



# 93-107 Cecil Ave & 9-10 Roger Ave CASTLE HILL NSW 2154

Arboriculture Impact Assessment (AIA)

Client: Alton Property Group

Submission Date: 11/11/24



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# 1 Quality Information

Document: 93-107 Cecil Ave & 9-10 Roger Ave CASTLE HILL NSW 2154

Arboriculture Impact Assessment

Date: 11/11/24
Prepared by: Nick Nelson
Reviewed by: Travis Wyper

Table 1, Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
1	6/11/24	First Draft	Nick Nelson, Consultant Arborist	4
2	08/11/24	Revisions/Clarifications	Travis Wyper, Director Xylem TreeCare & Consultant Arborist	
3	11/11/24	Revisions/Clarifications	Nick Nelson, Consultant Arborist	9

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- Xylem TreeCare's instructions as to the Purpose of the Report.
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- The use by the Client of the Report.
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The client's receipt of the report, information, or other material in relation to the report is an express acknowledgment and acceptance of the foregoing.

# **3 Executive Summary**

93-107 Cecil Ave & 9-10 Roger Ave Arboricultural Impact Assessment (Report) relates to a total of one hundred and twenty nine trees (129) trees located within the grounds of the existing private residences and business premises at 93-107 Cecil Ave & 9-10 Roger Ave CASTLE HILL NSW 2154. Alton Property Group (referred to as the Client) has identified the subject site as having trees that could potentially be affected by the proposed demolition of the existing dwellings and construction of the new mixed use residential development. The client is applying to the NSW State Government under a State Significant Development Application (SSDA) to undertake the planned development. None of the subject trees were found to be covered under existing heritage orders or had any specific ecological status.

As part of the project scope, Xylem TreeCare are to determine trees which are negatively impacted by the proposed works to the extent that they will need to be removed in order for the works required to be undertaken. One hundred and seven (107) of the trees inspected will require removal due to either being within the footprint of the works or due to an unacceptable level of encroachment. Twenty-two (22) trees can be retained as either not affected by the works or as result of an acceptable level of encroachment. Only trees of 6m in height or greater have been included in this report as trees less than 6m in height are not protected under the Hills Local Environment Plan, Clause 5.9. Tree species that were found to be exempt from the requirement for permission from the Hills Shire Council were not included in the survey except where they were found to provide amenity to the existing treescape.

# 4 Purpose

The purpose of this report is to undertake a review of the existing trees within the subject area to identify those trees which will need to be removed to undertake the required construction and provide recommendations for minimising the impact of the proposed development on the existing tree population that is to be retained.

The report has been requested by the client in order to support and address the requirements of the State Significant Development Application for the 93-107 Cecil Ave & 9-10 Roger Ave CASTLE HILL NSW 2154 site.

The report findings and recommendations are based on the information and guidance contained within Australian Standard AS 4970-2009: *Protection of Trees on Development Sites*.

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# 4.1 Project Requirements

Undertake an audit of all trees within the subject area.

- Provide information on the current condition of each tree.
- Provide general information i.e. Botanical name and dimensions i.e. height, canopy spread and DBH.
- Calculate the Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) of individual trees.

Review the proposed plans and where possible make recommendations for adjusting the works based on the proximity to individual trees within the subject area.

- Create an Arboricultural Impact Assessment Report outlining the following items:
  - Provide the current tree condition within the subject area in relation to the proposed development.
  - Utilise existing maps and plans provided outlining the planned works in relation to the existing tree population.

#### 5 Method

This assessment was undertaken on site on the 15<sup>th</sup> of October 2024 using a ground-based visual assessment by Nick Nelson, followed by undertaking an in office desktop review of the proposed plans.

The EOS Arrow 100 GNSS was used to collect tree location data to sub-meter level utilising the Esri Fieldmaps application with the Ipad Pro 13 Inch M4. The Nikon Forestry Pro laser rangefinder was used to capture tree heights, span was estimated, and a standard forestry diameter tape measure was used to capture diameter at breast height and diameter above buttress dimensions.

The trees have been assessed for Arboricultural value using tree attributes and overall condition to assist in determining the retention value and significance.

The retention value ascribed to each tree in this report is not definitive and should be used as a guide only. Many factors influence the comparative value of a tree, and a number of these factors are outside the scope of arboriculture assessment.

The assessment report provides information about the species, size, and condition of the trees, as well as any potential risks or hazards they may pose.

Site Plans, Aerial views and site photographs utilised in this report have been captured on site, downloaded from open source GIS maps and as provided by the client.

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# **5.1 Limitations of Assignment**

- Information obtained from publicly available databases has been used in the preparation
  of this report. The accuracy of information obtained from such sources cannot be
  guaranteed and has not been verified.
- The hybridization of flora species can cause an intermediate or incomplete form of morphological features and thereby affect the accuracy of field identification.
- Seasonal variations influence the presence of flowering and fruiting in flora species and thereby can affect the accuracy of field identification. Seasonal variation was not captured during the field assessment due to the short duration of the assessment.
- Xylem TreeCare has not undertaken any of the following items which may impact tree health:
  - o Soil analysis
  - Below ground root analysis
  - Aerial tree inspections

# **5.2 Consulting Arborist**

Table 2: Outlines the qualifications, experience and involvement of staff that have assisted in the development of this report.

Table 2, Staff Qualifications

Staff Member	Qualifications	Experience	Project Involvement
Travis Wyper	Certificate V in	Travis has 28 years'	Review of AIA
Senior Consulting	Arboriculture	experience within the	
Arborist		arboriculture Industry and 16	
		years as a Consulting Arborist	
Nick Nelson	Certificate V in	Nick has 25 years' experience	Completion of review and update
Consulting Arborist	Arboriculture	within the arboriculture	of AIA
		industry; 15 years as a	
		Consulting Arborist	

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#### 5.3 Site Information

Xylem TreeCare Pty Ltd has been commissioned to provide an AIA on one hundred and twenty nine (129) trees located within the grounds and on the council nature strips outside the existing residential and commercial properties at the following locations:

Table 3, Lot/DP Numbers & Property Addresses subject sites.

Lot/DP	Property Address	Lot/DP	Property Address
Lot 27 DP 15399	93 Cecil Avenue, Castle Hill	Lot 2 DP 581293	101 Cecil Avenue, Castle Hill
Lot 22 DP 77859	95 Cecil Avenue, Castle Hill	Lot 4 DP 581293	101A Cecil Avenue, Castle Hill
Lot 1 DP 531559	95A Cecil Avenue, Castle Hill	Lot 1 DP 547897	103 Cecil Avenue, Castle Hill
Lot 21 DP 778595	95B Cecil Avenue, Castle Hill	Lot 2 DP 547897	103A Cecil Avenue, Castle Hill
Lot 6 DP 705913	97 Cecil Avenue, Castle Hill	Lot 1 DP 591676	105 Cecil Avenue, Castle Hill
Lot 4 DP 531559	97A Cecil Avenue, Castle Hill	Lot 2 DP 591676	105A Cecil Avenue, Castle Hill
Lot 5 DP 705913	97B Cecil Avenue, Castle Hill	Lot 20 DP 15399	107 Cecil Avenue, Castle Hill
Lot 1 DP 581293	99 Cecil Avenue, Castle Hill	Lot 6 DP 29141	9 Roger Avenue, Castle Hill
Lot 3 DP 581293	99A Cecil Avenue, Castle Hill	Lot 5 DP 29141	10 Roger Avenue, Castle Hill

The sites as listed in Table 3 are located in the suburb of Castle Hill in the Hills Shire Council LGA in an area that is dominated by single dwelling house blocks, with several green spaces nearby. Castle Hill is a prominent suburb in Sydney, Australia, located in the Hills District, about 30 km northwest of the Sydney Central Business District (CBD). The Proposed Site occupies the entirety of the properties listed in Table 3 and currently contains existing structures, areas of hardstand, and planted urban native and exotic landscaped gardens, with planted tree species present that are typical of an urban environment.

#### 5.3.1 Topography

Castle Hill is characterized by its gently undulating hills, which is typical of the broader Hills District. The suburb has a varied landscape that includes low-lying areas as well as elevated ridges, with altitudes ranging roughly between 60 to 180 meters above sea level.

The topography of Castle Hill is generally sloping, with gradual gradients and natural water drainage patterns leading into creeks and tributaries. The area is part of the upper catchment for the Parramatta River, with several smaller creeks such as Cattai Creek flowing through parts of the suburb. This natural drainage system is complemented by a mix of urban development and preserved bushland.

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#### 5.3.2 Soil Types

The soils in Castle Hill primarily belong to the Hawkesbury and Wianamatta soil groups, which are common in the Sydney Basin:

- 1. **Hawkesbury Sandstone-derived Soils**: These soils are typically found on the elevated areas and ridges. They are light, sandy, and well-draining but often low in fertility due to their coarse texture and low organic matter content. The shallow, stony nature of these soils can sometimes present challenges for gardening without amendments.
- Wianamatta Shale-derived Soils: In the lower, flatter areas, especially toward the south and
  west, the soil composition shifts to clay-rich profiles derived from Wianamatta shale. These
  soils are heavier, more fertile, and retain moisture better than the sandstone-derived soils.
  However, they can become compacted and waterlogged, particularly in low-lying areas
  during wet periods.
- 3. **Alluvial Soils**: Found along creek lines and drainage areas, these soils are richer and more fertile due to sediment deposits from flowing water. These soils support a greater diversity of vegetation and are suitable for gardens and landscaping.



Figure 1 – 93-107 Cecil Ave & 9-10 Roger Ave CASTLE HILL NSW 2154 - Image extracted from SIXMAPS 2024

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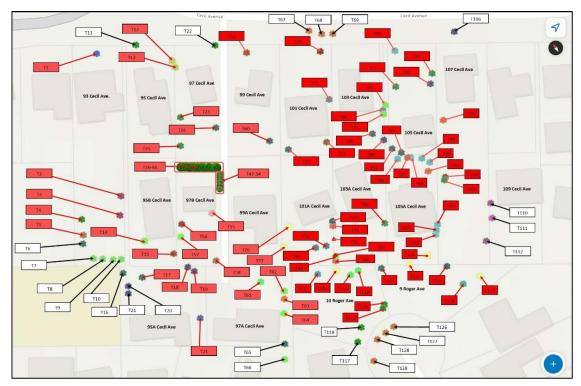


Figure 2 – Site Map Showing Tree Locations, retentions in white and removals in red.

# **5.4 Planning and Considerations**

Trees 1-129 were found to be with a few exceptions (exempt trees found to offer a high level of amenity were included in the report) protected under the provisions of the State Environmental Planning Policy (Biodiversity and Conservation) 2021 Chapter 2 Vegetation in non-rural areas and the Hills Local Environment Plan 2019. The trees that are the focus of the Arboricultural Impact Assessment Report (as shown in Figure 2) were identified through discussions with the client. Additionally, the identification process involved walking the site, reviewing the plans provided and a review of the requirements of the Hills Shire Council and NSW State Government planning provisions.

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#### 6 Observations

The following observations were identified during the field and desktop assessments.

#### **6.1 Tree Condition**

One hundred and twenty-nine (129) trees were surveyed on site. The trees were found to be a mixture of indigenous and exotic species ranging from semi-mature to mature age classes. The trees were found to be representatives of thirty-four (34) genera of Tree species including the following genera:

Table 4, List of tree genera surveyed on site.

Tree genera surveyed on site:					
<u>Acacia</u>	<u>Citharexylum</u>	<u>Grevillea</u>	<u>Lophostemon</u>		
<u>Acer</u>	<u>Corymbia</u>	<u>Harpephyllum</u>	<u>Melaleuca</u>		
<u>Alnus</u>	Cupressocyparis	<u>Jacaranda</u>	<u>Melia</u>		
<u>Brachychiton</u>	<u>Cupressus</u>	<u>Juniperus</u>	<u>Pinus</u>		
<u>Callistemon</u>	<u>Eucalyptus</u>	<u>Lagerstroemia</u>	<u>Pyrus</u>		
<u>Cedrus</u>	<u>Ficus</u>	<u>Lagunaria</u>	<u>Viburnum</u>		
<u>Ceratopetalum</u>	<u>Fraxinus</u>	<u>Leptospermum</u>	<u>Waterhousea</u>		
<u>Chamaecyparis</u>	<u>Gleditsia</u>	<u>Liquidambar</u>			
<u>Cinnamonum</u>	<u>Gordonia</u>	<u>Liriodendron</u>			

Trees surveyed on site range in current health and condition from dead trees with poor structure through to healthy and structurally sound significant tree specimens.

Three (3) trees were found to have a high retention value, three (3) trees were found to have a low retention value, and one hundred and twenty-three (123) trees were found to have a moderate retention value.

Trees subject of this report have not been tagged on site with their unique tree number.

Complete data for each tree can be found in 10.2 Attachment 10.2 – Tree Data Detail.

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# **6.2 Tree Retention Values**

The retention value ascribed to each tree in this report is not definitive and should be used as a guide only. Many factors influence the comparative value of a tree, and a number of these factors are outside the scope of arboriculture assessment. These factors cannot therefore be addressed in a single rating system.

The retention value is comprised of two parts. These are the Amenity Value of the tree rated as Very Low to Very High and the Useful Life Expectancy (ULE) of the tree.

The Amenity Value of the tree relates to the contribution of the tree to the aesthetic amenity of the area. The primary determinants of amenity value are tree health, size and form.

The Amenity Value is then modified by the ULE of the tree with short ULE values reducing the RV of the tree and long ULE values increasing the RV of the tree.

Table 5, Tree retention categories

Category	Example	Amenity Value Value (AVV)
Very High	Generally, a very large tree that exhibits excellent health and/or for or a tree that is listed on a heritage or significance register	10
High	Generally, a large tree that exhibits good health and/or form	8
Medium	Generally, a medium tree that exhibits good health and/or form. May be a large tree that exhibits fair health and/or form.	6
Low	Generally, a small tree that exhibits good health and/or form. May be a large or medium tree that exhibits fair or poor health and/or form	4
Very Low	Generally, a small tree that exhibits poor health and/or form. May be a large or medium tree that exhibits poor, or worse, health and/or form	2

Table 6, Tree Retention Values Project specific

Category	Tree Numbers
Very high	Nil
High	65, 77, 122
Medium	1—64, 66-75, 78-113, 115-121, 122-124, 126-129
Low	76, 114, 125
Very Low	Nil

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# **6.3 Trees of Significance**

#### **6.3.1** Heritage Status

None of the one hundred and twenty-nine (129) trees were found to be covered under existing heritage orders.

#### **6.3.2** Ecological Status

As per the Narla Environmental BDAR Waiver (31/10/24) prepared for the SSDA, the tree species within the landscape of the Subject Site does not conform to any locally occurring Plant Community Type (PCT) and has therefore been classified as Landscaped Exotic and Native Vegetation.

# **6.4 Proposed Construction**

#### **6.4.1** Proposed Development

The state significant development application proposal for the site (SSDA) seeks consent for:

- Site preparation, demolition, and bulk excavation for basement parking.
- Residential accommodation (apartment buildings and mixed-use buildings).
- Publicly accessible recreation area and through site links.
- Associated landscaping and public domain works.
- Augmentation of, and connection to, existing utilities as required.

# 6.5 Design Review

The design has been reviewed in the context of tree retention and removal across the site utilising guidance provided within Australian Standard AS 4970-2009 *Protection of Trees on Development Sites*.

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#### **6.5.1** Significant root damage due to major TPZ encroachment:

Where major Tree Protection Zone (TPZ) encroachment occurs levelling, filling and cutting of soil grades will result in the same types of damage that are associated with excavating, trenching and soil compaction. Ninety percent of the fine roots that absorb water and minerals are in the upper 150-300mm of soil. This area is the most conducive to root growth as it usually has available space, oxygen, nutrients, and water. Altering the soil level during trenching may either strip away the fine absorbing roots from the soil surface or remove the nutrient-rich topsoil that supplies the basic elements trees require for growth.

Raising or filling grades around trees reduces oxygen diffusion, and exchange, in the rhizosphere. As little as 100mm of soil placed over the established root systems of some species is enough to cause their death. Grade changes to the soil outside the rhizosphere of the tree may also affect water drainage, causing root dieback due to changes in soil moisture content in the situation where roots have been identified and require extraction, it is important that this be undertaken under the direct supervision of a qualified Arborist. The use of earth moving equipment has the potential to cause significant damage not only to the exposed root needing removal but also to major anchorage roots within the Structural Root Zone (SRZ); this is due to the roots being removed, split and compresses vascular tissue away from the target site. Where possible roots should be removed radially from the root zone rather than directly across the root system, this will reduce secondary damage to structural roots.

#### 6.5.2 Allowable Encroachment

The assumption of allowable encroachment and minimal long-term health or structural impacts to the subject trees assessed as capable of being retained on this site requires the adaptation of the following impact limiting measures

- The adoption of root sensitive construction methods within the TPZ, minimal excavation within the TPZ to limit root severance as agreed and supervised by the project arborist (i.e. construction placed outside the TPZ where possible).
- Utilisation of fill rather than excavation to affect level changes where possible (i.e. to minimise root severance and allow the tree's root system time to adjust).
- No construction occurring within the SRZ, compensatory area being available around the unimpacted aspects of the trees and the enhancement of the existing TPZ area (where allowable encroachment has occurred and the results of non-destructive digging (NDD) reveal root damage, mulching, soil conditioning and or irrigation may be required).

#### 6.5.3 Trees affected by encroachment

The development will affect one hundred and seven (107) site trees through encroachment via excavation and or due to being within the footprint of the proposed development. Trees 6-11, 16, 20-22, 66-69, 106, 112, 117-118, 126-129 are capable of being retained with either generic or specific tree protection measures.

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#### 6.5 TPZ Encroachment

#### 6.5.1 Major encroachment

As per the Australian Standard AS 4970–2009: *Protection of Trees on Development Sites*, a major encroachment into the TPZ of any tree is considered to occur when it is beyond a theoretical 10% of the total TPZ area. Trees with major encroachment may require removal or, in certain instances, be retained with specific protection requirements throughout the construction stage.

#### 6.5.2 Minor encroachment

Under AS 4970-2009, a minor encroachment is determined as less than a theoretical 10% of the total TPZ area. Trees with minor encroachment may be retained with specific, generic or no protection requirements throughout the construction stage.

#### 6.5.3 No encroachment

Trees with no encroachment may be retained with generic or no protection requirements throughout the construction stage.

#### 6.5.4 Identification of trees to be retained and or removed

Trees in the AIA for this project have been categorised as follows:

- Trees to be retained and protected through the development process.
- Trees that could be retained but could be removed to make way for more suitable replacement plantings.
- Trees to be removed due to an unacceptable level of impact from the planned construction or from being within the footprint of the planned works.

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#### 7 Recommendations

#### 7.1 Tree Removal

Following the review of the proposed designs provided one hundred and seven (107) trees that were seen to be potentially affected by the works will need to be removed to allow for the planned development to be undertaken.

Table 7, Tree Removals

	_	retention	Medi	um retention		retention	Ve	ery Low
Recommendations	١	value		value		value		
Recommendations	QTY	Tree	QTY	Tree	QTY	Tree	QTY	Tree
		Numbers		Numbers		Numbers		Numbers
Remove for	3	65, 77,	100	1-5, 12-15,	3	76, 114,	0	Nil
Development		122		17-19, 23-		125		
TPZ impact				64, 70-75,				
greater than 10%				78-105,				
or located within				107-111,				
the footprint of				113, 115-				
works				116, 119-				
				121 & 123-				
				124				

# 7.2 Tree Retention & Pruning

Trees 6-11, 16, 20-22, 66-69, 106, 112, 117-118, 126-129 are capable of being retained with either generic or specific tree protection measures.

Trees 6, 7, 16, 20, 21, 66, 106 and 112 can be retained with generic tree protection measures as per Attachment 10.5.

Trees 126-129 can be retained with specific tree protection measures consisting of trunk protection and ground protection as per Attachment 10.5.

Trees 22, 67-69 and 117-118 can be retained with generic protection measures but could be removed to allow for their replacement with more suitable endemic tree species.

Should pruning of retained trees be required during the construction process the project arborist must be contacted for direction and any pruning must be carried out by a suitably experienced minimum Australian Qualification Framework Level III Arborist as per the requirements of the AS4373-2007 *Pruning of amenity trees*\_standard.

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# 7.3 Protective Fencing, Trunk and Ground Protection Specification

AS4970-2009 Protection of Trees on Development Sites states that Protective fencing (as per Attachment 10.5) is to be installed as far as practicable from the trunk of any retained trees. Fencing should be erected as per the image and specifications in Attachment 10.5 before any machinery or materials are brought to site and before commencement of construction and or any demolition.

Once erected, protective fencing must not be removed or altered without approval from the project arborist. The TPZ fencing should be secured to restrict access.

TPZ fencing is to be constructed as per Attachment 10.5.

Tree protection fencing must remain intact throughout all proposed construction works and must only be dismantled after their conclusion. The temporary dismantling of tree protection fencing must only be done with the authorisation of the project arborist and/or the responsible authority.

# 7.4 Tree Protection Signs

Signs identifying the TPZ (As per image in Attachment 10.5) should be placed at 10m intervals around the edge of the TPZ and should be visible from within the development site.

# 7.5 Project Arborist

The AS4970-2009 Protection of trees on development standard requires the appointment of a Project Arborist.

The project arborist must have a minimum five (5) years industry experience in the field of arboriculture with relevant demonstrated experience in tree management on construction sites, and Diploma level qualifications in arboriculture.

Inspections are to be conducted by the project arborist at several key points during the construction to ensure that protection measures are being adhered to during construction stages and any potential decline in tree health or additional remediation measures can be identified.

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# **7.6 Project Milestones**

The following visits and milestones are recommended as to when on-site tree inspection by the project arborist is required:

Table 8, Project Milestones

Item	Purpose of Visit	Timing of Visit(s)	Prerequisites
1	Certification of Tree Protection Measures	Prior to the commencement of works on site	Tree protection installed as per the requirements of the AS4970-2009  Protection of Trees on Development
2	Regular site inspections	Minimum frequency quarterly for the duration of the project where works are affecting trees to be retained	sites standard.  The checklist must be completed by the Project Arborist at each site inspection and signed by both parties.
3	Supervision of excavation within TPZ	Whenever works are to take place that could impact the TPZ of retained trees.	5 working days' notice.
2	Final certification of retained trees	At the end of the construction process.	Clear access to all retained trees.

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# 7.7 Compliance Reporting

Following the completion of the development process, the project arborist shall prepare a report detailing the completion of the works. This report will certify whether the works have been completed in compliance with any approved conditions of consent relating to required tree protection.

The report will contain photographic evidence where required to demonstrate that the work has been carried out as specified.

Matters to be monitored and included in the report will include the condition of retained trees, tree protection measures and impact of site works which may arise from changes to the approved plans.

The completed tree register, report and compliance statement shall be submitted to the client following the completion of the development process.

# **8 Offset Tree Planting**

Offset planting should reflect the number of trees removed and the initial loss of amenity and biomass. New trees should be of long-term potential and sourced from a reputable supplier.

Replacement tree species must suit their location on the site in terms of their potential physical size and their tolerance(s) to the surrounding environmental conditions. To avoid unethical or unprofessional tree selection and/or their placement within the landscape, replacement tree species must be selected in consultation with a consulting arborist, who can also assist in implementing successful tree establishment techniques.

Replacement tree species must have the genetic potential to reach a mature size potential of those trees removed to facilitate the development. As a guide, potential height will be a minimum of 10m (or more) and produce a spreading canopy so as they may provide amenity value to the property and contribute to the tree canopy of the surrounding area in the future.

#### 9 Documents Reviewed

The following documents were reviewed in preparation of this report.

Table 9, Cited Project Documents

Date	Title	Revision Number	Attachment
2024/12/04	SSDA	A	10.3
22/02/17	Detail and level survey	С	10.3

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- Urban, J., 2008. Up By Roots Healthy Soils and Trees in the Built Environment. Champaign (Illinois): International Society of Arboriculture.
- Narla Environmental BDAR Waiver 93-107 Cecil Ave & 9-10 Roger Ave CASTLE HILL NSW 2154 31/10/24.

### 10 Attachments

10.1Attachment 1 - Site Map Showing Tree Locations

10.2Attachment 2 - Tree Data Detailed

10.3Attachment 3 - Construction Drawings

10.4Attachment 4 - Descriptions

10.5Attachment 5 - TPZ Management

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