Attachment A13

Arboricultural Impact Assessment

Arboricultural Impact Assessment

242 – 258 Young Street Waterloo

Prepared by Alex Austin
For
Sustainable Development Group Ltd
January 2024

Alex Austin
AQF level 8 Consulting Arborist.
PO Box 84, Avalon Beach 2017
Email: arborsaw@gmail.com

1 Summary

Alex Austin, an AQF level 8 Arborist, was commissioned by Sustainable Development Group Ltd to complete an Arboricultural Impact Assessment (AIA) of the trees that could be impacted by the proposed planning proposal located at 242 – 258 Young Street Waterloo.

The site inspection was completed on the 23rd June 2022, where 32 trees were inspected by Marc Fisher, an AQF Level 5 Arborist. The tree population was reinspected by Alex Austin An AQF Level 8 Arborist on 2nd November 2023 to ascertain impacts of the final proposed building envelope. This report has been collated by Alex Austin and prepared in accordance with Australian Standard 4970: 2009 *Protection of trees on development sites*. The complete tree and impact data can found be in the table located in the Appendix.

The subject site is located centrally within Waterloo and bounded by Young Street to the east, Hunter to the West and Powell Street to the south. The existing commercial brick and commercial buildings are built to the site edge and have minimal setback from council trees and the canopies overhang the site.

The 32 assessed trees are comprised of;

- Nine (9) High (A) Retention Value Tree.
- 13 Medium (B) Retention Value Trees
- Ten (10) Low (C)Retention Value Trees

Council Street trees adjacent to the site include trees numbered 1, 2, 6, 8-19, 22, 23, 28-33. The remainder of the trees are located on the site. Large Council owned trees exist along the footpath (outside of site boundary) of Young and Hunter streets.

The proposed planning proposal and future development of the site includes the proposed demolition of all existing buildings, tree removals and construction of a new building of Six (6) storey's with basement carparking. If the current proposed construction layout is to proceed, then Seven (7) Low Retention Value site trees numbered 7, 20 (Exempt size), 21(Exempt size), 24, 25, 26 & 27 are proposed for removal in order to facilitate the layout. The layout and setbacks have been adjusted serval times in design to minimise the quantity of tree removal.

The 25 trees on City of Sydney land can be retained if the tree protection measures in the report are adhered to. The proposed works have been designed to minimise impacts to these 25 trees and include a reduced building envelope resulting in smaller TPZ encroachments from the existing footprint for all trees, 3D modelling to identify and minimise canopy pruning, temporary scaffold on ground protection matts and the adoption of the tree protection measures using the details within the City of Sydney Street Tree Master Plan, Part D Technical Guidelines dated 2011 (Updated 2015). No impact to the viability of the tree to be retained is anticipated if the protection measures and specific pruning specifications are applied as per the guidance in this report.

To ensure the 25 trees nominated for retention remain viable during and post construction, tree protection measures including the engagement of a project arborist, tree protection fencing, tree protection signage, trunk protection, ground protection, sensitive demolition and excavation techniques, project arborist supervised pruning, a restriction of activities within Tree Protection Zones (TPZ's) and compliance reporting, must be incorporated into the project.

A Tree Impact Plan has been prepared and can be located in the Appendix.

This document must be used in its entirety and further questions are to be directed to:

Alex Austin

AQF Level 8 Arborist

2 Table of Contents

3 Document Details

Version Number	Date	Description
001	06/11/2023	Draft
002	09/11/2023	Updated Summary
003	15/1/2024	Updated Text, GF + Basement Plans

4 Background

The site inspection was completed on the 23rd June 2022, where 32 trees were inspected by Marc Fisher, an AQF Level 5 Arborist. The tree population was reinspected by Alex Austin An AQF Level 8 Arborist on 2nd November 2023 to ascertain impacts of the final proposed building envelope. .This report has been collated by Alex Austin and prepared in accordance with Australian Standard 4970: 2009 *Protection of trees on development sites*. The complete tree and impact data can found be in the table located in the Appendix.

Tree assessment and recommendations in this report are based on the condition of the trees at the time of inspection. As the trees continue to age and decline, further assessment, particularly from a hazard management perspective may be necessary. Site conditions and weather events may also change the condition of the trees from the time of inspection.

4.1 Reviewed Documents

The following documents were assessed as part of this report;

- ANNEXURE A - Project Brief for Redevelopment of 242 – 258 Young Street Waterloo, Prepared by: Sustainable Development Group June 2022
- Ground floor plan, from 20621 Presentation by SDG Dated 25.10.2023)
- Tree Canopy plans and 3D Canopy Modelling by Plus Architects, dated 1/08/2023
- General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 1/08/2023
- Sydney Development Control Plan 2012 Section 3 – General Provisions
- General Floor Plan – Basement 1, by Plus Architects, drawing number PLA-PP-10B1 dated 1/08/2023
- General Floor Plan – Ground floor, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024

5 Methodology

5.1 Aims and Objectives

- Determine the Retention Value and required area for each tree to be protected and remain viable during and post construction.
- Identify and reduce potential conflicts between subject trees and site development by providing accurate information on the area required for tree retention and methods/techniques suitable for tree protection during construction.
- Encroachments to the TPZs are to be minimized prior to construction.
- Works within the defined Tree Protection Zone shall utilize special measures to avoid or minimize adverse impacts on trees.
- Provide information on restricted activities within the area nominated for tree protection, as well as suitable construction methods to be adopted during construction.

- The trees to be retained must be protected from all other demolition, excavation, and construction activities.

5.2 Tree Health and Condition

The inspection of the trees was made from the ground and involved inspection of the external features only. No invasive, diagnostic or laboratory testing was carried out.

Tree height and canopy spread were estimated and trunk diameter (DBH) and Diameter at Root Crown (DRC), have been measured with a diameter tape where applicable.

Data including species, age class, health, structure, landscape significance, defect and life expectancy were recorded. Tree species were identified using available seed and fruit during the site inspection.

All photographs were taken at the time of the site inspection by the inspecting arborist. Photographs have been altered for brightness and/or cropped only.

5.3 Tree Protection Zone and Structural Root Zone

The Tree Protection Zone method has been derived from the Australian Standard 4970–2009: *Protection of trees on development sites*.

The Tree Protection Zone (TPZ) is defined as a specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown. It is the area required to provide for the viability of a tree to be retained where it is potentially subject to damage by development.

The radius of the TPZ is calculated for each tree by multiplying its Diameter at Breast Height (DBH) by 12

$$TPZ\ radius = DBH \times 12$$

The trunk diameter method has been used in this report to determine the TPZ. This area provides a general guide where the roots are likely to be located.

The Structural Root Zone (SRZ) is the area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres.

$$SRZ\ radius = (Drc \times 50)^{0.42} \times 0.64$$

5.4 Root Loss

In line with section 3.3.2 of AS 4970:2009, a 10% incursion to a TPZ is considered a minor encroachment. Any more than 10% is considered a major incursion and special measures should be taken to minimise impact on the retained trees and the Arborist must demonstrate that the tree will remain viable post construction.

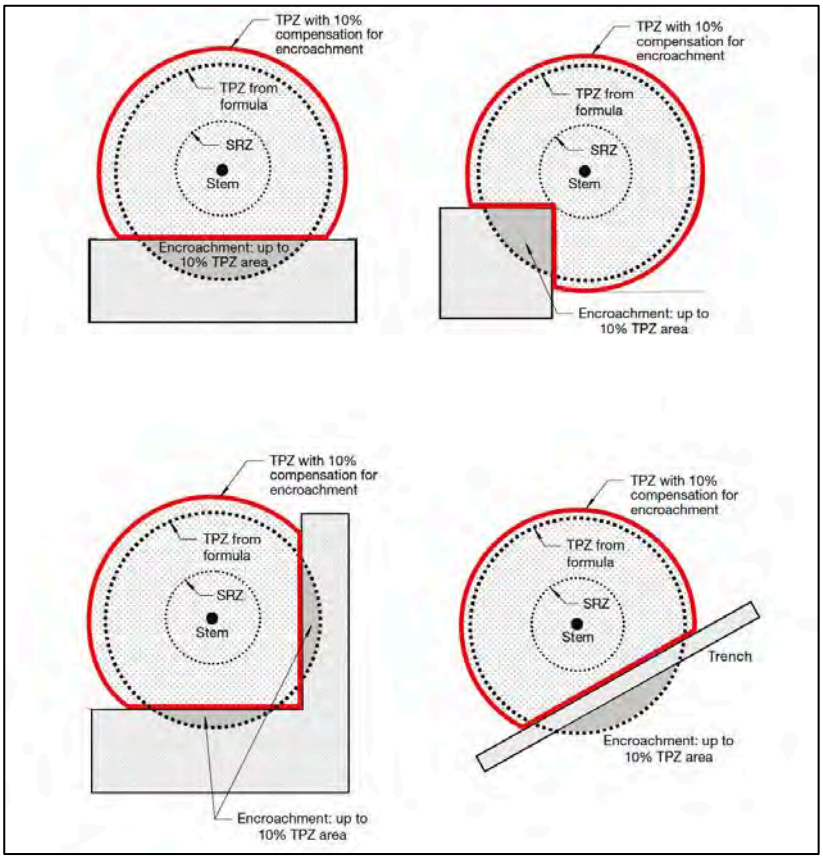


Figure 1: Example acceptable 10% minor encroachments. (Source: AS 4970:2007)

5.5 Retention Value

The retention value method used is IACA Significance of a Tree, Assessment Rating System (STARS) (IACA 2010)©. See appendix for detailed description of the method . retention value method used is a simplified rating system consisting of 4 categories as a summary of the survey's cascading process. The retention value considers the trees health and structure, age class, defects, life expectancy and significance in the landscape.

- Priority for Retention (High - A - Green) -These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s 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 e.g. pier and beam etc if works are to proceed within the Tree Protection Zone. Considerable efforts should be made to retain these trees.
- Consider for Retention (Medium – B (Blue)These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted. Reasonable efforts should be made to retain these trees.
- Consider for Removal (Low- C –Grey) These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
- Priority for Removal (Remove – R- Red). -These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

6 Legislation.

6.1 Land Zoning

The site is zoned B4 Mixed Use under the Sydney Local Environmental Plan 2012 in the City of Sydney Local Government Area.

6.2 Biodiversity and Conservation SEPP

The subject trees are protected by the State Environmental Planning Policy (Biodiversity and Conservation SEPP) 2021. Trees proposed for removal or pruning, are covered by the SEPP unless they are considered an imminent danger to life and property (By a AQF Level 5 or above Arborist) and require a permit to be issued by Council.

6.3 Suburb Map

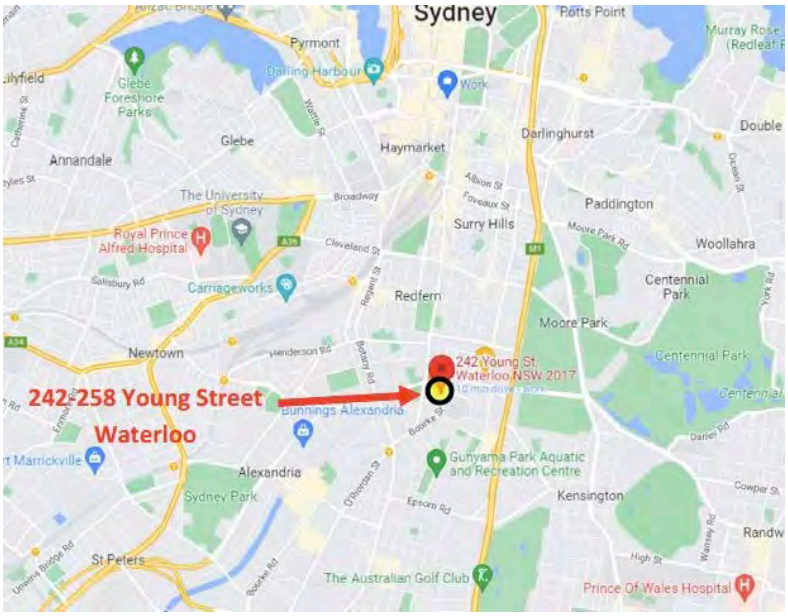


Figure 2: Map of Suburb showing site location (Source: Google 2023)

6.4 Aerial Image

Figure 3: Aerial image of the site showing boundaries. (Source: Sixmaps 2023).

6.5 Site conditions

The site is situated on the traditional land of the Gadigal people of the Eora nation, located at 242-258 Young Street, Waterloo within the City of Sydney Local Government Area (LGA). The site is prominently positioned at the junction of Hunter Street, Young Street and Powell Street. It is located 4km south of the Sydney CBD within the Green Square Urban Renewal Area.

The site comprises three lots which are legally described as Lot 1 in DP84655 and Lots A and B in DP 161650. The site's area is 4,611m^2 and is triangular in shape and is bounded by Hunter Street to the west, Young Street to the east and Powell Street to the south. The site has street frontage dimensions of 118m along Hunter Street, 137m along Young Street and 4.3m along Powell Street. The topography of the site generally falls in an east to west direction.The site and is currently occupied by 2 storey office building and film school. The southern tip of the site is a grass lawn area.

Figures 4 & 5: The typical appearance of the Young Street Frontage. (Source: Austin 2nd November 2023)


Figures 6 & 7: The typical appearance of the Young Street Frontage. (Source: Austin 2nd November 2023)


Figures 8 & 9: The typical appearance of the Hunter Street Frontage. (Source: Austin 2nd November 2023)

7 Tree Survey

The site inspection was completed on the 23rd June 2022, where 33 trees were inspected by Marc Fisher, an AQF Level 5 Arborist.

The 33 assessed trees are comprised of;

- Nine (9) High (A) Retention Value Tree.
- 13 Medium (B) Retention Value Trees
- Ten (10) Low (C)Retention Value Trees
- One (1) (R) Remove Tree

7.1 Tree Ownership

Trees numbered 1, 2, 6, 8-19, 22, 23, 28-33 are council owned trees located on the council verge surrounding the site. The remaining trees are located within the site.

7.2 Aerial Image with Tree Locations

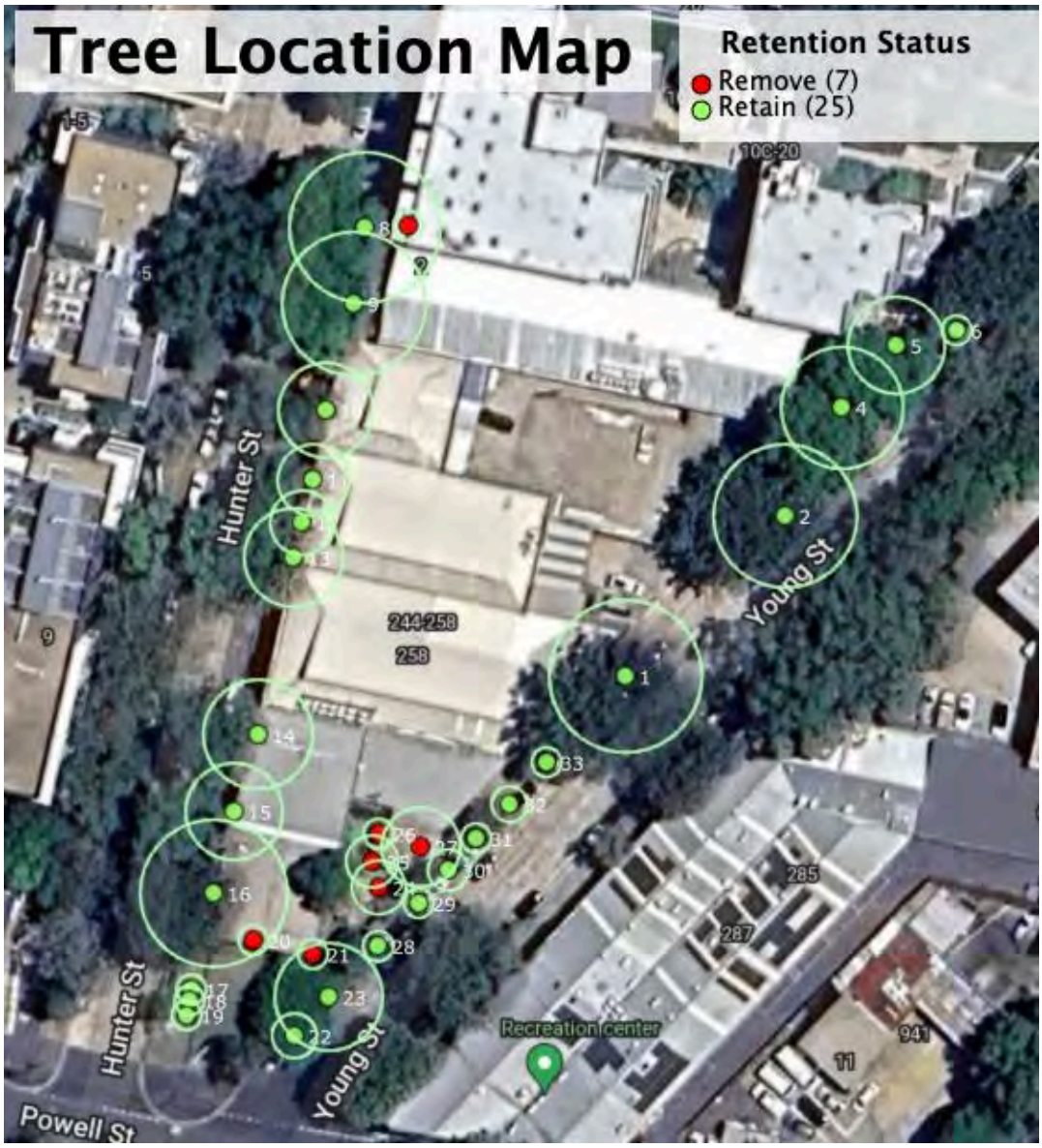


Figure 10: Aerial Image of the whole site showing tree locations. (Source: Arborsaw Tree Plotter 2022)

7.3 Nine (9) High (A) Retention Value trees

Nine (9)Trees numbered 1, 2, 4, 5, 8, 9, 14, 15 & 16 hold High Retention Value were identified in the Tree Survey. Trees in this category have high landscape significance, long life expectancies and considerable efforts should be made to incorporate these trees within the proposed development. Key examples include;

7.3.1 6.2.1 Trees 1, 2 & 16 *Eucalyptus microcorys* (Tallow Woods) Council Trees

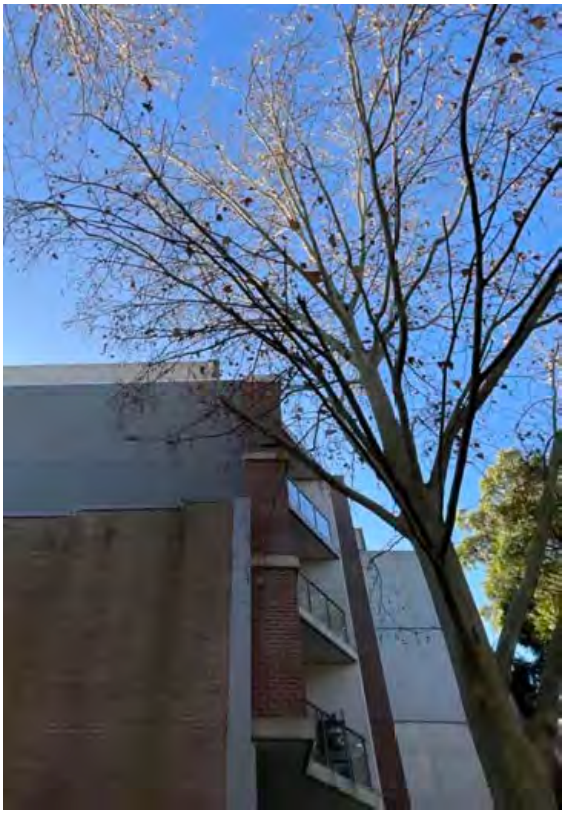
Trees 1, 2 & 16 *Eucalyptus microcorys* (Tallow Woods) are council trees with High retention value and with High landscape significance. The trees are in good condition and have long life expectancies of 40+ years. The trees have around 10 m TPZs and 3.2m SRZs. The trees have an estimated 7m site overhang at 10m height. Considerable efforts should be made to incorporate these trees within the project.

Figures 11 & 12: Tree 1 (Left) and Tree 16 (Right) in the landscape. (Source: Fisher 23rd June 2022).

7.3.2 Trees 4 & 5 *Platanus x hybrida* (London Planes)

Trees 4 & 5 *Platanus x hybrida* (London Planes) are site trees on the Young Street frontage. The trees have High retention value and landscape significance . The trees are in good condition and have long life expectancies of 40+ years. The trees have large TPZ's. Considerable efforts should be made to incorporate these trees within the project

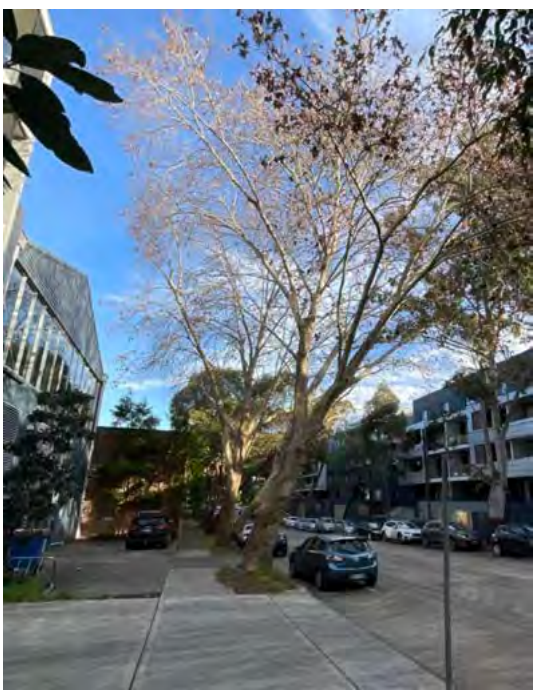

Figures 13 & 14: Tree 4's growing location (Left) and Tree 4 in the landscape. (Right). (Source: Fisher 23rd June 2022)

Figures 15 & 16: Tree 5 in the landscape (Left) and the upper crown proximity to the building can be observed. (Right). (Source: Fisher 23rd June 2022).

7.3.3 Trees 8 & 9 *Platanus x hybrida* (London Planes)

Trees 8 & 9 *Platanus x hybrida* (London Planes) are council trees on the Hunter Street frontage. The trees have High retention value and landscape significance. The trees are in good condition and have long life expectancies of 40+ years. The trees have large TPZ's. The trees have considerable canopy overhanging the site. Considerable efforts should be made to incorporate these trees within the project



Figures 17 & 18: Trees 8 & 9 can be observed. (Source: Fisher 23rd June 2022)

7.3.4 *Eucalyptus botryoides* (Southern Mahogany)

Trees 14 & 15 *Eucalyptus botryoides* (Southern Mahogany) are council trees located on the Hunter Street frontage. The trees carry High landscape significance. Both trees have only minor defects including Mechanical damage to root(s) and wounds.

Figure 19: Trees 14 & 15 can be observed in the landscape. (Source: Fisher 23rd June 2022)

7.4 13 Medium Retention Value trees

13 Trees numbered 8, 16, 17, 19, 20, 21, 22, 23, 26, 27, 33, 34 & 41were assessed to hold Medium Retention Value status. Trees in this category generally posses fair or better health and structure and have life expectancies greater than 15 years. Reasonable attempts should be made to retain the trees through the project as they have the ability to be continuing components of the landscape. Examples include;

7.4.1 Tree 6, 18, 28, 31 & 33 *Eucalyptus microcorys* (Tallow Woods)

Trees numbered 6, 18, 28, 31 & 33 are *Eucalyptus microcorys* (Tallow Wood) are relativity new established plantings with a long life expectancy of 40+ years.

Figures 20 & 21: Tree 6 (Left) and Tree 18 (Right) in the landscape. (Source: Fisher 23rd June 2023).

7.4.2 Trees 10 - 13 *Eucalyptus botryoides* (Southern Mahogany)

Trees 10 - 13 *Eucalyptus botryoides* (Southern Mahogany)are council trees located on the Hunter Street frontage. The trees have minor defects and have medium life expectancies of 15-40 years.

Figures 22 & 23: Trees 10 -13 can be observed in the landscape. (Source: Fisher 23rd June 2022).

7.5 Ten (10) Low Retention Value trees

Ten (10) Trees numbered 7, 17, 19, 20, 21, 24, 25, 26, 27 & 29 form the Low category. Trees in this category should not be considered a constraint on development as they have reduced health or condition, or have short life expectancies or have low landscape significance or are easily replaceable due to their small size.

Examples include;

7.5.1 Tree 24 *Ulmus glabra 'Lutescens'* (Golden Scotch Elm)

Tree 24 *Ulmus glabra 'Lutescens'* (Golden Scotch Elm) is site tree on the Young Street Frontage. Major Observations included; Cavity, Co-dominant stems, Deadwood > 30mm, Hanger(s) and Wound(s). The tree has a short life expectancy of 5-15 years and is recommended; for Remove deadwood > 30mm, Remove hanging limb(s).

Figure 24: Tree 24 in the landscape. (Source: Fisher 23rd June 2022)

7.5.2 Tree 29 *Eucalyptus scoparia* (Wallangarra White Gum)

Tree 29 *Eucalyptus scoparia* (Wallangarra White Gum) is a council tree on the Young Street frontage. Major Observations included; Deadwood < 30mm, Dieback, Mechanical damage, Wound response growth, Wound(s). The tree has a short life expectancy of 5- 15 years.

Figure 25: Tree 29 in the landscape. (Source: Fisher 23rd June 2022)

7.5.3 Consider Removals

Trees numbered 20, 21 & 25 are listed for consider removal and hold a Low Retention Value.

Trees 20 & 21- *Celtis occidentalis* (North American Hackberry) - inappropriate location. Exempt size (<10m height).

Tree 25- *Eucalyptus botryoides* (Southern Mahogany) - Insufficient room for mature establishment.

Figures 26 & 27: Tree 20 (Left) and Tree 21 (Right) self sown adjacent to the existing building. (Source: Fisher 23rd June 2022).

Figures 28 & 29: Tree 25 in the landscape (Left) and its very close proximity to the existing wall (Right). (Source: Fisher 23rd June 2022).

8 Planning Proposal.

8.1 Proposed Development

The proposed amendments to the to the Sydney Local Environmental Plan (Sydney LEP) 2012 are seeking principally to facilitate the delivery of a new independent K-12 vertical school, catering for approximately 800 students. The amendments sought to the Sydney LEP 2012 will encourage and facilitate the redevelopment of the site by allowing for:

- an increased maximum Floor Space Ratio (FSR)
- an increased maximum Building Height.

Supporting the amendments to the Sydney LEP 2012 is an amendment to the Sydney DCP 2012 which includes site-specific controls. For assessment purposes, the Planning Proposal is supported by a concept scheme prepared by Plus Architecture that facilitates the following:

- A new 6 storey vertical school consisting of: 45 GLS, 13 specialist / classrooms, A multi-purpose hall / auditorium, A library, A canteen, Administration, lobby and circulation spaces, An active green roof, A basement including 55 car parking spaces and end-of-trip facilities
- The incorporation of the existing film school within the new vertical school building
- A total of approximately 13,543m2 of gross floor area which equates to a floor space ratio of 2.94:1. The gross floor area comprises approximately: 10,608m2 education floor area, 2,935m2 commercial (film school) floor area
- Outdoor spaces totalling approximately 4,978m

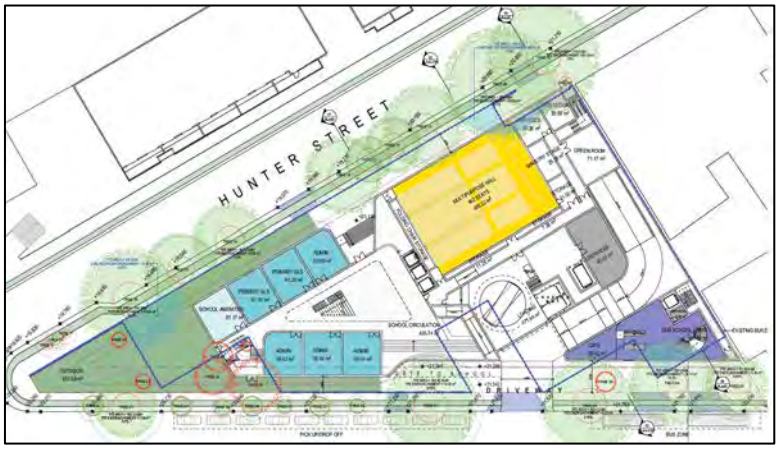


Figure 30: The proposed ground level development plan for the site. (Source Ground floor plan, from 20621 Presentation by SDG Dated 25.10.2023).

Figure 31: The proposed basement development plan for the site. (Source Basement plan, from 20621 Presentation by SDG Dated 25.10.2023).

9 Impact from Planning Proposal

9.1 Seven (7) Tree Removals

If the current proposed construction layout is to proceed, then Seven (7) site trees numbered 7, 20, 21, 24, 25, 26 & 27 are proposed for removal in order to facilitate the layout. The layout and setbacks have been adjusted serval times in design to minimise the quantity of tree removal.

All Seven (7) trees for removal are small site owned trees of Low Retention Value. Trees proposed for removal are all within the proposed footprint and their Low Retention Value status do not warrant further design change to incorporate these trees into the layout.

Trees 20, 21 & 26 are *Celtis sp* of exempt size (<10m Height).

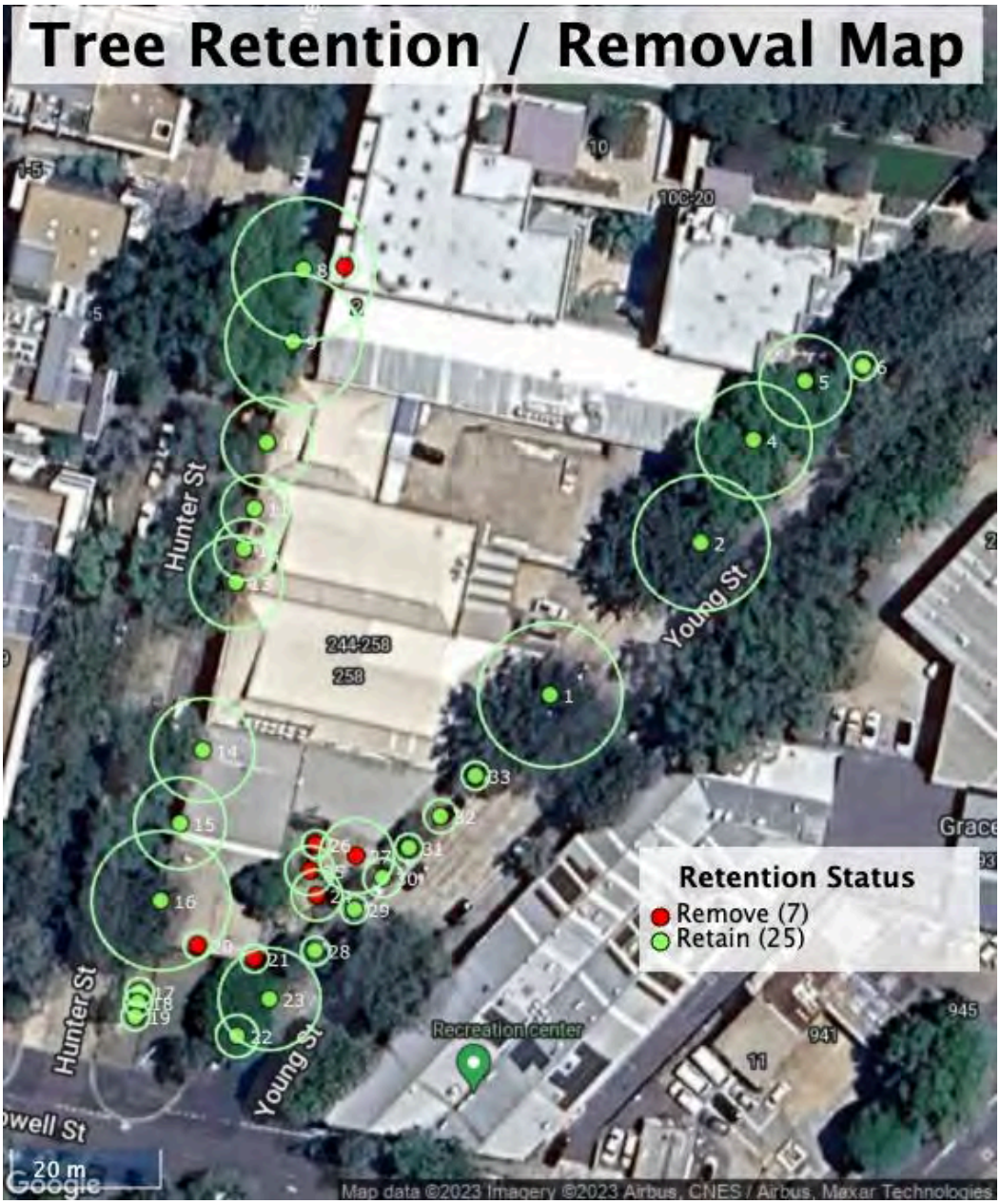


Figure 32: The proposed Tree retention and Removal Map (Source: Tree Plotter 2023).

9.2 25 Trees for Retention

25 trees numbered 1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 22, 23, 28, 29, 30, 31, 32 & 33 will be retained. No impact to the viability of these trees is anticipated if the protection measures are applied as per the guidance in this report.

Trees 4 & 5 are on the Client site and the remainder of the trees are on the Council land surrounding the site.

The proposed new layout has a reduced foot print to that of the existing building,. The proposed building is Six (6) levels high and also has a basement carpark. Certain trees will require supervision of the demolition of the existing as well as minor canopy pruning to facilitate the new building envelopes.

Complete TPZ impact data is seen in the Data Spreadsheet and Plan.

Canopy pruning requirements are detailed below and further detail is provided in the data spreadsheet.

9.2.1 Demolition of Existing Building

The existing building is located within the TPZ and SRZ of numerous trees. This demolition must be completed with arborist supervision and retain all roots >40mm diameter.

9.2.2 Reduced Building Envelope

The TPZ areas that are encroached by the new building envelope are all smaller than the existing encroachment. All trees have a proposed <10 % minor encroachment except for Tree 4 with 18.2%, and Tree 9 with 10.7%. Building layout has been adjusted several times to minimise impacts to trees and to ensure the proposed envelope is smaller than the existing.

The existing building is a multistorey brick struck un a concrete slab and footing. The existing construction is expected to be restricting root growth and resulting in unfavourable growing conditions for tree growth. No evidence of building damage from roots penetrating beneath the building was observed.

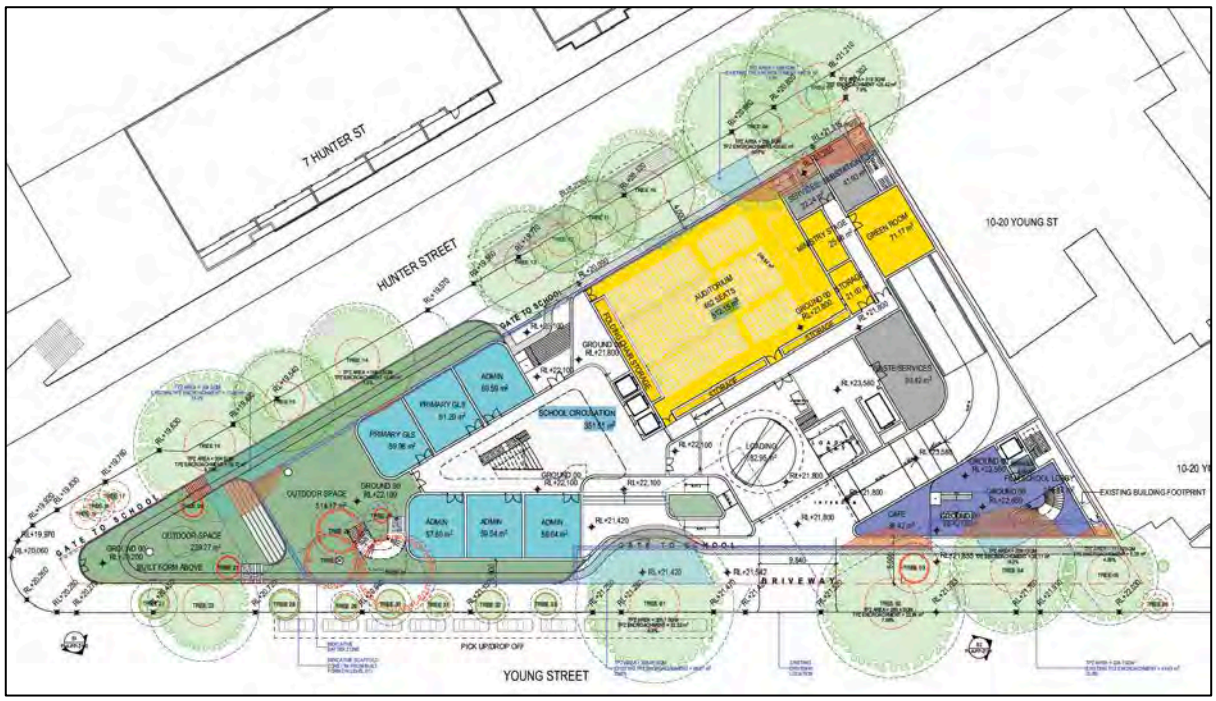


Figure 33: The floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 21/12/2024). See appendix for larger plans.

9.2.3 Temporary Scaffold.

Temporary scaffold 1m wide will be required to facilitate the building works. The scaffold must be placed on ground protection matts as to not damage roots or compact the ground.

The ground below the scaffolding must be protected by boarding (e.g. scaffold board or plywood sheeting) as shown in the figure 94 in section 11. Where access is required, a board walk or other surface material should be installed to minimize soil compaction. Boarding should be placed over a layer of mulch and impervious sheeting to prevent soil contamination. The boarding should be left in place until the scaffolding is removed.

The ground below the temporary scaffold is not expected to be negatively impacted and is not considered as a TPZ encroachment.

9.2.4 Canopy Pruning

Canopy pruning is proposed on several trees to accommodate the building envelope from level 1 up. This includes a 4.8m boundary setback on Young Street. A 1m clearance from the building is required to incorporate the scaffold.

Canopy pruning to provide space for the scaffold will be completed with minimal clearance to permit the scaffold only. Once remove the 1m gap for the scaffold will provide the appropriate 1m gap from the new building.

Pruning for scaffold will be minimized. The scaffolding must be designed to avoid branches or tying back branches. Where pruning is unavoidable it must be in accordance with AS 4373. The proposed pruning is detailed below in images, 3D modelling and descriptions below and it is also detailed in the spreadsheet located in the appendix.

9.2.5 Street Tree Protection

As works are planned near the City of Sydney Street trees in vicinity to the site, the street trees will be protected from the works using the details within the City of Sydney Street Tree Master Plan, Part D Technical Guidelines dated 2011 (Updated 2015), These guidelines have details pertaining to the protection of existing street trees during construction. These management measures will be required for street trees in proximity to the proposed works.

The technical guidelines provide advice pertaining to; Staff Training and Induction, Trunk Protection, Trenching and Excavation Near Trees, Pruning, Kerb Removal Adjacent To Trees, Signs - Tree Protection, Stockpiling and Storage of Materials & Damage to Trees to be Retained

10 Specific Site Trees

10.1 Tree 1 *Eucalyptus microcorys* (Tallow Wood)

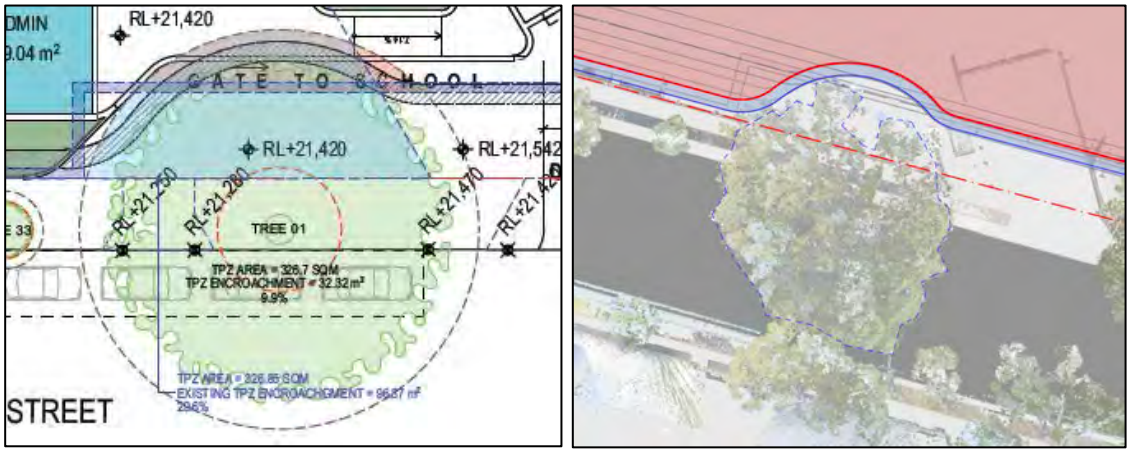
Tree 1 *Eucalyptus microcorys* (Tallow Wood) is a Council tree with High retention value and with High landscape significance.

The exiting building envelope is in the SRZ. Demolition is required in the TPZ and SRZ.

The proposed building envelope proposes a minor 9.9% TPZ encroachment.

Canopy branch reduction pruning of 5 x 80mm diameter branches will provide a 3m spread reduction on the proposed building side. The proposed pruning is estimated at 5% canopy volume.

Figures 34 & 35: The proximity of Tree 1 to the existing building edge. (Source: Austin 2nd November 2023).



Figures 36 & 37: The ground floor plan depicting the existing building in the blue hatched line (partially hidden behind red hatch in this image) with the proposed building TPZ encroachments shown in pink, batter in blue and (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/12024). See appendix for larger plans & Tree Canopy Modelling by Plus Architects dated 1/08/2023)

Figures 38 & 39: The proposed minor pruning requirements to accommodate the proposed building façade.. (Source: Austin 2nd November 2023).

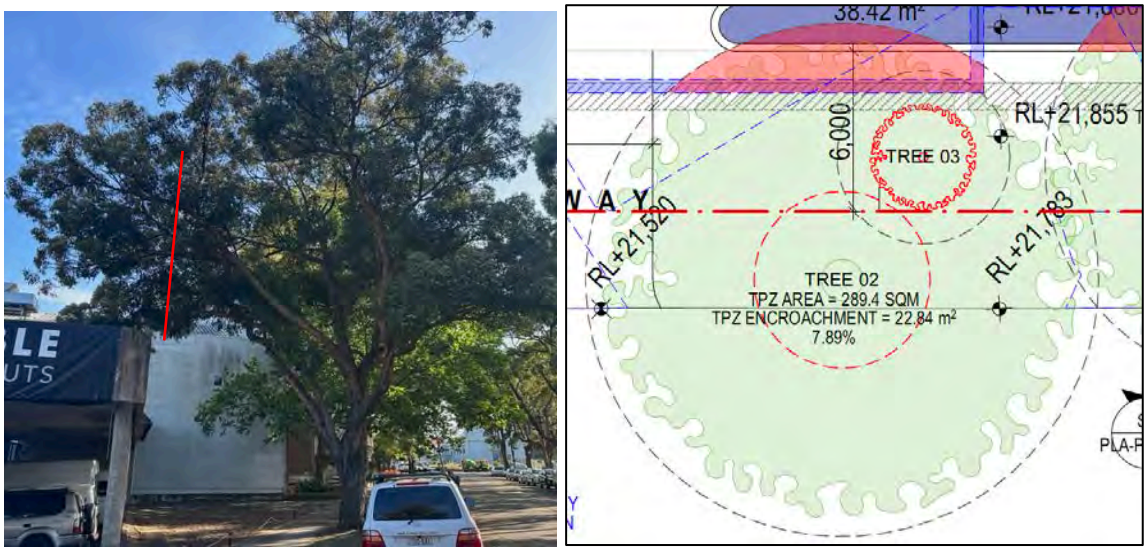
10.2 Tree 2 *Eucalyptus microcorys* (Tallow Wood)

Tree 2 *Eucalyptus microcorys* (Tallow Wood) is a Council tree with High retention value and with High landscape significance.

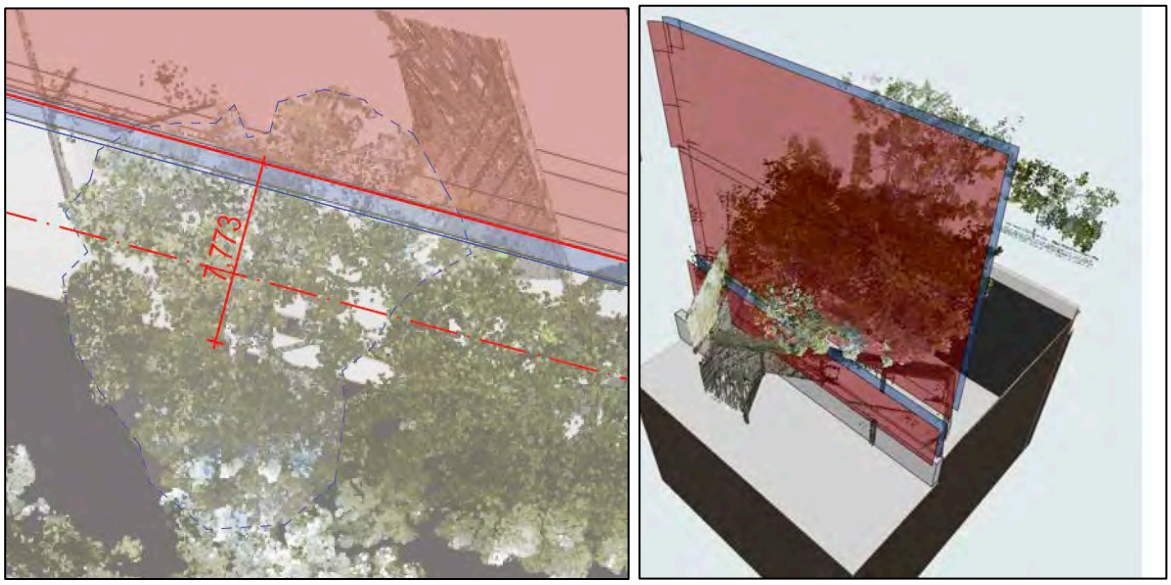
The exiting building envelope is in the TRZ. Demolition is required in the TPZ.

The proposed building envelope proposes a minor 7.89% TPZ encroachment.

Canopy branch reduction pruning of Pruning reduce 14 x 60 - 80mm diameter and 1 lower 100mm branch will provide 5m spread reduction. Plenty of pruning points are available. The proposed pruning is estimated at 15% canopy volume.



Figures 40 & 41: The proximity of Tree 2 to the existing building edge with an approximate pruning setback in red (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP - 1000 dated 15/1/2024). See appendix for larger plans.



Figures 42 & 43: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)

Figures 44 & 45: The proposed pruning requirements to accommodate the proposed building façade next to Tree 2. (Source: Austin 2nd November 2023).

10.3 Tree 4 *Platanus x hybrida* (London Plane)

Tree 4 *Platanus x hybrida* (London Plane) is a site tree with High retention value and with High landscape significance.

The exiting building envelope is in the SRZ. Demolition is required in the TPZ and SRZ.

The existing envelope takes up 20.8% of the TPZ.

The proposed building envelope proposes a major 18.2% TPZ encroachment.

Canopy branch reduction pruning of 1x low branch at 3m of 120mm diameter back to collar. Upper canopy proposes 6 x 60 - 80mm branch reductions gives 3m canopy spread reduction. Numerous pruning points are available. The proposed pruning is estimated at 10% canopy volume.

Figures 46 & 47: The proximity of Tree 4 to the existing building edge (Left) and the slab and drain between the trunk and the building(Right). (Source: Austin 2nd November 2023)

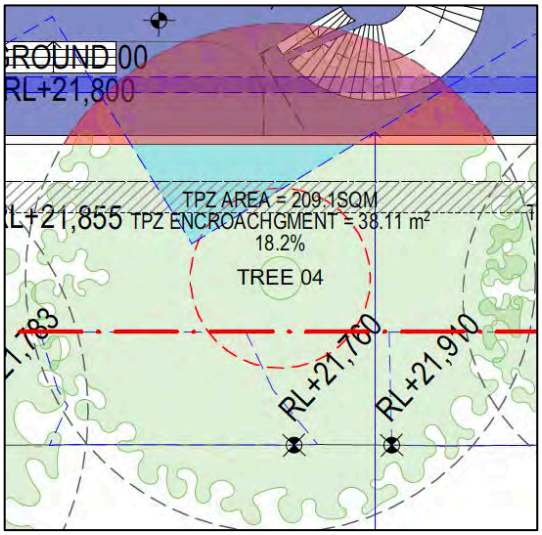
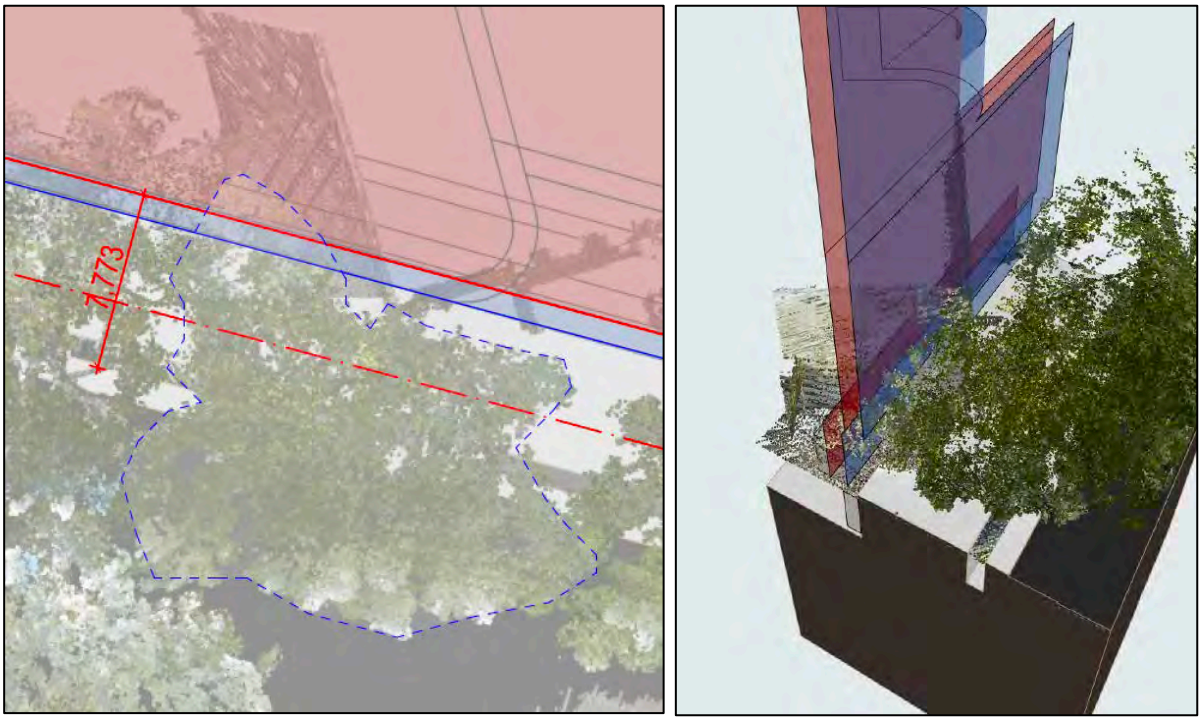


Figure 48: The floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024). See appendix for larger plans



Figures 49 & 50: The 3d modelled Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)

Figures 51 & 52: The proposed pruning requirements to accommodate the proposed building façade. (Source: Austin 2nd November 2023).

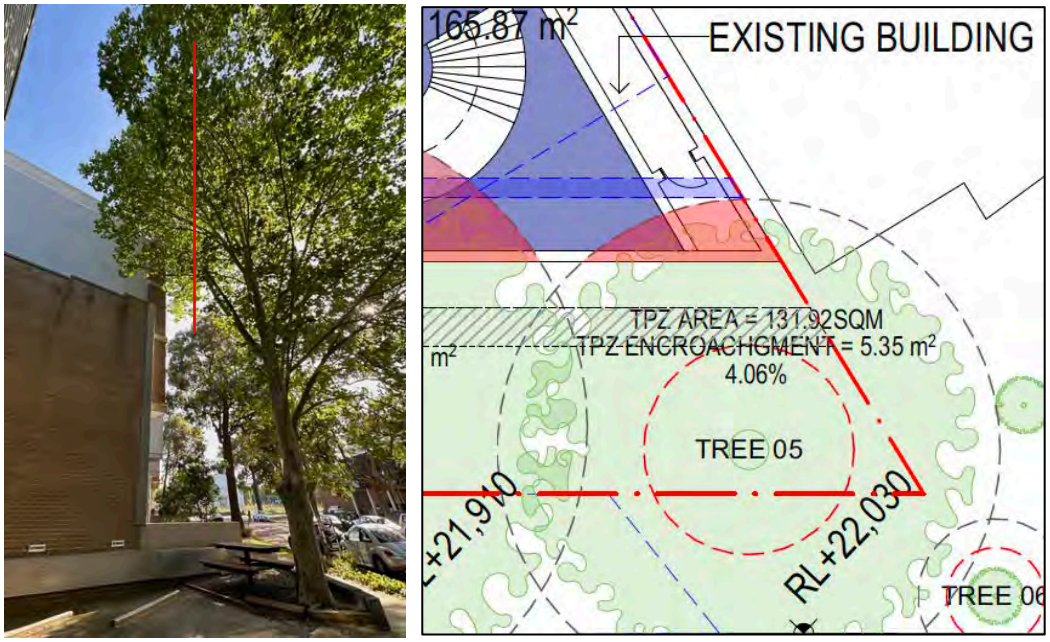
10.4 Tree 5 *Platanus x hybrida* (London Plane)

Tree 5 *Platanus x hybrida* (London Plane) is a site tree with High retention value and with High landscape significance.

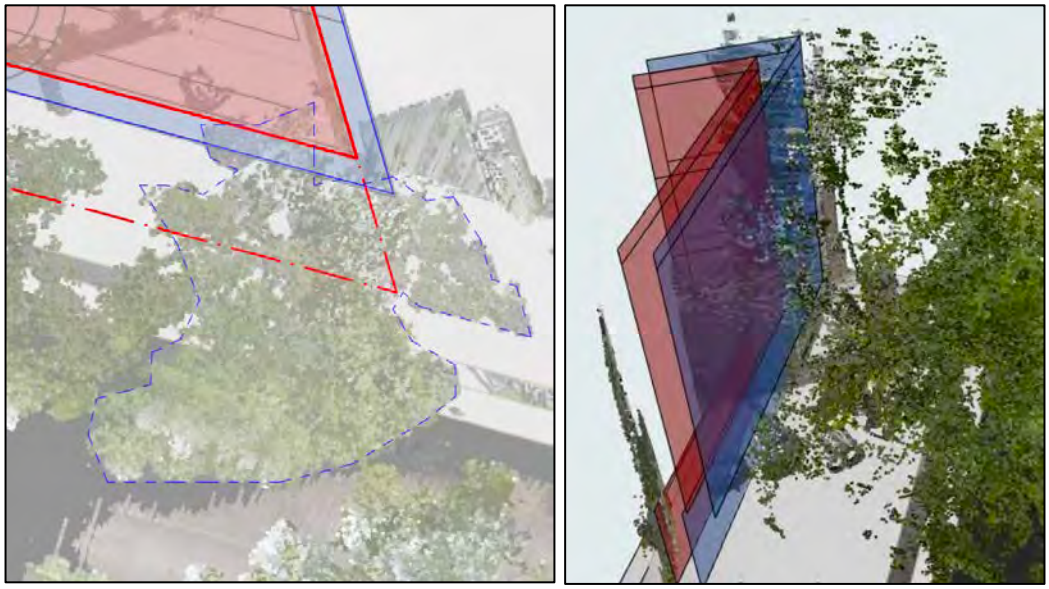
The exiting building envelope is in the TPZ. Demolition of the slab is required in the SRZ and TPZ.

The proposed building envelope proposes a minor 4.06% TPZ encroachment.

Canopy branch reduction pruning of 10 x 60 - 80mm branch reductions + clear neighbours building to 1m. The proposed pruning provides 4m canopy spread reduction. Numerous pruning points are available. The proposed pruning is estimated at 15% canopy volume.



Figures 53 & 54: The proximity of Tree 5 to the existing building edge with an approximate pruning setback in red (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP - 1000 dated 15/1/2024). See appendix for larger plans.



Figures 55 & 56: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)

Figures 57 & 58: The proposed pruning requirements to accommodate the proposed building façade next to Tree 5. (Source: Austin 2nd November 2023).

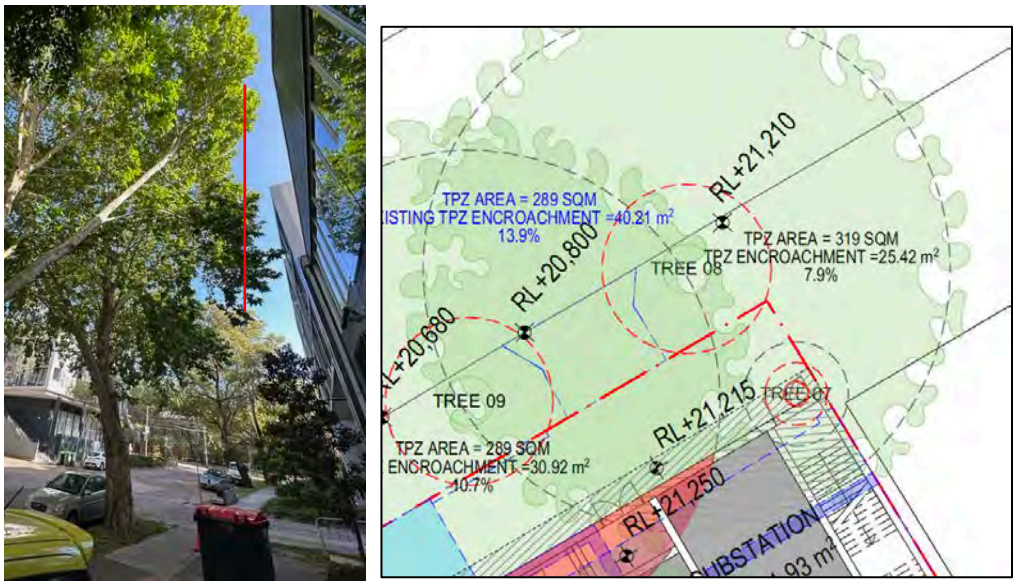
10.5 Tree 8 *Platanus x hybrida* (London Plane)

Tree 8 *Platanus x hybrida* (London Plane) is a Council tree with High retention value and with High landscape significance.

The exiting building envelope is in the TPZ. Demolition of the slab is required in the SRZ and TPZ.

The proposed building envelope proposes a minor 7.9 % TPZ encroachment.

Canopy branch reduction pruning of 6 x 50mm branches. The proposed pruning provides 2m canopy spread reduction. Numerous pruning points are available. The proposed pruning is estimated at <5% canopy volume.



Figures 59 & 60: The proximity of Tree 8 to the existing building edge with an approximate pruning setback in red (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP - 1000 dated 15/1/2024). See appendix for larger plans.

Figures 61 & 62: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)

Figure 63: The proposed pruning requirements to accommodate the proposed building façade next to Tree 8. (Source: Austin 2nd November 2023).

10.6 Tree 9 *Platanus x hybrida* (London Plane)

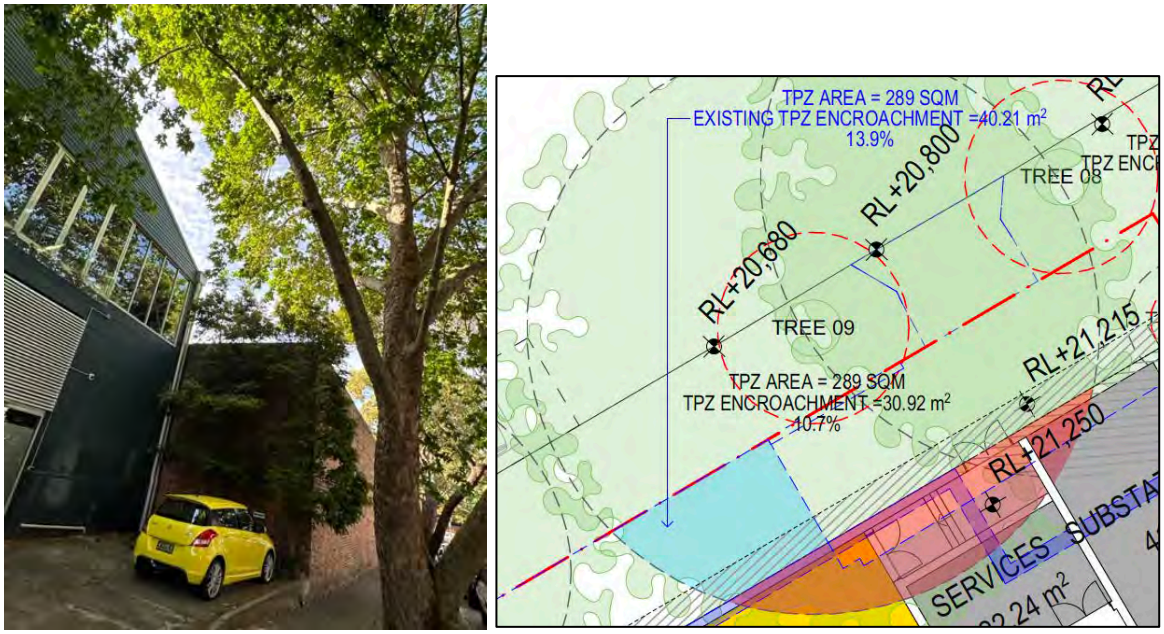
Tree 9 *Platanus x hybrida* (London Plane) is a Council tree with High retention value and with High landscape significance.

The exiting building envelope is in the TPZ. Demolition of the slab is required in the SRZ and TPZ.

The existing building envelope has a 13.9% TPZ encroachment.

The proposed building envelope proposes a 10.7 % TPZ encroachment.

Canopy branch reduction pruning Major - 1x 300mm - elongated extends to proposed building will provide 4m additional clearance. This branch has inadequate pruning points and should be removed to the collar. Additionally, Five(5) x 60 - 80mm branch reductions provide 3m additional clearance. Numerous pruning points are available. The proposed pruning provides 3m canopy spread reduction in total. The proposed pruning is estimated at 15% canopy volume.



Figures 64 & 65: The proximity of Tree 9 to the existing building edge (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024). See appendix for larger plans

Figures 66 & 67: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)

Figures 68 & 69: The proposed pruning requirements to accommodate the proposed building façade next to Tree 9. (Source: Austin 2nd November 2023)

10.7 Tree 10 *Eucalyptus botryoides* (Southern Mahogany)

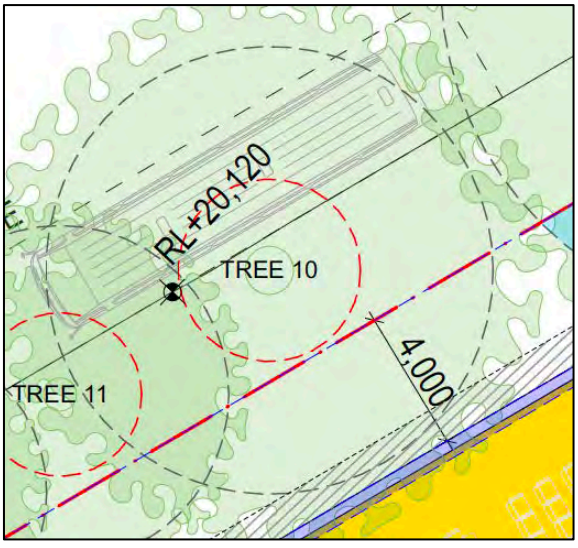
Tree 10 *Eucalyptus botryoides* (Southern Mahogany) is a Council tree with Medium retention value and landscape significance.

The exiting building envelope is in the TPZ. Demolition of the slab is required in the SRZ and TPZ.

The existing building envelope has a Major TPZ encroachment.

The proposed building envelope proposes a 0 % TPZ encroachment.

No pruning is required due to the proposed set back.



Figures 70 & 71: The proximity of Tree 10 to the existing building edge (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024) See appendix for larger plans.

Figures 72 & 73: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)

10.8 Tree 14 *Eucalyptus microcorys* (Tallow Wood)

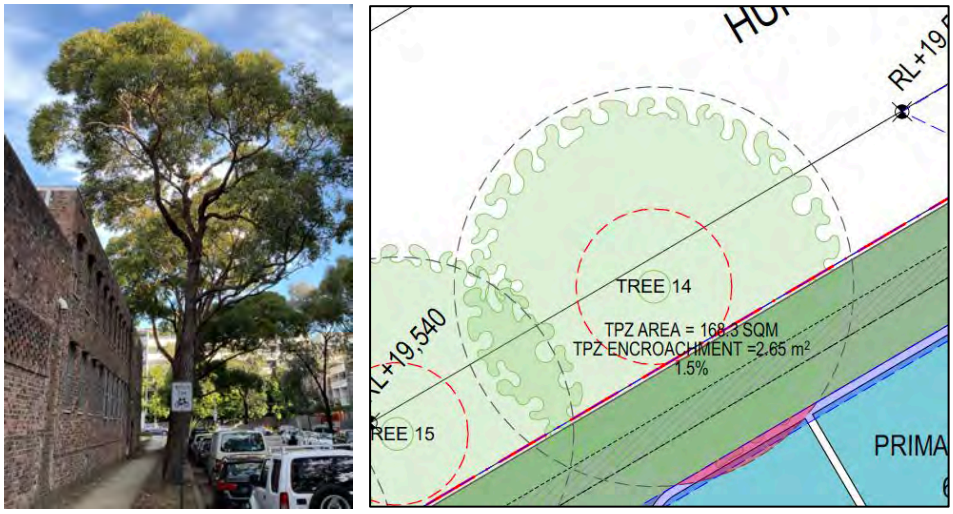
Tree 14 *Eucalyptus microcorys* (Tallow Wood) is a Council tree with Medium retention value and landscape significance.

The exiting building envelope is in the TPZ. Demolition of the slab is required in the SRZ and TPZ.

The existing building envelope has a Major TPZ encroachment.

The proposed building envelope proposes a minor 1.5 % TPZ encroachment.

Canopy branch reduction pruning of Four (40) x 50mm diameter branches will provide 2m canopy reduction and improved branch direction for future building façade. The proposed pruning is estimated at <5% canopy volume.



Figures 74 & 75: The proximity of Tree 14 tto the existing building edge (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024) See appendix for larger plans.

Figures 76 & 77: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Left) (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023) and The proposed pruning requirements to accommodate the proposed building façade next to Tree 14. (Source: Austin 2nd November 2023).

10.9 Trees 13 & 15

Tree 13 *Eucalyptus microcorys* (Tallow Wood) is a Council tree with Medium retention value and landscape significance.

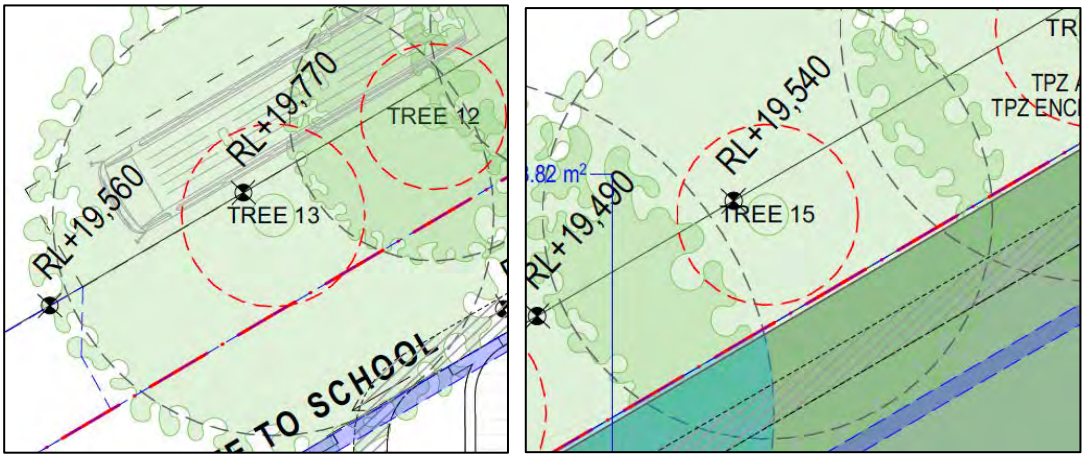
Tree 15 *Eucalyptus botryoides* (Southern Mahogany) is a Council tree with Medium retention value and landscape significance

The exiting building envelope is in the TPZs. Demolition of the slab is required in the SRZs and TPZs.

The existing building envelope has a Major TPZ encroachment for both trees

The proposed building envelope proposes a 0 % TPZ encroachment.

Canopy branch reduction pruning of Four (40) x 50mm diameter branches gives 2m clearance, improved branch direction for future building façade. The proposed pruning is estimated at <5% canopy volume.



Figures 78 & 79: The floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch to Tree 13 (Left) and Tree 15 (Right). (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024) See appendix for larger plans

10.10 Tree 16 *Eucalyptus microcorys* (Tallow Wood)

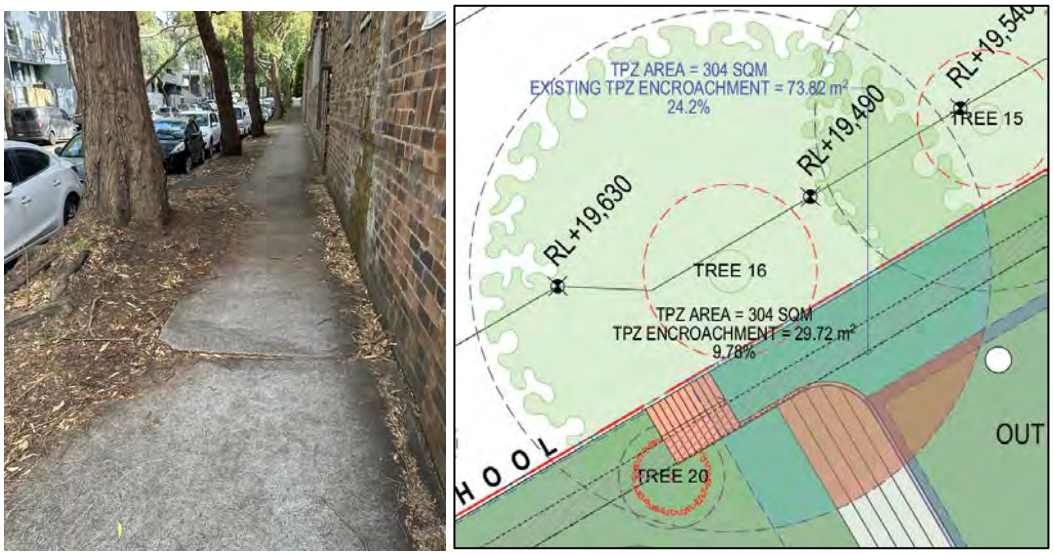
Tree 16 *Eucalyptus microcorys* (Tallow Wood) is a Council tree with High retention value and landscape significance.

The exiting building envelope is in the TPZ. Demolition of the slab is required in the SRZ and TPZ.

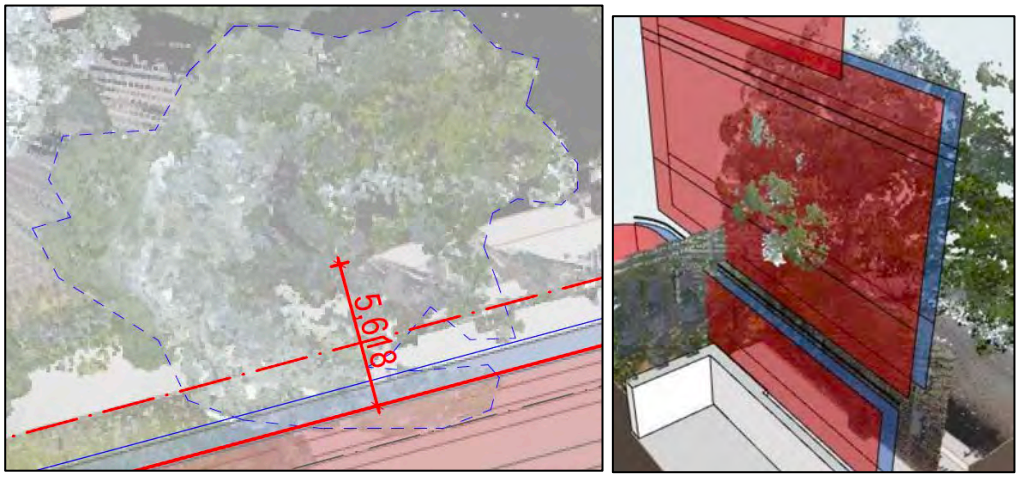
The existing building envelope has a Major 24.2% TPZ encroachment.

The proposed building envelope and outdoor staircases propose a minor 9.78 % TPZ encroachment.

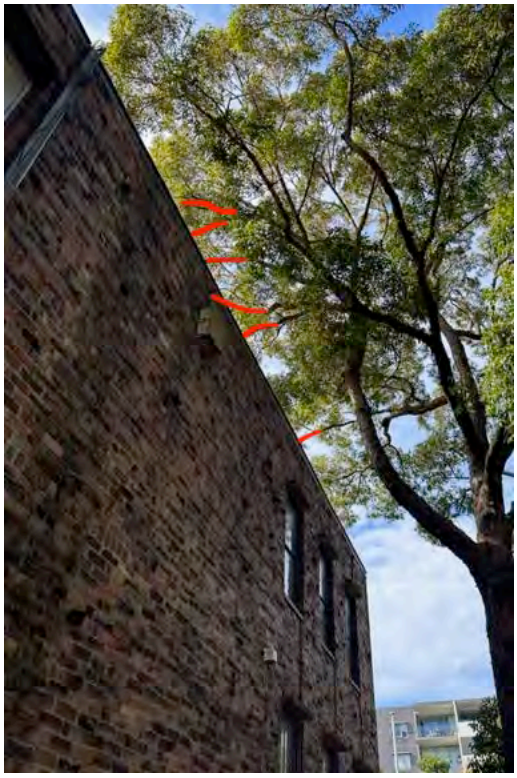
Canopy branch reduction pruning of Five (5) x 50mm diameter and One (1)x 100mm diameter branches would give 4m canopy spread reduction. Plenty of pruning points are available to minimize cuts. The proposed pruning is estimated at 10% canopy volume.



Figures 80 & 81: The proximity of Tree 16 to the existing building edge depicting the lifted paving (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line with the proposed building TPZ encroachments shown in pink, batter in blue and scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024). See appendix for larger plans.



Figures 82 & 83: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)




Figures 84 & 85: The proposed pruning requirements to accommodate the proposed building façade next to Tree 16. (Source: Austin 2nd November 2023).

10.11 23 *Ficus sp.* (Fig)

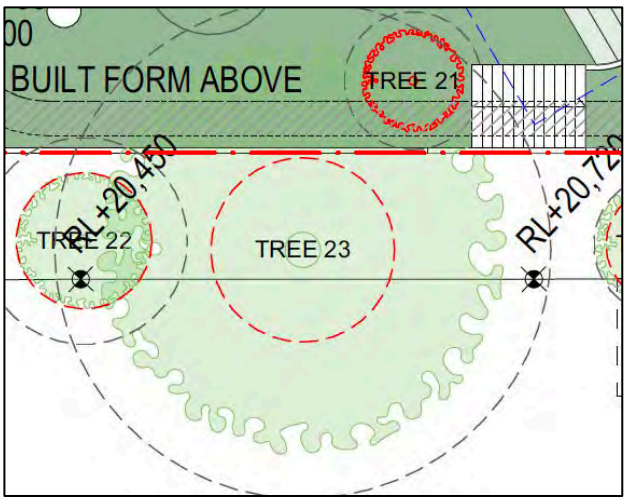
Tree 23 *Ficus sp.* (Fig) is a Council tree with Medium retention value and landscape significance.

Excavation is required in TPZ.

The proposed building envelope proposes a 4.7 % TPZ encroachment.

The 1m wide temporary scaffold results in a total 10.2% TPZ encroachment.

Canopy branch reduction pruning of Ten (10) 50mm diameter branch reduction of 2m. This would provide 42m canopy spread reduction from the proposed building façade. Plenty of pruning points are available to minimize cuts. The proposed pruning is estimated at 10% canopy volume.

Figures 86 & 87: The proximity of Tree 23 to the existing building edge depicting the lifted paving (Left - Source: Austin 2nd November 2023) and the floor plan depicting the existing building in the blue hatched line scaffold from level 1 and above shown in hatch (Source: General Floor Plan, by Plus Architects, drawing number PLA-PP -1000 dated 15/1/2024). See appendix for larger plans

Figures 88 & 89: The Tree canopy impact of the proposed building in Pink and 1m wide scaffold in Blue. (Source: Tree Canopy Modelling by Plus Architects dated 1/08/2023)

Figures 90 & 91: The proposed pruning requirements to accommodate the proposed building façade next to Tree 16. (Source: Austin 2nd November 2023).

10.12 Remaining Trees

Eleven (11) Council Trees numbered 6, 17, 18, 19, 22, 28, 29, 30, 31, 32 & 33 are located adjacent to the site but have no direct impacts from the proposal. These Eleven (11) Council Trees must be protected from construction activities such as goods movements by applying the details within the City of Sydney Street Tree Master Plan, Part D Technical Guidelines dated 2011 (Updated 2015).

11 Measures to minimise impacts to retained trees.

25 Trees can be retained if the tree protection measures in the report are adhered to. In order to minimise the impact to the tree nominated for retention, the following measures must be incorporated into the works.

11.1 Project Arborist

An official "Project Arborist" should be commissioned to oversee the tree protection, any works within the TPZ's and complete compliance certification. The Project Arborist should have minimum five (5) years industry experience in the field of arboriculture.

11.2 Seven (7) Tree Removals

Seven (7) site trees numbered 7, 20, 21, 24, 25, 26 & 27 are proposed for removal and should be removed at the beginning of the project (STCA). The trees nominated for retention must not be damaged during the tree removal works.

11.2.1 Standard of Works

To ensure a high standard of works is achieved, all proposed arboricultural works must be completed by a suitably qualified and experienced Arborist(s) of a minimum AQF Level 3 in accordance with the principles of the Australian Standard *4373-2007 Pruning of Amenity Trees.*

11.3 Tree Protection Fencing

Protective fencing is to be installed as close as practicable from the trunk to the TPZ distances listed in the Tree Data table. Existing site features such as boundary fences will influence the extent of the TPZ fencing. The project arborist is to determine the suitability and extent of the tree protection fencing to be used.

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

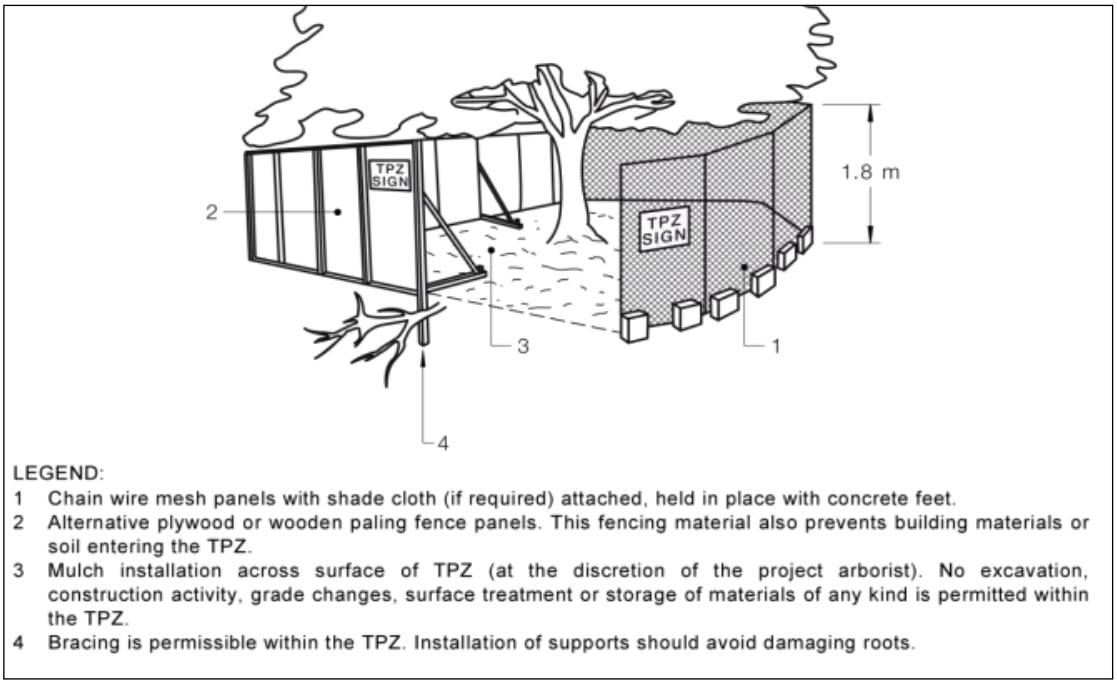


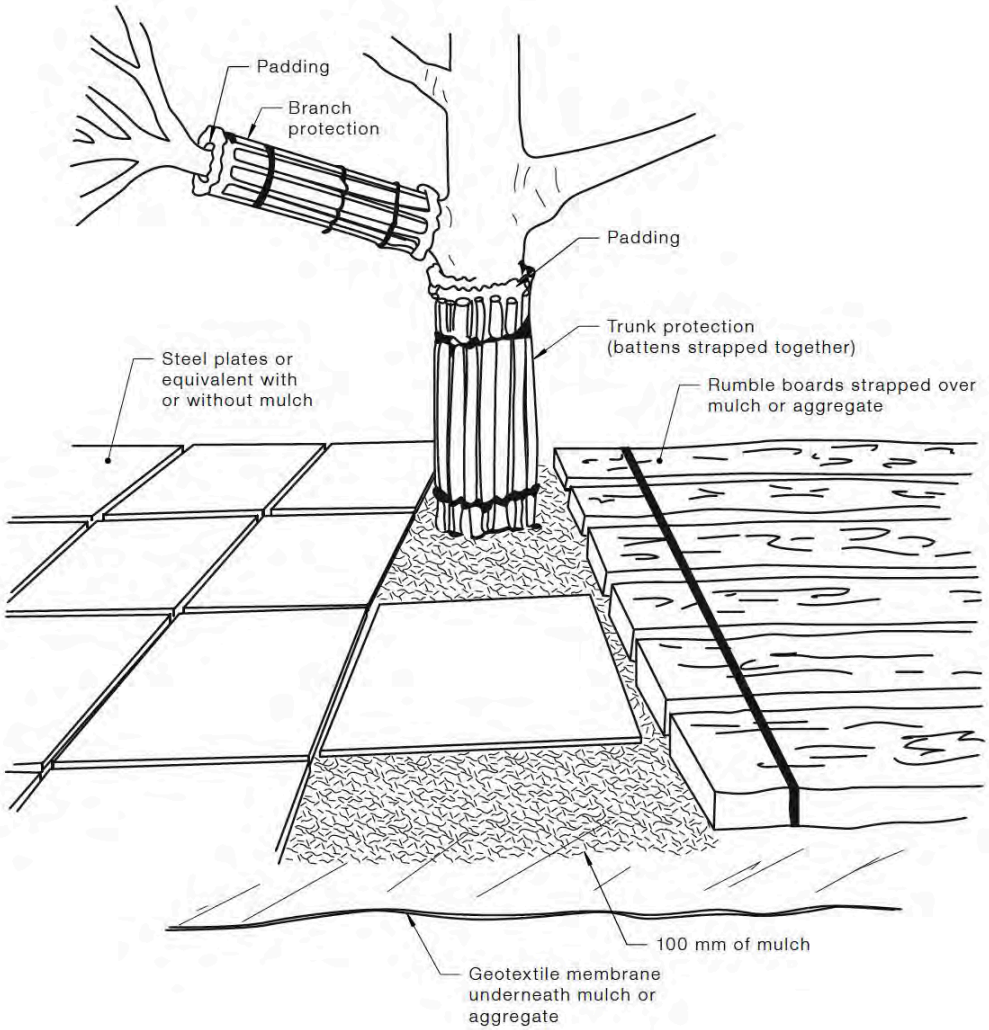
Figure 92: TPZ fencing specification. (Source: AS 4970:2007).

11.4 Trunk and Branch Protection

Trunk and Branch Protection requires the wrapping of trunks and branches with padding then at the addition of boards to be strapped (Not Nailed) to the tree using galvanised strapping tape.

11.5 Ground Protection

Rumble boards are to be installed on the ground wherever access to the site is planned outside existing driveways. Rumble boards must be installed on aggregate or mulch above a geotextile base. The rumble boards must be of suitable thickness to prevent compaction to the ground.



NOTES:

1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.

2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

Figure 93: Trunk and branch warping as well as rumble board specifications. (Source: AS 4970:2007).

11.6 Existing Driveways

The existing driveways are suitable to use as access for demolition and site works. The existing driveway must be left in situ until the new driveways are ready to be poured.

11.7 Temporary Scaffold.

Temporary scaffold 1m wide will be required to facilitate the building works. The scaffold must be placed on ground protection matts as to not damage roots or compact the ground. Scaffold construction will be combined with canopy pruning and trunk/branch wrapping.

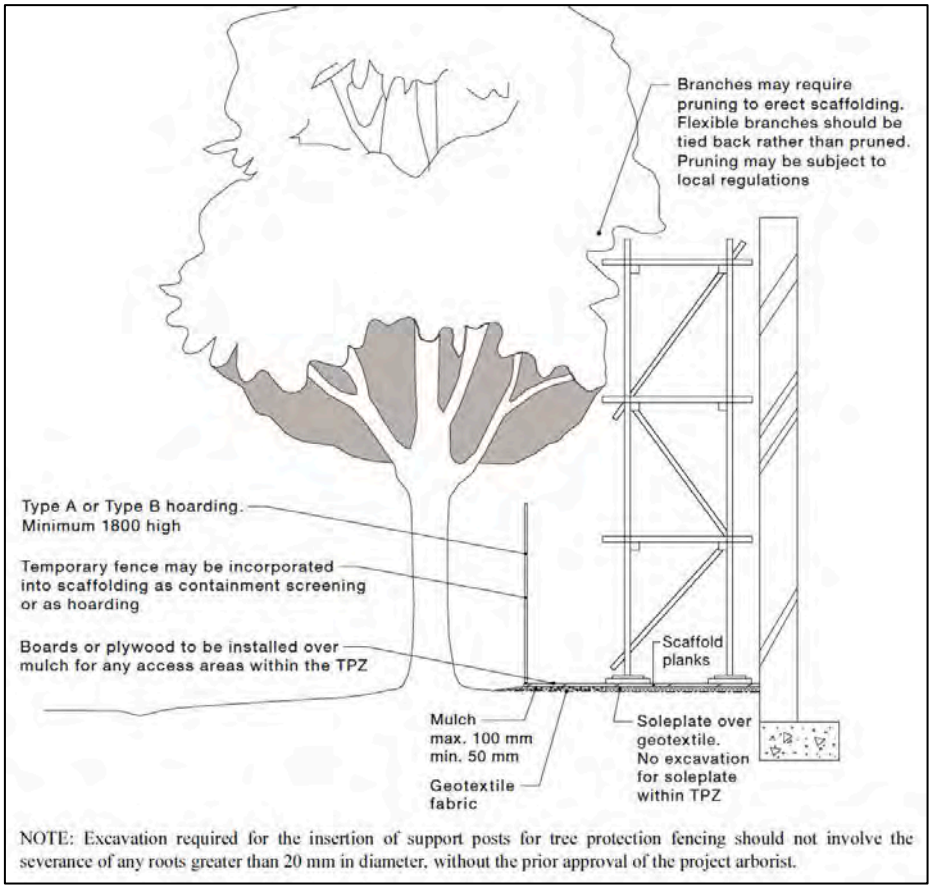


Figure 94: Scaffold within the TPZ specification. (Source: AS 4970:2007)

11.8 Tree Protection Signage

The tree protection signage below should be installed at 10m intervals along the Tree Protection Fences.

Figure 95: TPZ signage specification. (Source: Austin 2023).

11.9 Canopy Pruning

All proposed clearance pruning must be in line with the detail provides in this report be approved by the Council, be supervised by the project Arborist, be completed by a suitably qualified and experienced Arborist(s) of a minimum AQF Level 3 in accordance with the principles of the Australian Standard *4373-2007 Pruning of Amenity Trees.*

11.10 Works within TPZ's

All works within the TPZs must be completed by techniques that do not damage tree roots. Excavation works should be undertaken using techniques that are sensitive to tree roots to avoid unnecessary damage. Such techniques include:

- Excavation/demolition by hand
- Excavation/demolition by machine with Arborist supervision
- Excavation using a high-pressure water jet and vacuum truck
- Excavation using an air spade with vacuum truck

Machine excavation is prohibited within the remaining TPZ areas of retained trees unless undertaken at the direct consent from the project arborist and/or the responsible authority.

11.11 Activities Restricted within the TPZ

- Machine excavation without Arborist supervision
- Demolition by machine without Arborist supervision
- Excavation for silt fencing
- Storage
- Preparation of chemicals, including preparation of cement products
- Dumping of waste
- Wash down and cleaning of equipment
- Placement of fill
- Soil level changes
- Temporary or permanent installation of services, utilities, or signs
- Physical damage to the tree
- Parking or driving of vehicles/machinery.

11.12 Compliance Inspections & Reports

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

Tree inspections and compliance reporting by the project arborist is required at the following points;:

1. Following the tree removal works and the installation of the tree protection including, tree protection fencing, trunk protection, mulch and ground protection matts.
2. During any demolition or excavation within TPZ's of the Trees to be retained.
3. To supervise the proposed pruning schedule on trees to be retained.
4. Following the installation of the ground protection and scaffold in the TPZ's
5. During any other works within TPZ's of trees to be retained unless specific methodologies are developed and approved by the project arborist.
6. Every month during the works to ensure compliance

7. At the practical completion of the project

Following each inspection, the project arborist shall prepare a brief compliance report detailing the condition of the trees. These reports should contain photographic evidence where required to demonstrate that the protection measures are in place as specified.

Any Non-Compliance Statements shall be submitted to the Project Manager (as well as the clients' nominated representative) if tree protection conditions have been breached. Reports should contain clear remedial action specifications to minimise any adverse impact on any subject tree.

12 Conclusion

This Arboricultural Impact Assessment has provided a detailed analysis of the trees that could be affected by development on the subject site. The requirements for Tree Preservation Zones are in line with AS 4970:2009 *Protection of tree on development sites.* The viability of the trees nominated for retention is not anticipated to be impacted if the protection measures are applied as per the guidance in this report.

13 References

Australian Standard 4970: 2009 *Protection of trees on development sites.*

British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations.*

14 Industry Qualifications

- AQF Level 5 & 8 Consulting Arborist.
- ISA Certified Arborist # AU-0348A
- Tree Risk Assessment Qualification (TRAQ) (Exp Oct 2028)
- Advanced Quantified Tree Risk Assessment Registered User # 3692
- Masters of Environmental Law

15 Appendices

15.1 Significance of a Tree Assessment Rating System (IACA 2010)©

The landscape significance of a tree is an essential criterion for establishing the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance and *Useful Life Expectancy* of an individual tree has been defined, the retention value can be determined.

Tree Significance - Assessment Criteria

1. High Significance in landscape.

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- 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 is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- 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 supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- 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.

2. Medium Significance in landscape.

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in 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 provides a fair contribution to the visual character and amenity of the local area;
- 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*.

3. Low Significance in landscape.

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings;
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area;
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms

and can easily be replaced with a suitable specimen;
- 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 is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms;
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species:

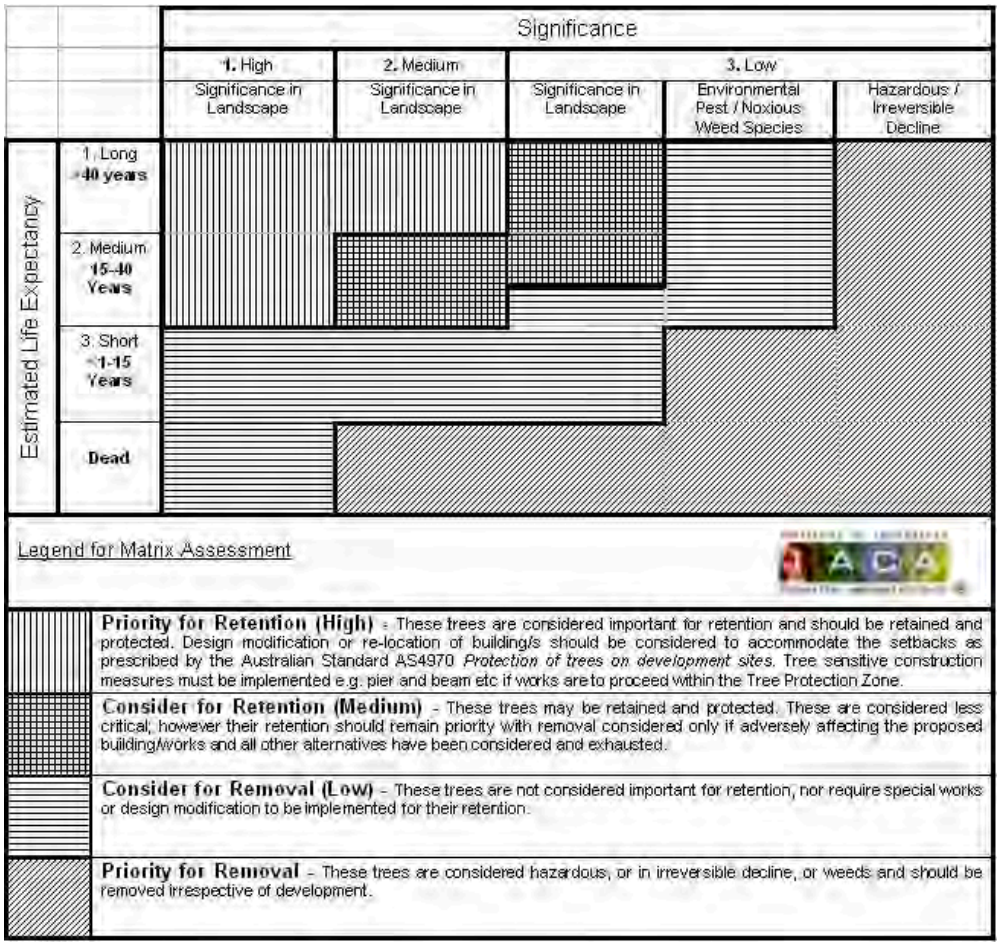
- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties;
- The tree is a declared noxious weed by legislation.

Hazardous/Irreversible Decline:

- The tree is structurally unsound and/or unstable and is considered potentially dangerous;
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group. Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety

Table - Tree Retention Value - Priority Matrix



15.2 Complete Tree and Impact Data Spreadsheet

15.3 Tree Location Map

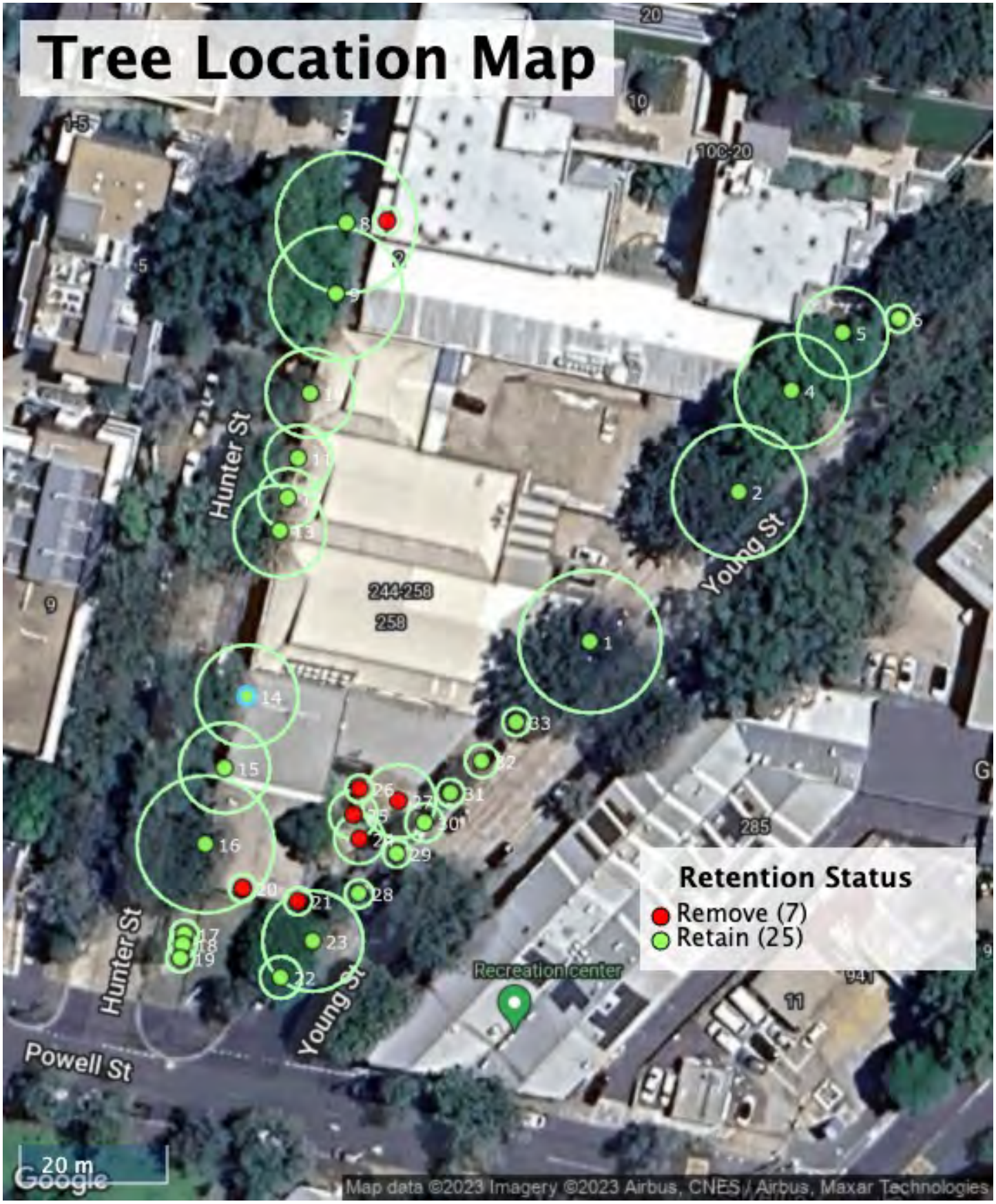
15.4 City of Sydney Street Tree Master Plan, Part D Technical Guidelines dated 2011 (Updated 2015)

15.5 Tree Protection and Management Plan

15.6 Tree Impact Plan

Tree Id	Tree Ownership	Common Name	Botanical Name	Trees in Group	Tree Age	DBH [cm]	Root Crown Diameter [cm]	TPZ Radius [m]	TPZ Area [m2]	SRZ Radius [m]	Height [m]	Canopy [m]	Health	Structure	Significance	ULE [Yrs.]	Observations	Habitat Features	Landscape Significance (STARS)	Retention Value (SRIV)	Canopy distance over boundary	Existing Canopy overhang severity	Pruing Required for Proposed building	Pruing Required for Proposed Scaffold	Pruning Detail	Required Pruning %	Current TPZ Encraochment	Proposed TPZ Encroachment %	Proposed Impact	Proposed Action
1	Council land	Tallowwood	*Eucalyptus microcorys*	1	Mature	85	91	10.2	327	3.18	19	18	Good	Good	Amenity value, Shade value	Long (>40 years)	Crossing/rubbing branches, Deadwood > 30mm, Epicormic growth, Flush cuts	None sighted	High	High (A)	7	Major	None	Yes	Pruning 5 x 80mm diamter will give 3m spread reduction,	5%	Minor	9.9	Demoltion and reduced TPZ encroachment	Retain and Protect
2	Council land	Tallowwood	*Eucalyptus microcorys*	1	Mature	80	99	9.6	289	3.3	17	18	Good	Average	Amenity value, Shade value	Long (>40 years)	Co-dominant stems, Deadwood > 30mm, Epicormic growth, Previous failure(s)	None sighted	High	High (A)	8	Major	Yes	Yes	Pruning reduce 14 x 60 - 80mm diamter and 1 lower 100mmwould give 5m spread reduction. Plenty of pruning points are available.	15%	Minor	7.89	Demoltion, Excavation with reduced TPZ encroachment, Pruning	Retain and Protect
4	Client site	London Plane	*Platanus x hybrida*	1	Mature	68	72	8.16	209	2.88	20	16	Good	Good	Amenity value, Shade value	Long (>40 years)	Co-dominant stems, Deadwood < 30mm, Poor pruning	None sighted	High	High (A)	NA	Major	Yes	Yes	1x low branch at 3m 120mm back to collar. Upper canopy 6 x 60 - 80mm branch reductions gives 3m additional clearance. Numerous pruning points available	10%	20.8	18.2	Demoltion, Excavation with reduced TPZ encroachment, Pruning	Retain and Protect
5	Client site	London Plane	*Platanus x hybrida*	1	Mature	54	62	6.48	132	2.71	19	12	Good	Good	Amenity value, Shade value	Long (>40 years)	Co-dominant stems, Deadwood < 30mm, Poor pruning	None sighted	High	High (A)	NA	Major	Yes	Yes	10 x 60 - 80mm branch reductions + clear neighbours building to 1m. Can provide 4m additional clearance.	15%	None	4.06	Demoltion, Excavation with reduced TPZ encroachment, Pruning	Retain and Protect
6	Council land	Tallowwood	*Eucalyptus microcorys*	1	Juvenile	9	10	2	12.6	1.26	6	1.5	Good	Good	New tree planting	Long (>40 years)		None sighted	Medium	Medium (B)	None	Minor	None	None		None	None	None	No Impact	Retain and Protect
7	Client site	Dwarf Bull Bay	*Magnolia grandiflora 'Little Gem'*	1	Semi-Mature	7	9	2	12.6	1.2	6	1	Good	Good	Amenity value	Medium (15-40 years)	Deadwood < 30mm	None sighted	Low	Low (C)	NA	NA	None	None		None			Within foot Print	Remove
8	Council land	London Plane	*Platanus x hybrida*	1	Mature	84	95	10.08	319	3.24	20	22	Good	Average	Amenity value, Shade value	Medium (15-40 years)	Co-dominant stems, Deadwood < 30mm, Suppressed	None sighted	High	High (A)	3	Minor	Yes	Yes	Minor - 6 x 50mm branch reductions gives 2m additional clearance	<5%	Major	7.9	Demoltion, Excavation with reduced TPZ encroachment, Pruning	Retain and Protect
9	Council land	London Plane	*Platanus x hybrida*	1	Mature	80	93	9.6	289	3.21	20	22	Good	Average	Amenity value, Shade value	Medium (15-40 years)	Co-dominant stems, Deadwood < 30mm	None sighted	High	High (A)	6	Major	Yes	Yes	Major - 1x 300mm - elongated extends to propsed building. Gives 4m additional clearance + 5 - 60 - 80mm reductions gives 3m additional clearance.	15%	13.9	10.7	Demoltion, Excavation with reduced TPZ encroachment, Pruning	Retain and Protect
10	Council land	Southern Mahogany	*Eucalyptus botryoides*	1	Mature	53	56	6.36	127	2.59	16	16	Good	Average	Amenity value, Shade value	Medium (15-40 years)	Co-dominant stems, Epicormic growth, Previous failure(s), Suppressed	None sighted	Medium	Medium (B)	4	Minor	None	None	Minor reduction pruning of 4 x 50mm gives 2m clearance, improved branch direction for future building facade	<5%	Major	0	Demoltion, Excavation with reduced TPZ encroachment,	Retain and Protect
11	Council land	Southern Mahogany	*Eucalyptus botryoides*	1	Semi-Mature	40	43	4.8	72.4	2.32	15	11	Good	Average	Amenity value, Shade value	Medium (15-40 years)	Epicormic growth, Suppressed	None sighted	Medium	Medium (B)	3	Minor	None	None	Minor reduction pruning of 4 x 50mm gives 2m clearance, improved branch direction for future building facade	<5%	Major	0	Demoltion, Excavation with reduced TPZ encroachment,	Retain and Protect
12	Council land	Southern Mahogany	*Eucalyptus botryoides*	1	Semi-Mature	36	37	4.32	58.6	2.18	15	9	Good	Average	Amenity value, Shade value	Medium (15-40 years)	Epicormic growth, Suppressed	None sighted	Medium	Medium (B)	1	Minor	None	None		None	Major	0	Demoltion, Excavation with reduced TPZ encroachment,	Retain and Protect
13	Council land	Tallowwood	*Eucalyptus microcorys*	1	Mature	55	64	6.6	137	2.74	16	15	Good	Good	Amenity value, Shade value	Medium (15-40 years)	Deadwood < 30mm, Epicormic growth, Infrastructure damage	None sighted	Medium	Medium (B)	4	Major	None	None	Minor reduction pruning of 6 x 50mm gives 2m clearance, improved branch direction for future building facade	<5%	Major	0	Demoltion, Excavation with reduced TPZ encroachment,	Retain and Protect
14	Council land	Southern Mahogany	*Eucalyptus botryoides*	1	Mature	61	70	7.32	168	2.85	17	14	Good	Good	Amenity value, Shade value	Medium (15-40 years)	Co-dominant stems, Epicormic growth, Mechanical damage to root(s)	Stick nest(s)	Medium	High (A)	3	Major	None	None	Minor reduction pruning of 4 x 50mm gives 2m clearance, improved branch direction for future building facade	<5%	Major	1.5	Demoltion, Excavation with reduced TPZ encroachment,	Retain and Protect
15	Council land	Southern Mahogany	*Eucalyptus botryoides*	1	Mature	54	57	6.48	132	2.61	17	14	Good	Average	Amenity value, Shade value	Medium (15-40 years)	Crossing/rubbing branches, Epicormic growth, Mechanical damage to root(s), Suppressed, Wound(s)	None sighted	Medium	High (A)	3	Minor	None	None			Major	0	Demoltion, Excavation with reduced TPZ encroachment,	Retain and Protect
16	Council land	Tallowwood	*Eucalyptus microcorys*	1	Mature	82	98	9.84	304	3.28	21	19	Good	Good	Amenity value, Shade value	Medium (15-40 years)	Epicormic growth, Inappropriate location, Infrastructure damage, Mechanical damage to root(s)	None sighted	High	High (A)	7	Major	Yes	Yes	Pruning reduce 5 x 50mm diameter and 1 100mm would give 4m more clearance. Plenty of pruning points.	<10%	24.2	9.78	Demoltion, Excavation with reduced TPZ encroachment, Pruning	Retain and Protect
17	Council land	Crepe Myrtle	*Lagerstroemia indica*	1	Young	3	4	2	12.6	0.86	1	1	Good	Good	Landscape feature	Medium (15-40 years)			Low	Low (C)	0	None	None	None			None	0	No Impact	Retain and Protect
18	Council land	Tallowwood	*Eucalyptus microcorys*	1	Juvenile	14	17	2	12.6	1.57	7	2	Good	Good	Amenity value	Long (>40 years)		None sighted	Medium	Medium (B)	0	None	None	None			None	0	No Impact	Retain and Protect

Tree Id	Tree Ownership	Common Name	Botanical Name	Trees in Group	Tree Age	DBH [cm]	Root Crown Diameter [cm]	TPZ Radius [m]	TPZ Area [m2]	SRZ Radius [m]	Height [m]	Canopy [m]	Health	Structure	Significance	ULE [Yrs.]	Observations	Habitat Features	Landscape Significance (STARS)	Retention Value (SRIV)	Canopy distance over boundary	Existing Canopy overhang severity	Pruing Required for Proposed building	Pruing Required for Proposed Scaffold	Pruning Detail	Required Pruning %	Current TPZ Encraochment	Proposed TPZ Encroachment %	Proposed Impact	Proposed Action
19	Council land	Crepe Myrtle	*Lagerstroemia indica*	1	Young	3	4	2	12.6	0.86	1	1	Good	Good	Landscape feature	Medium (15-40 years)			Low	Low (C)	0	None	None	None			None	0	No Impact	Retain and Protect
20	Client site	North American Hackberry	*Celtis occidentalis*	1	Semi-Mature	8	10	2	12.6	1.26	5	3	Good	Good	Exempt Size	Medium (15-40 years)	Co-dominant stems, Inappropriate location	None sighted	Low	Low (C)	NA	NA	NA	NA					Within foot Print	Remove
21	Client site	North American Hackberry	*Celtis occidentalis*	1	Semi-Mature	8	10	2	12.6	1.26	5	3	Good	Good	Exempt Size	Medium (15-40 years)	Co-dominant stems, Inappropriate location	None sighted	Low	Low (C)	NA	NA	NA	NA					Within foot Print	Remove
22	Council land	Wallangarra White Gum	*Eucalyptus scoparia*	1	Semi-Mature	25	29	3	28.3	1.97	10	4	Average	Good	Amenity value	Medium (15-40 years)	Co-dominant stems, Deadwood < 30mm, Epicormic growth	None sighted	Medium	Medium (B)	1	Minor	None	None			None	0	No Impact	Retain and Protect
23	Council land	Fig	*Ficus sp.*	1	Semi-Mature	60.09	60	7.21	163	2.67	9	12	Good	Average	Amenity value, Shade value	Long (>40 years)	Co-dominant stems, Deadwood < 30mm, Included bark	None sighted	Medium	Medium (B)	4	Major	Yes	Yes	Minor - 10 x 50mm branch reduction of 2m	10%	None	0	Demoltion, Excavation with reduced TPZ encroachment, Pruning	Retain and Protect
24	Client site	Golden Scotch Elm	*Ulmus glabra 'Lutescens'*	1	Mature	30	39	3.6	40.7	2.23	7	7	Average	Poor	Amenity value	Short (5-15 years)	Cavity, Co-dominant stems, Deadwood > 30mm, Hanger(s), Wound(s)	Hollow(s)	Medium	Low (C)	NA	NA	NA	NA			None		Within foot Print	Remove
25	Client site	Southern Mahogany	*Eucalyptus botryoides*	1	Semi-Mature	29	34	3.48	38	2.1	12	6	Good	Good	Amenity value	Short (5-15 years)	Inappropriate location	None sighted	Medium	Low (C)	NA	NA	NA	NA			None		Within foot Print	Remove
26	Client site	North American Hackberry	*Celtis occidentalis*	1	Semi-Mature	6	8	2	12.6	1.15	6	2	Good	Good		Short (5-15 years)	Co-dominant stems	None sighted	Low	Low (C)	NA	NA	NA	NA			None		Within foot Print	Remove
27	Client site	Golden Scotch Elm	*Ulmus glabra 'Lutescens'*	1	Mature	44	45	5.28	87.5	2.37	8	10	Average	Average	Amenity value	Short (5-15 years)	Cavity, Co-dominant stems, Crossing/rubbing branches, Deadwood > 60mm. Wound(s)	Hollow(s)	Medium	Low (C)	NA	NA	NA	NA			None	30	Major TPZ encrpachment	Remove
28	Council land	Tallowwood	*Eucalyptus microcorys*	1	Juvenile	17	20	2.04	13.1	1.68	8	4	Good	Good	Amenity value	Long (>40 years)	Co-dominant stems	None sighted	Medium	Medium (B)	0	None	None	None			None	0	No Impact	Retain and Protect
29	Council land	Wallangarra White Gum	*Eucalyptus scoparia*	1	Juvenile	16	19	2	12.6	1.65	7	3	Average	Average	Amenity value	Short (5-15 years)	Deadwood < 30mm, Dieback, Mechanical damage, Wound response growth, Wound(s)	None sighted	Medium	Low (C)	0	None	None	None			None	0	No Impact	Retain and Protect
30	Council land	Tallowwood	*Eucalyptus microcorys*	1	Semi-Mature	23	26	2.76	23.9	1.88	11	4	Good	Good	Amenity value	Long (>40 years)	Co-dominant stems, Epicormic growth	None sighted	Medium	Medium (B)	0	None	None	None			None	0	No Impact	Retain and Protect
31	Council land	Tallowwood	*Eucalyptus microcorys*	1	Juvenile	12	14	2	12.6	1.45	7	2.5	Good	Good	Amenity value	Long (>40 years)	Deadwood < 30mm	None sighted	Medium	Medium (B)	0	None	None	None			None	0	No Impact	Retain and Protect
32	Council land	Wallangarra White Gum	*Eucalyptus scoparia*	1	Semi-Mature	20	26	2.4	18.1	1.88	8	4	Good	Average	Amenity value	Medium (15-40 years)	Dieback, Suppressed	None sighted	Medium	Medium (B)	0	None	None	None			None	0	No Impact	Retain and Protect
33	Council land	Tallowwood	*Eucalyptus microcorys*	1	Juvenile	13	14	2	12.6	1.45	7	3	Good	Good	Amenity value	Long (>40 years)	Co-dominant stems	None sighted	Medium	Medium (B)	0	None	None	None			None	0	No Impact	Retain and Protect


Tree Location Map
Retention Status
Remove (7)
Retain (25)
Hunter St
Young St
Powell St
Recreation center
244-258
258
285
20 m
Google
Map data ©2023 Imagery ©2023 Airbus, CNES / Airbus, Maxar Technologies

8. Existing Street Tree Protection Measures During Construction

8.1 Staff Training and Induction

All staff working on the contract shall be adequately inducted to ensure they are aware of the following tree protection requirements.

8.2 Trunk Protection

Trunk and major limb protection shall be installed to any tree within 5 metres of the work site prior to any delivery of machinery or works commencing, and shall remain in place for the duration of the works. It shall consist of wrapping of each tree trunk and any major branches within the work area with hessian or similar material to limit damage, then space planks (50mm x 100mm or similar), at 100mm intervals, and fixed against the trunk with tie wire, or strapping. The trunk protection shall not be fixed to the tree in any instance, or in any fashion, e.g., no nails or screws are to be used.

8.3 Trenching and Excavation Near Trees

During any trenching or excavation works, the use of mechanical equipment must stop if tree roots greater than 50mm diameter are encountered. Approval must be sought from the Council Street Tree Coordinator (ph 9265 9333) to cut any root greater than 50mm diameter. Excavation shall be done by hand, or other approved non-destructive method, in any area known to, or suspected of having roots larger than 50mm diameter.

8.4 Pruning

The Contractor shall not undertake pruning of any branch of any street tree without permission. If pruning or small branches or limbs are required for machinery access, or any other reason, contact the Council's Street Tree Coordinator.

8.5 Kerb Removal Adjacent To Trees

Existing sections of kerbs adjacent to any street tree shall not be removed without approval from the Street Tree Coordinator. Removal of kerbs adjacent to mature trees can cause trees to become unstable and fail.

Figure 88- Proper tree protection is essential to avoid unnecessary damage to trees during construction activities (Photo: Arterra)

Figure 89- This illustrates the minimum trunk protection measures expected by the Council for street trees adjoining construction sites. (Photo: Arterra)

Figure 90- Where access is required through an identified tree protection zone the ground surface shall be protected through appropriate boarding and mulch or gravel placed above the existing ground surface to protect the roots and limit soil compaction. (Photo: Arterra)

8.6 Signs - Tree Protection

Temporary signs, or any other items, shall not be fixed or attached to any street tree.

8.7 Stockpiling and Storage of Materials

Fuel or any type of liquid waste shall not be stored or disposed of at the base of any street tree.

8.8 Damage to Trees to be Retained

Any damage sustained to any street trees is to be immediately reported to the Council's Street Tree Contract Coordinator, to determine the appropriate response for maintaining the health and structural integrity of the tree/s.

Should any damage occur to Council's trees and not be rectified by the Contractor to a satisfactory standard, as directed by Council's Street Tree Coordinator, Council will undertake the necessary works, which may include the full replacement of trees, and all associated costs will be recovered. Damage to street trees may also result in a prosecution being sought under Sections 626 and 629 of the Local Government Act for an offence where such damage occurred wilfully or negligently. Significant financial penalties can be imposed for such offences.

Figure 91- Groups of street trees within a grass strip may also require tree protection fencing installed to protect the trees and the ground surface around them. (Photo: Arterra)

Figure 92- Where ground is uneven or the site is subject to strong winds the fencing may be held securely by wiring to strategically placed star pickets driven into the ground. (Photo: Arterra)

Figure 93- Where tree trunks are low branching and difficult to protect with other methods, water filled barricades and fencing may also be applied . (Photo: Arterra)

Figure 94- Younger trees that are too small to apply trunk protection shall be fenced as above to protect the roots, foliage and trunk during construction periods. (Photo: Arterra)

Figure 95- Hand excavation or other non-destructive methods such as water jetting and vacuum extraction to excavate around tree roots. (Photo: Arterra)

Figure 96- Non-destructive excavation methods can allow services to be installed across verges without the need to sever important and structural tree roots. (Photo: Arterra)

TPZ

SRZ

RETENTION CLASS

- HIGH
- MEDIUM
- LOW
- REMOVE

IACA Significance of a Tree, Assessment Rating System (STARS)

Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of buildings should be considered to accommodate the setbacks as prescribed by the Australian Standards AS4970 Protection of trees on development sites. Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone (TPZ).

Consider for Retention (Medium) – These trees may be retained and protected. These are considered less critical; however, their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.

Consider for Removal (Low) – These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

Priority for Removal – These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

PROJECT.	258 YOUNG STREET, WATERLOO NSW			
CLIENT.	ARBORSAW			
PLAN TYPE.	TREE PROTECTION & MANAGEMENT PLAN			
PLAN DETAILS.	V 1.0	24.6.2022	A3	Scale: 1:384

0 3.25 6.5 13 19.5 26 Meters

ArborScan

PLANNING PROPOSAL

DATE	REVISION	BY	CHK	NO.
15/01/2024	PLANNING PROPOSAL	IC	GH	A

DATE	REVISION	BY	CHK	NO.

CONSULTANTS		
PLANNER	ETHOS URBAN	T (02) 9956 6962
TRAFFIC	JMT CONSULTING	T 0415 563 177
ARBORIST	ARBORSAW	T 2413 842 183
FLOODING	WMA WATER	T (02) 9299 2855
SCHOOL OPERATIONS	AMINA	T 02 9541 0628
LANDSCAPE	TURF DESIGN STUDIO	T (02) 8394 9990

SDG

plus architecture

Level 4, 222 Clarence Street
Sydney, NSW 2000 Australia

Plus Architecture Pty. Ltd.
ACN 600506303

Nominated Architect (NSW):
Amit Julka 10002
Rido Pin 11286

Melbourne Sydney
Brisbane Western Australia
Christchurch Auckland

Telephone +61 2 8823 7000
Instagram #plusarchitecture

arch@plusarchitecture.com.au
www.plusarchitecture.com.au

PROJECT
242-258 Young Street Waterloo Sydney NSW

DRAWING TITLE
GENERAL FLOOR PLAN - GROUND 00

SCALE		
1:250 @A1		
DATE 15/01/2024	PLOT DATE 15/01/2024	
DRAWN IC	CHECKED GH	
JOB NO. 20621	DRAWING NO. PLA-PP-1000	REVISION A