium Impact: <20%		Retain as per section 3/4
52	*Eucalyptus robusta*	15	12	700	Fair	Fair	**Medium**	8.4	2.8	High Impact: >20%	Large pruning wound on trunk	Remove
53	*Corymbia citriodora*	16	10	300	Fair	Good	**Medium**	3.6	2.0	No Impact: 0%		Retain
58	*Casuarina cunninghamiana*	7	4	150	Fair	Fair	**Low**	2.0	1.5	High Impact: >20%		Remove
59	*Pittosporum undulatum*	5	5	300	Fair	Fair	**Low**	3.6	2.0	Low Impact: <10%		Remove due to bike parking as per section 3/4
60	*Callistemon salignus*	6	5	200	Fair	Fair	**Low**	2.4	1.7	High Impact: >20%		Remove
61	*Callistemon salignus*	8	3	130	Fair	Fair	**Low**	2.0	1.5	High Impact: >20%		Remove
62	*Olea africana*	6	5	169	Good	Fair	**Low**	2.0	1.6	High Impact: >20%		Remove
63	*Olea africana*	10	10	429	Fair	Fair	**Medium**	5.1	2.3	No Impact: 0%		Retain
64	*Harpephyllum caffrum*	6	3	160	Fair	Fair	**Low**	2.0	1.5	High Impact: >20%		Remove
65	*Melaleuca quinquenervia*	8	5	250	Fair	Fair	**Medium**	3.0	1.8	High Impact: >20%		Retain

Tree	Botanical Name	Height (m)	Spread (m)	DHB (mm)	Health	Structure	Retention Value	TPZ (mm)	SRZ (mm)	Impacts	Notes	Proposed action
												as per section 3/4

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