SEASONED TREE CONSULTING

ARBORICULTURAL IMPACT ASSESSMENT REPORT

For

Early Works SSDA

(Amending DA To DA-2023/156)

Prepared for

Wollongong Developments No.5 Pty Ltd

Site address

357-363 Crown Street & 2-4 Gladstone Avenue, Wollongong

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1. INTRODUCTION

1.1 This Arboricultural Impact Assessment (AIA) Report prepared Seasoned Tree Consulting on behalf of Wollongong Developments No 5 Pty Ltd (the 'Applicant') supports an Early Works State Significant Development Application (SSDA)(SSD-97973958) as an **Amending SSDA to DA-2023/156** for a mixed-use shop top housing development at No. 357-359 and 363 Crown Street, and No. 2 & 4 Gladstone Avenue, Wollongong (the Site).

This Amending DA seeks approval for the undertaking of early construction works comprising bulk excavation and shoring works to enable the excavation of basement parking areas.

The approval of DA-2023/156 included the carrying out of the nominated early works across part of the site. This application seeks consent to extend the area of those approved works to certain other areas of the site. For a further detailed project description, please refer to the Environmental Impact Statement prepared by Planning Ingenuity.

This report should be read in conjunction with the Environmental Impact Statement prepared by Planning Ingenuity, plans of the proposed works prepared by BKA Architecture, and the other accompanying documents that form part of the State Significant Development Application.

This report has been commissioned by Wollongong Developments No.5 Pty Ltd to assess trees located on and adjoining the site that may be impacted by a proposed development.

Secretary's Environmental Assessment Requirements

This report has been prepared to respond to the Secretary's Environmental Assessment Requirements (SEARs) dated 12 November 2025 for SSD-97973958. Specifically, this report has been prepared to respond to those SEARs outlined in **Table 1** below.

Table 1 SEARs relevant to this Report

SEAR	SEARs description	Report name and section
14. Trees and Landscaping	Assess the number, location, condition and significance of trees to be removed and retained and note any existing canopy coverage to be retained on-site.	Arboricultural Impact Assessment Report (AIA)

Table 2: Plans and documents reviewed or prepared as part of this assessment:

Title	Author	Date	Reference on document
Architectural Plans	BKA Architecture	08.12.2025	Rev
Survey Plan	GeoSurv	22.02.2022	Rev A

1.2 Tree data collected for the purpose of this assessment and report was collected on 28th October 2022 where all trees were surveyed. The site inspection was undertaken to collect tree and site data.

1.3 The weather at the time of the site assessment was clear with good visibility.

2. ASSIGNMENT

2.1 This report has been carried out to meet the objectives listed below.

2.1.1 Conduct a Visual Tree Assessment from ground level of all trees identified on the survey plan provided that may be impacted by a proposed development.

2.1.2 In accordance with the relevant Consent Authority, a 'tree' is defined as a "a tree that is 5 metres or more in height or has a trunk diameter of 30cm or more when measured at ground level."

2.1.3 Determine the trees estimated useful life expectancy and award retention values to each tree.

2.1.4 Provide an assessment of the potential impact the proposed development is likely to cause to the condition of the subject trees in accordance with **AS4970- 2025 Protection of trees on development sites**.

2.1.5 Recommend methods to mitigate development impacts where appropriate.

2.1.6 Provide tree protection advice in accordance with AS4970-2025 Protection of Trees on Development Sites and a site-specific tree protection plan where reasonably practical.

3. METHODOLOGY

3.1 **The following data was collected from each tree during the site assessment.**

3.1.1 Age class

3.1.2 Diameter at Standard Height (DSH Trunk/Stem diameter at 1.4m above ground level) – centimetres (generally estimated if access to the base of the tree is not available in the instance of neighbours trees or inaccessible vegetation)

3.1.3 Diameter above Buttress (DAB trunk diameter above the root flare near the base of the tree- (generally estimated if access to the base of the tree is not available in the instance of neighbours trees or inaccessible vegetation)

3.1.4 Estimated height - metres

3.1.5 Estimated crown spread (diameter of crown) - metres

3.1.6 Health

3.1.7 Structural condition

3.1.8 Amenity value

3.1.9 Safe Useful Life expectancy (SULE)[1]

3.1.10 Trees AZ retention value [2]

3.1.11 An assessment of the trees condition was made using the Visual Tree Assessment (VTA) method (Mattheck & Breloer, 1994).[3]

3.1.12 Trunk diameter was measured using a calculated diameter tape measure. Where this was not possible the measurements have been estimated. All other measurements were estimations unless otherwise stated.

3.1.13 Notional Root Zones (NRZ) and Structural Root Zones (SRZ) have been calculated using formulas given within the Australian Standards 4970-2025 The Protection of Trees on Development Sites

3.1.14 The Notional Root Zone (NRZ) was calculated from DSH x 12

3.1.15 The Structural Root Zone (SRZ) was calculated using the formula SRZ radius = (D x 50)0.42 x 0.64

3.1.16 Palm NRZ - The NRZ of palms, other monocots, cycads and tree ferns is not calculated, but should not be less than 2m

3.1.17 Details of how the observations in this report have been assessed are listed in the appendices.

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[1] Barrell Tree Consultancy, *SULE: Its use and status into the New Millennium*, TreeAZ/03/2001, http://www.treeaz.com/.

[2] Barrell Tree Consultancy, *Tree AZ version 10.10-ANZ*, http://www.treeaz.com/.

[3] Mattheck, C. & Breloer, H., *The body language of trees - A handbook for failure analysis*, The Stationary Office, London, England (1994).

4. GLOSSARY OF BASIC TERMS

4.1 The **Tree Protection Zone (TPZ)** is defined as a specified zone above and below ground and at given offsets from the trunk set aside to protect a tree's roots and canopy where these might be damaged by a development. **AS4970-2025 The Protection of Trees on Development Sites** lists three (3) levels of encroachment into the Tree Protection Zone of a tree, where the **NRZ** calculation (DSH x 12) is used as a starting point.

4.2 **Minor encroachments** are those of 10% or less of the NRZ area. This encroachment is unlikely to cause a significant impact to health, structure or longevity. While considered minor, a contiguous area to the NRZ is required and incorporated into a Tree Protection Zone unless it can be demonstrated tree viability will not be affected.

4.3 **Moderate encroachments** are those between 10-20% of the NRZ area but not within the SRZ. Further investigations are required to demonstrate that the tree will remain viable, which are noted in section 3.3.2 of the standard and mentioned below. A larger contiguous area of the NPZ is required to be incorporated into the Tree Protection Zone unless it can be demonstrated the tree will remain viable.

4.4 **Major encroachments** are those greater than 20% of the NRZ, or within the SRZ. Alternative design options should be explored, or it must be demonstrated otherwise that the tree will remain viable. Detailed investigations are necessary, which may include exploratory root investigations, relevant literature or examples of similar encroachments. Similarly to Minor and Moderate encroachments, an area similar to the encroachment must be incorporated into the Tree Protection Zone unless it can be demonstrated the tree will remain viable.

4.5 **Section 3.3.2** of AS4970-2025 *The Protection of Trees on Development Sites* lists considerations that the assessing arborist can take into account when working within a Tree Protection Zone. These considerations help the arborist into making a determination on the encroachment and whether the development will negatively impact trees that may be affected by the proposal. This includes (but not limited to):

- Tree species, its age, health and tolerance to root disturbance
- Site topography and soil characteristics
- The presence of past or existing obstacles that may affect root development and distribution
- Lean and stability of the tree
- Proposed tree maintenance and tree care activities
- If the works will result in a temporary or permanent loss of soil volume
- Potential loss of root mass resulting from the encroachment
- Proposed construction measures that reduce the impact on trees (pier and beam, suspended or cantilevered slabs, screw piles)
- Location and distribution of roots (found through non-destructive exploratory investigations)
- Regardless of the extent of encroachment, a site-specific **Tree Protection Specification (TPS)** and **Tree Protection Plan (TPP)** should be developed in accordance with the standard with these factors in mind to ensure trees on site remain viable for the duration of the build and the future.

5. THE SITE AND PROPOSED WORKS

5.1 The subject site is located within the Wollongong Council LGA. The trees on or close to the site are managed under the following policy and legislation.

5.1.1 Wollongong Local Environmental Plan 2009

5.1.2 Wollongong DCP 2009

5.1.3 State Environmental Planning Policy SEPP (Biodiversity and Conservation) 2021

Site Description

The site is situated at 357-359 & 363 Crown Street and No 2 & 4 Gladstone Avenue, Wollongong. The site is located within the Wollongong Local Government Area (LGA) approximately 70km south of the Sydney CBD.

It is a well-located site, approximately 100m walking distance from the Wollongong Railway Station which provides access to numerous destinations including Sydney, Port Kembla, Shellharbour and Kiama.

The site is in close proximity to the Wollongong Health Precinct including Wollongong Public and Private Hospitals. Wollongong TAFE and Wollongong University are approximately 2km from the site.

Public open spaces near the site include Rotary Park, the Beaton Park Leisure Centre and MacCabe Park in the city centre.

The site consists of the following parcels of land and is legally described as in **Table 3**.

Table 3 Site Legal Description

Street Address	Lot/DP
357-359 Crown Street, Wollongong	Lot 2/DP 201949
363 Crown Street, Wollongong	Lot 1/DP 201949
2 Gladstone Avenue, Wollongong	Lot 6/DP 14480
4 Gladstone Avenue., Wollongong	Lot 7/DP 661845

The land is wholly owned by Wollongong Developments No 5 Pty Ltd. The site is irregular shape with an area of approximately 6,514m^2, with road frontages to Crown Street and Gladstone Avenue and an unnamed laneway near Frederick Street. In addition, the site benefits from a right of carriageway over the adjacent site to the west providing vehicle access to Parkingson Street.

Tile 1. Site location [4]

[4] https://portal.spatial.nsw.gov.au/

Table 4: Site Considerations

Site Considerations	Application to site Yes/No	Source/References
Heritage Conservation Area	No	https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap
Heritage Item	Yes	
Biodiversity	No	
Ecologically Sensitive	No	
Bushfire Prone Land	No	

5.2 The site is multiple blocks zoned as E2 Commercial Centre that totals approximately 6514 sqm with existing commercial buildings. The site is moderately sloped falling from west to east. The site has a listed heritage tree located in the south-western corner of the block (Local heritage item 6290 in Schedule 5). The site is not located within biodiversity mapped lands[5].

5.3 The proposal consists of Early works Bulk excavation and shoring.

[5] https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address

6. ASSESSEMENT OF CONSTRUCTION IMPACTS

6.1 **Table 5:** Summary of the impact of proposed development impact to all trees included in the report.

Tree ID	Species	Retention value	NRZ radius (m)	SRZ Radius (m)	TPZ Area (sqM)	TPZ encroachment	Discussion/ Conclusion	Recommendation
1	*Phoenix canariensis*, Canary Island date palm	Z3	-	-	-	Footprint	Has been removed	n/a.
2	*Eucalyptus sp*, Eucalyptus	Z10	3.36	2.3	35.5	Footprint	Has been removed	n/a.
3	*Platanus × acerifolia*, London plane	A1	5.52	2.6	95.7	Major	A large street tree located along Crown street. The tree is in good condition and this species is known to be tolerant of construction impact. Works proposed for the site include the demolition of all existing structures within the site with deep excavation of the site for below ground carparks. Construction is then proposed for a multi-level building. Section 3.3.4 of AS4970-2009 (Protection of Trees on Development Sites) discusses that the presence of existing or past structures or obstacles affecting root growth should be considered when assessing the impact of TPZ encroachments. The existing structure will likely have restricted root growth, therefore any development works within the subject property will not impact the tree's root system and the tree will not be significantly affected. Strict project arborist supervision will be required for all works including demolition of the existing building and then the deep excavation. Canopy pruning will be required to be carried out. The pruning is estimated at less than 10% of the canopy. Any pruning works must be carried out by an AQF Level 3 Arborist, in line with the AS4373-2009- Pruning of Amenity trees. If scaffolding must be installed within close proximity to the tree, it is recommended that the tree branches be tied back and then scaffolding working around and through the canopy of the tree, with branch protection required where the tree may rub against the scaffolding.	Retain and protect.
4	Sapling	A1				Nil	A small street tree located along Crown street that has a steel tree protection barrier currently in place. No impact from proposed plans.	Retain and protect.
5	*Ligustrum lucidum*, Privets	Z3				Footprint	Has been removed	n/a.

Tree ID	Species	Retention value	NRZ radius (m)	SRZ Radius (m)	TPZ Area (sqM)	TPZ encroachment	Discussion/ Conclusion	Recommendation
	and *Schinus terebinthifolia*, Brazilian pepper							
6	*Ficus macrophylla*, Moreton Bay Fig	AA/ A4	15	4.4	706.9	Major	The subject tree is very large and is listed as the Local heritage item 6290 in Schedule 5. The tree has some minor crown and tip dieback but is of generally good health and condition. There are large portions of the TPZ covered in bitumen and concrete guttering/ edging. Concrete edging appears to have restrained structural roots within 5m of the tree and some roots have grown over this concrete edging. There is a Phoenix palm growing beside/ within the trunk of the tree, which should be removed extremely carefully. Works proposed for the TPZ include the demolition of all existing hard surfacing within the site with re-landscaping of the area which includes stepping stones, turfing, planting, sandstone seating, granite paving path and a timber deck. These works calculate for a major encroachment. Markups have been shown in Appendix 1A on the landscape plan as that is the plan with the most significant direct impact to the tree. Associated works proposed that may indirectly impact the tree are the construction of the 2 tall towers to the north and northeast of the tree that will have an effect on and likely reduce the amount of sunlight the tree will receive throughout the year. Fig trees are known to be tolerant of change including being tolerant of reduced light levels and less sunlight, and the fig will still receive reflective light as well as partial light through the newly proposed tall buildings (Shadow diagrams have been shown and assessed that show the tree still receives light for the majority of the year). The tree will also receive east/west sun and reflected light. Ultimately it is only possible to give an indication or estimate to assess the impact the tall buildings and less sunlight that will have on the tree, but the proposal is unlikely to significantly impact the health or condition of the tree long term. Mitigation strategies should be put in place which should include a drip irrigation system and mulched gardens beds/ turf areas under the drip line of the tree to improve growing conditions. All proposed ground works are to be sympathetic with existing ground levels (that is no land filling over 200mm in grade change or excavation of more than 100mm). Ultimately, all ground works as proposed will improve the growing conditions through the removal of hard surfacing and installation of (permeable) garden	Retain and protect.

Tree ID	Species	Retention value	NRZ radius (m)	SRZ Radius (m)	TPZ Area (sqM)	TPZ encroachment	Discussion/ Conclusion	Recommendation
							and turf beds, significantly increasing water infiltration rates and opening up air and gaseous exchange rates, all which will improve the health of the tree long term. Strict project arborist supervision will be required for all works. *Demolition of the existing surfacing, and removal of the concrete edging has occurred already (with Project Arborist supervision and certification being provided by Arbor Express during November 2025)* No canopy pruning will be required to be carried out aside from general canopy maintenance and deadwood removal. Any pruning works must be carried out by an AQF Level 3 Arborist, in line with the AS4373-2009- Pruning of Amenity trees. With high quality experienced project arborist management and supervision of works within the TPZ and SRZ, this tree will be able to be retained in a viable condition from this proposed development. The Arborist Network has further strengthened the argument that reduction of sunlight will not impact the tree (Appendix 10, page 39 of this report) I have provided examples of retained figs that have had significant changes in sunlight and have excelled in health (Appendix 11, page 40 of this report)	
7	*Citrus sp*, Citrus tree	Z3				Footprint	Has been removed	n/a.
8	*Acca sellowiana*, Feijoa	Z3				Footprint	Has been removed	n/a.
9	*Macadamia tetraphylla*, Macadamia	A1	3.36	2.3	35.5	Footprint	Has been removed	n/a.
10	*Mangifera indica*, Mango	Z3				Footprint	Has been removed	n/a.
11	*Pittosporum undulatum*, Sweet Pittosporum	Z10	2.4	1.7	18.1	Footprint	Has been removed	n/a.
12	*Banksia integrifolia*, Coastal Banksia	A1	2.4	1.7	18.1	Footprint	Has been removed	n/a.
13	*Plumeria acutifolia,* Frangipani	A1	2	1.7	12.6	Footprint	Has been removed	n/a.

7. CONCLUSIONS

7.1 **Table 6:** Summary of development impacts on trees assessed.

Impact	Reason	Retention Category		
		AA	A	Z
Trees that have already been removed	Building construction, new surfacing and/or proximity, or trees in poor condition.	-	**T9, T12, T13** **(3 trees)**	**T1, T2, T5, T7, T8, T10** **(6 trees)**
Retained trees that will be subject to TPZ encroachment	Removal of existing surfacing/structures and/or installation of new surfacing/structures	-	**T3, T4** **(2 trees)**	None
Trees to be retained that will not be subject to TPZ encroachment	Trees are located sufficiently away from the development not to be impacted.	-	None	**T11** **(1 tree)**
Retained trees that will require project arborist supervision + sensitive installation of structures	Refer to section 6 specifications	-	**T6** **(1 tree)**	None

8. RECOMMENDATIONS AND MITIGATION STRATEGIES

8.1 This report assesses the impact of a proposed development at the site on **13 trees** in accordance with AS4970-2025 Protection of trees on development sites.

8.2 Trees **T1, T2, T5, T7, T8, T9, T10, T12 and T13 (total of 9 trees) have been removed to date.**

8.3 It is recommended that **T3, T4, T6 and T11 (total of 4 trees) be retained and protected for the life of the development.**

8.4 **Project Arborist supervision and management of all works (including demolition) within the TPZ and SRZ of T3 and T6 is highly recommended**. All proposed ground works within the TPZ and SRZ of T6 are to be sympathetic with existing ground levels (that is no land filling over 200mm in grade change or excavation of more than 100mm). Strict project arborist supervision will be required for all works including demolition of the existing surfacing, and removal of the concrete edging. There are sections of the concrete edging that the tree roots are growing over that should be retained insitu rather than be removed. This should be decided by the Project Arborist whilst supervision is occurring. If sections of the concrete edging are removed, they must be done by hand (jackhammer), with no excavator to be used that could damage structural roots.

8.5 **T3 will require canopy pruning on the south side of the tree. This canopy pruning must be undertaken by an AQF3 Arborist and comply with the AS4373-2009.**

8.6 Tree protection measures are recommended to be installed prior to the commencement of any site activity, inclusive of demolition and installed in accordance with the recommendations made within this report and be compliant to AS4970-2025 Protection of Trees on Development Site.

8.7 All works within the TPZ areas are to be carried out in consultation with the project Arborist who is to monitor the condition of the trees and the site activities throughout the development process.

8.8 All construction activity is to comply with Australian Standard AS4970-2025 Protection of Trees on Development Sites (2025), sections 7, 10 and 11 of this report.

8.9 No services plan has been assessed as part of this report. All underground services located inside the TPZ of any tree to be retained must be installed via tree sensitive techniques. This should include either directional drilling methods or manual excavations to minimise the impact to trees identified for retention. Section 4.5.5 of AS4970-2025 says that ‘The directional drilling bore should be at least 600 mm deep. The project Arborist should assess the likely impacts of boring and bore pits on retained trees. For manual excavation of trenches the project Arborist should advise on roots to be retained and should monitor the works’.[6]

8.10 This report does not provide approval for tree removal or pruning works. All recommendations in this report are subject to approval by the relevant authorities and/or tree owners. This report should be submitted as supporting evidence with any tree removal/pruning or development application.

[6] Council of Standards Australia, *AS 4970 Protection of trees on development sites* (2025) page 21.

9. ARBORICULTURAL WORK METHOD STATEMENT (AWMS) AND TREE PROTECTION SPECIFICATIONS (TPS)

9.1 **Use of this report:** All contractors must be made aware of the tree protection requirements prior to commencing works at the site and be provided a copy of this report.

9.2 **Tree protection Specifications:** It is the responsibility of the principle contractor to install tree protection prior to works commencing at the site (prior to demolition works) and to ensure that the tree protection remains in adequate condition for the duration of the development. The tree protection must not be moved without prior agreement of the project Arborist. The project Arborist must inspect that the tree protection has been installed in accordance with this document and AS4970-2025 prior to works commencing.

9.3 **Project Arborist:** Prior to any works commencing at the site a project Arborist should be appointed. The project Arborist should be qualified to a minimum AQF level 5 and/or equivalent qualifications and experience, and should assist with any development issues relating to trees that may arise. If at any time it is not feasible to carryout works in accordance with this, an alternative must be agreed in writing with the project Arborist.

9.4 **Tree work:** All tree work must be carried out by a qualified and experienced Arborist with a minimum of AQF level 3 in arboriculture, in accordance with NSW Work Cover Code of Practice for the Amenity Tree Industry (1998) and AS4373 Pruning of amenity trees (2007).

9.5 **Variations to protective fencing:** Where it is not feasible to install fencing at the specified location due to factors such restricting access to areas of the site or for constructing new structures, an alternative location and protection specification must be agreed with the project Arborist. Where the installation of fencing in unfeasible due to restrictions on space, trunk and branch protection will be required (see below). The protective fencing must be constructed of 1.8 metre ‘cyclone chainmesh fence’. The fencing must only be removed for the landscaping phase and must be authorised by the project Arborist. Any modifications to the fencing locations must be approved by the project Arborist.

9.6 **TPZ signage:** Tree protection signage is to be attached to the protective fencing, displayed in a prominent position and the sign repeated at 10 metres intervals or closer where the fence changes direction. Each sign shall contain in a clearly legible form, the following information:

- Tree protection zone/No access.
- This fence has been installed to prevent damage to the tree/s and their growing environment both above and below ground. Do not move fencing or enter TPZ without the agreement of the project Arborist.
- The name, address, and telephone number of the developer/builder and project Arborist

9.7 **Trunk and Branch Protection:** The trunk must be protected by wrapped hessian or similar material to limit damage. Timber planks (50mm x 100mm or similar) should then be placed around tree trunk. The timber planks should be spaced at 100mm intervals, and must be fixed against the trunk with tie wire, or strapping and connections finished or covered to protect pedestrians from injury. The hessian and timber planks must not be fixed to the tree in any instance. The trunk and branch protection shall be installed prior to any work commencing on site and shall be maintained in good condition for the entire development period.

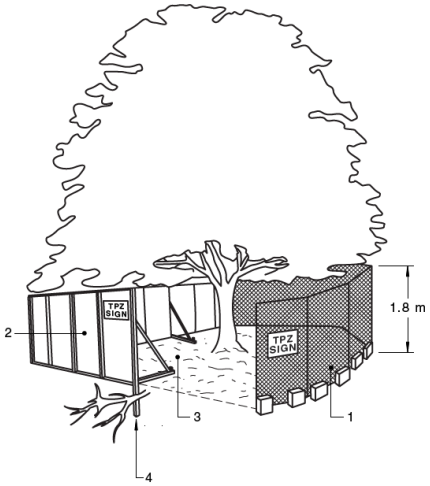
9.8 **Mulch:** Any areas of the TPZ located inside the subject site (only trees to be retained directly adjacent to site works must be mulched to a depth of 75mm with good quality composted wood chip/leaf mulch.

9.9 **Ground Protection:** Ground protection is required to protect the underlying soil structure and root system in areas where it is not practical to restrict access to whole TPZ, while allowing space for construction. Ground protection must consist of good quality composted wood chip/leaf mulch to a depth of between 150-300mm, laid on top of geo textile fabric. If vehicles are to be using the area, additional protection will be required such as rumble boards or track mats to spread the weight of the vehicle and avoid load points. Ground protection is to be specified by the project Arborist as required.

Figure 4 indicates an example of protective fences.

4.4 Signs

Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from within the development site, as shown in Figure 4. The lettering on the sign should conform to AS 1319. Appendix C provides an example of a suitable TPZ sign.



KEY:

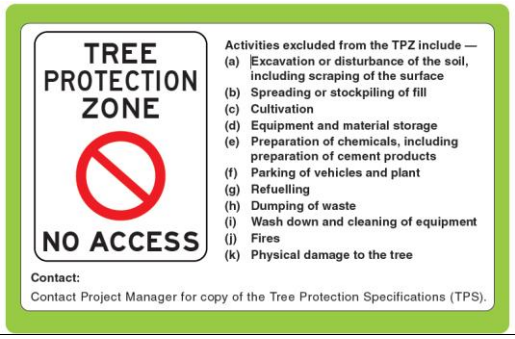
1 Chain wire mesh panels that are held in place with concrete feet.

2 Alternatively, plywood or wooden paling fence panels may be used. This fencing material also prevents building materials or soil from entering the TPZ.

3 Mulch installation across the surface of the TPZ (as detailed in the TPS). No excavation, construction activity grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ other than those indicated in the TPS.

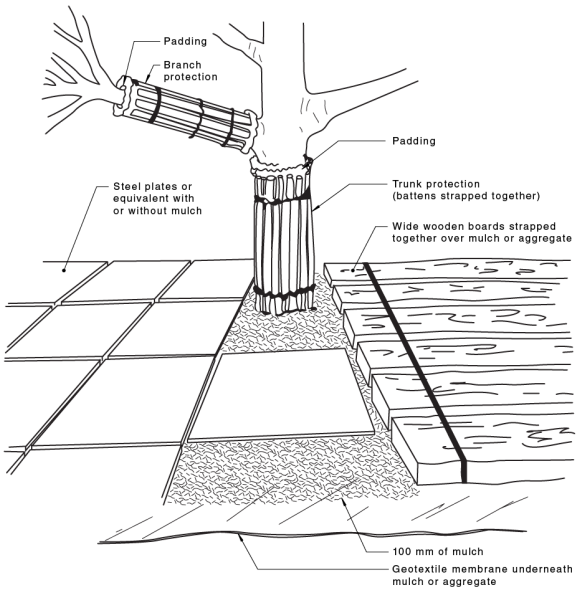
4 Bracing may be used within the TPZ. Installation of posts or supports should avoid damaging roots.

Figure 4 — Protective fences



An image from AS4970-2025,[7] with example tree protection, plus a standard TPZ Sign

[7] Council of Standards Australia, *AS4970-2025 Protection of trees on development sites*, page 18, page 31



NOTE 1 For trunk and branch protection, boards and padding may be used to prevent damage to bark. Boards shall be joined to each other using hoop straps and screws or similar. They shall not be screwed or nailed to the tree.

NOTE 2 Wide wooden boards or plastic or metal plates should be of a suitable thickness to spread the load and prevent soil compaction and root damage.

Figure 5 — Examples of trunk, branch and ground protection

An image from AS4970-2025,[8] with example tree protection.

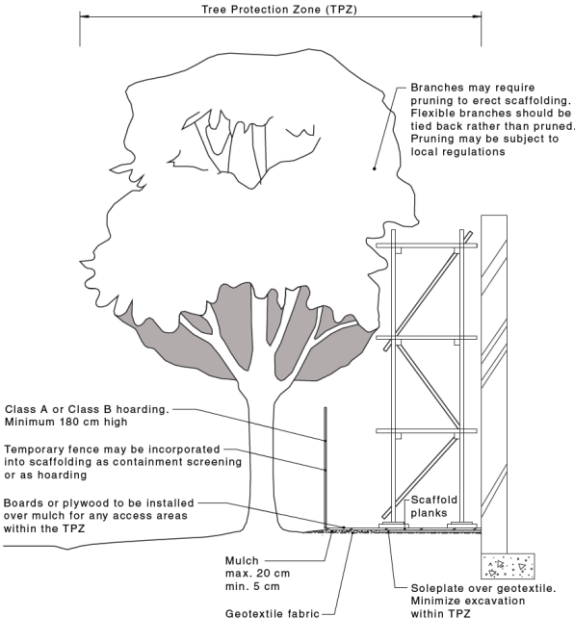


Figure 6 — Indicative scaffolding within a TPZ

Image 3: An image from AS4970-2025,[9] with example tree protection involving scaffold.

[8] Council of Standards Australia, *AS4970-2025 Protection of trees on development sites*, page 20

[9] Council of Standards Australia, *AS4970-2025 Protection of trees on development sites*, page 22

9.10 **Root investigations:** Where major TPZ encroachments require demonstrating the viability of trees the following method for root investigations is to be used. Non-destructive excavations are to be carried out along the outer edge of proposed or existing structures within the TPZ (excavation methods include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device). Excavations generally consist of a trench to a depth dictated by the location of significant roots, bedrock, unfavourable conditions for root growth, or the required depth for footings up to 1 metre. The investigation is to be carried out by AQF5 consulting Arborist who is to record all roots greater than 30 millimetres in diameter and produce a report discussing the significance of the findings. No roots 30 millimetres in diameter are to be frayed or damaged during excavation and the trench is to be backfilled as soon as possible to reduce the risk of roots drying out. In the event roots must be left exposed they are to be wrapped in hessian sack and regularly irrigated for the duration of exposure.

9.11 **Restricted activities inside TPZ:** The following activities must be avoided inside the TPZ of all trees to be retained unless approved by the project Arborist. If at any time these activities cannot be avoided an alternative must be agreed in writing with the project Arborist to minimise the impact to the tree.

A) Machine excavation.
B) Ripping or cultivation of soil.
C) Storage of spoil, soil or any such materials
D) Preparation of chemicals, including preparation of cement products.
E) Refueling.
F) Dumping of waste.
G) Wash down and cleaning of equipment.
H) Placement of fill.
I) Lighting of fires.
J) Soil level changes.
K) Any physical damage to the crown, trunk, or root system.
L) Parking of vehicles.

9.12 **Demolition:** The demolition of all existing structures inside or directly adjacent to the TPZ of trees to be retained must be undertaken in consultation with the project Arborist. Any machinery is to work from inside the footprint of the existing structures or outside the TPZ, reaching in to minimise soil disturbance and compaction. If it is not feasible to locate demolition machinery outside the TPZ of trees to be retained, ground protection will be required. The demolition should be undertaken inwards into the footprint of the existing structures, sometimes referred to as the ‘top down, pull back’ method.

9.13 **Excavations and root pruning:** The project Arborist must supervise and certify that all excavations and root pruning are in accordance with AS4373-2007 and AS4970-2025. For continuous strip footings, first manual excavation is required along the edge of the structures closest to the subject trees. Manual excavation should be a depth of 1 metre (or to unfavourable root growth conditions such as bed rock or heavy clay, if agreed by project Arborist). Next roots must be pruned back in accordance with AS4373-2007. After all root pruning is completed, machine excavation is permitted within the footprint of the structure. For tree sensitive footings, such as pier and beam, all excavations inside the TPZ must be manual. Manual excavation may include the use of pneumatic and hydraulic tools, high-pressure air or a combination of high-pressure water and a vacuum device. No pruning of roots greater 30mm in diameter is to be carried out without approval of the project arborist. All pruning of roots greater than 10mm in diameter must be carried out by a qualified Arborist/Horticulturalist with a minimum AQF level 3. Root pruning is to be a clean cut with a sharp tool in accordance with AS4373 Pruning of amenity trees (2007).[10] The tree root is to be pruned back to a branch root if possible. Make a clean cut and leave as small a wound as possible.

9.14 **Landscaping:** All landscaping works within the TPZ of trees to be retained are to be undertaken in consultation with a consulting Arborist to minimize the impact to trees. General guidance is provided below to minimise the impact of new landscaping to trees to be retained.

9.15 **Level changes should be minimised**. The existing ground levels within the landscape areas should not be lowered by more than 50mm or increased by more 100mm without assessment by a consulting Arborist.

9.16 **New retaining walls** should be avoided. Where new retaining walls are proposed inside the TPZ of trees to be retained, they should be constructed from tree sensitive material, such as timber sleepers, that require minimal footings/excavations. If brick retaining walls are proposed inside the TPZ, considerer pier and beam type footings to bridge significant roots that are critical to the trees condition. Retaining walls must be located outside the SRZ and sleepers/beams located above existing soil grades.

9.17 **The location of new plantings** inside the TPZ of trees to be retained should be flexible to avoid unnecessary damage to tree roots greater than 30mm in diameter.

9.18 **Sediment and Contamination:** All contamination run off from the development such as but not limited to concrete, sediment and toxic wastes must be prevented from entering the TPZ at all times.

9.19 **Tree Wounding/Injury:** Any wounding or injury that occurs to a tree during the construction process will require the project Arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. It is generally accepted that trees may take many years to decline and eventually die from root damage. All repair work is to be carried out by the project Arborist, at the contractor's expense.

9.20 **Completion of Development Works:** After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigour. If changes to condition are identified the project Arborist should provide recommendations for remediation.

[10] Council Of Standards Australia, *AS 4373 Pruning of amenity trees* (2007) page 18

10. HOLD POINTS

10.1 **Hold Points:** Below is a sequence of standard hold points requiring project Arborist certification throughout the development process**.**

10.2 It provides a list of hold points that must be checked and certified where specified by the Consent Authority.

10.3 Certification is recommended to be provided in written format upon completion of each point. The final certification must include details of any instructions for remediation undertaken during the development.

Hold Point	Stage	Responsibility	Certification	Complete Y/N and date
Project Arborist to hold pre construction site meeting with principle contractor to discuss methods and importance of tree protection measures and resolve any issues in relation to feasibility of tree protection requirements that may arise.	Prior to work commencing.	Principle contractor	Project Arborist	
Project Arborist To supervise all pruning works to retained trees.	Prior to works commencing	Principal Contractor	Project Arborist	
Project Arborist to assess and certify that tree protection has been installed in accordance with section 11 and AS4970-2025 prior to works commencing at site.	Prior to development work commencing.	Principle contractor	Project Arborist	
In accordance with AS4970-2025 the project arborist should carryout regular site inspections to ensure works are carried out in accordance with the recommendations. I recommend site inspections on a bi-monthly frequency.	Ongoing throughout the development	Principle contractor	Project Arborist	
Project Arborist to oversee all initial pier excavations and demolition inside the TPZ of any tree to be retained.	Construction	Principle contractor	Project Arborist	
Project Arborist to certify that all pruning of roots greater than 40mm in diameter has been carried out in accordance with AS4373-2007. All root pruning must be carried out by a qualified Arborist/Horticulturalist with a minimum AQF level 3.	Construction	Principle contractor	Project Arborist	
Project Arborist to certify that all underground services including storm water inside TPZ of any tree to be retained have been installed in accordance with AS4970-2025.	Construction	Principle contractor	Project Arborist	
All landscaping works/boundary walls within the TPZ of trees to be retained are to be undertaken in consultation with the project Arborist to minimize the impact to trees.	Landscape	Principle contractor	Project Arborist	
After all construction works are complete the project Arborist should assess that the subject trees have been retained in the same condition and vigor and authorize the removal	Upon completion of construction	Principle contractor	Project Arborist	

of protective fencing. If changes to condition are identified the project Arborist should provide recommendations for remediation.				
Any wounding or injury that occurs to a tree during the demolition/construction process will require the project arborist to be contacted for an assessment of the injury and provide mitigation/remediation advice. All remediation work is to be carried out by the project arborist, at the contractor's expense.	Ongoing throughout the development	Principle contractor	Project Arborist	

11. BIBLIOGRAPHY/REFERENCES

- Council of Standards Australia, *AS4970-2025 Protection of trees on development sites*.
- Council of Standards Australia, *AS4373 Pruning of amenity trees* (2007).
- Mattheck, C. & Breloer, H., *The body language of trees - A handbook for failure analysis*, The Stationary Office, London, England (1994).
- Barrell Tree Consultancy, *SULE: Its use and status into the New Millennium*, TreeAZ/03/2001, http://www.treeaz.com/.
- Barrell Tree Consultancy, *Tree AZ version 10.10-ANZ*, http://www.treeaz.com/.
- State Environmental Planning Policy (SEPP) (Biodiversity and Conservation Act 2021)

12. LIMITATIONS AND ASSUMPTIONS

12.1 Observations and recommendations are based on one site inspection. The findings of this report are based on the observations and site conditions at the time inspection. All observations were carried out from ground level. No detailed additional testing was carried out on trees or soil on site and none of the surrounding surfaces were lifted for investigation.

12.2 Where access was not available to neighbouring trees, their dimensions have been estimated from within the property boundary or from public land.

12.3 It is possible that root decay and defects can be present below ground with no visual indication above ground. It is impossible to know the extent of any root damage caused by mechanical damage such as underground root cutting during the installation of services without undertaking detailed root investigation or being present at the time of the works. Any form of tree failure due to these occurrences is beyond the scope of this assessment.

12.4 The report reflects the subject tree(s) as found on the day of inspection. Any changes to the growing environment of the subject tree, or tree management works beyond those recommended in this report may alter the findings of the report. There is no warranty, expressed or implied, that problems or deficiencies relating to the subject tree, or subject site may not arise in the future.

12.5 Tree identification is based on accessible visual characteristics at the time of inspection. As key identifying features are not always available the accuracy of identification is not guaranteed. Where tree species is unknown, it is indicated with a spp.

12.6 Seasoned Tree Consulting neither guarantees, nor is responsible for, the accuracy of information provided by others that is contained within this report.

12.7 Trees useful life expectancy has been estimates however this report is not an assessment of risk or probability of failure.

12.8 Trees stated as ‘retainable’ in this report may only be retained in a viable condition in the event they are correctly managed as per the recommendations and specifications in this report. In the event deviations occur the level of impact will increase and likely further impact the trees.

12.9 The ultimate safety of any tree cannot be categorically guaranteed. Even trees apparently free of defects can collapse or partially collapse in extreme weather conditions. Trees are dynamic, biological entities subject to changes in their environment, the presence of pathogens and the effects of ageing. These factors reinforce the need for regular inspections. It is generally accepted that hazards can only be identified from distinct defects or from other failure-prone characteristics of a tree or its locality.

12.10 Alteration of this report invalidates the entire report.

13. PHOTOGRAPHS

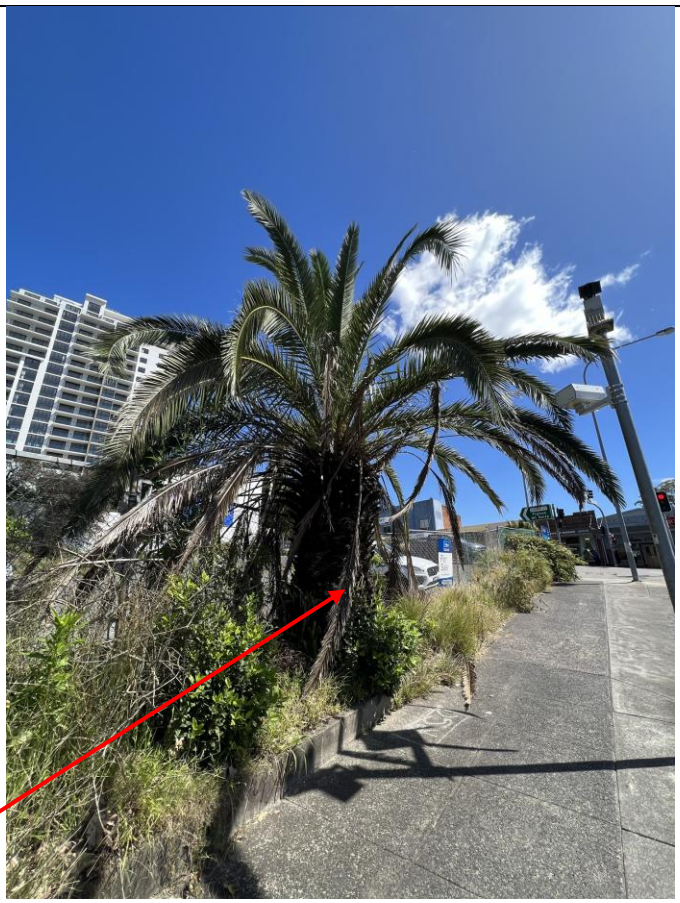


Image a: T1

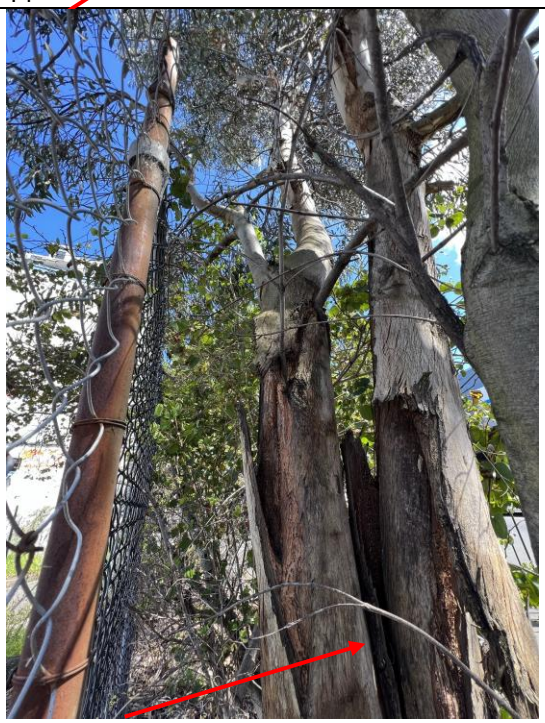


Image b: T2, T3,

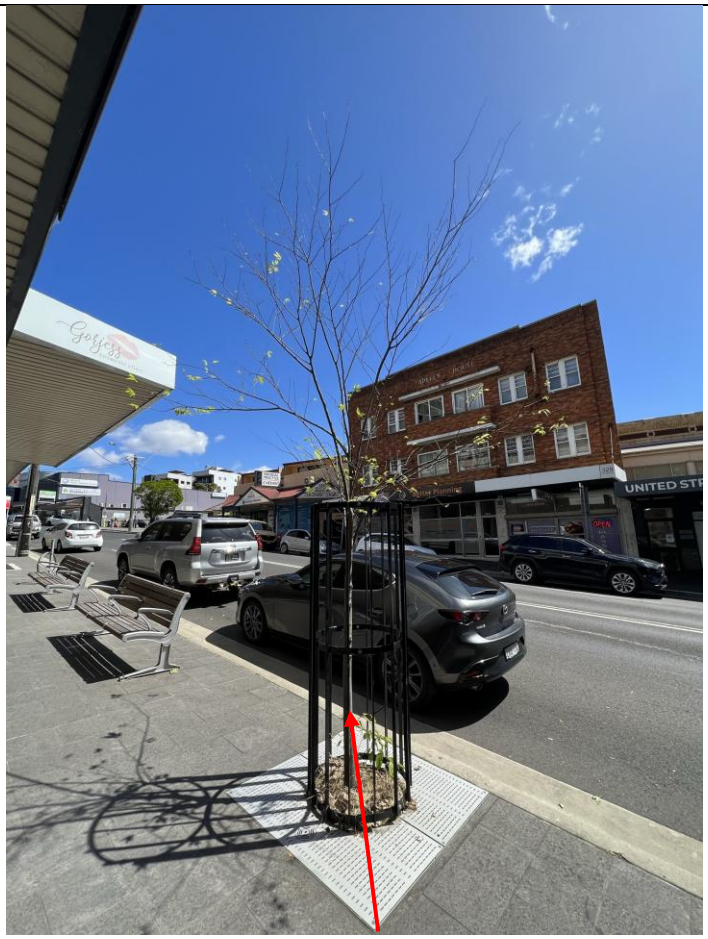


Image c: T4

T5 (Multiple trees)

Image e: T6

Image f: T6- All this concrete edging must be retained in place or very carefully removed by hand under project arborist supervision

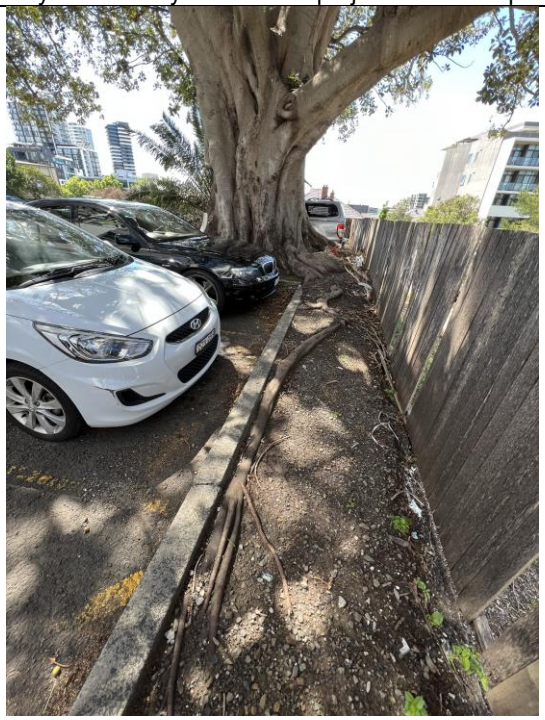


Image g: T6- all this bitumen within a 15m radius of the trunk must be carefully scraped up under project arborist supervision

Image h: T7, T8, T9

Image i: T12, T13

14. LIST OF APPENDICIES

The following are included in the appendices:

Appendix 1 – Tree Location Plan
Appendix 1A – Proposed Site Plan and Tree Protection Plan
Appendix 2 - Tree Inspection Schedule
Appendix 3 – Health
Appendix 4 – Structural Condition
Appendix 5 – Age Class
Appendix 7 – SULE Categories
Appendix 8 – Trees AZ Field Sheet
Appendix 9 – NRZ Encroachment Examples
Appendix 10 – Arborist Statement (Arborist Network, 20.11.2025)
Appendix 11 – Tree Study of a row of Morton Bay Fig located within Sydney University Grounds (09.07.2024)

Regards

D. Gowenlock

David Gowenlock- Seasoned Tree Consulting

Diploma of Arboriculture AQF5
Diploma of Conservation and Land Management AQF5
TRAQ (International Society of Arboriculture – Tree Risk Assessment Qualification)
VALID Tree Risk Assessment Qualified
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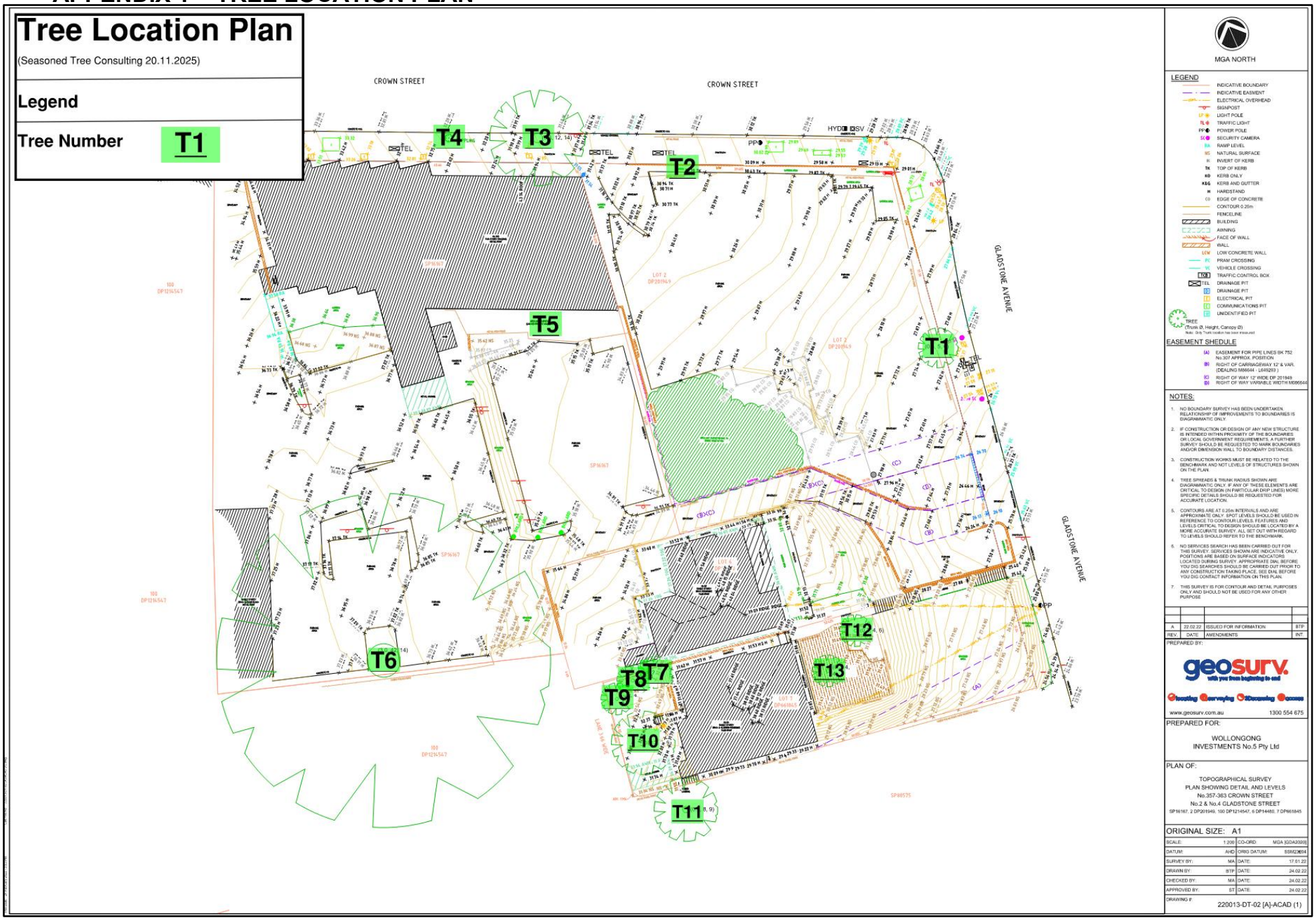
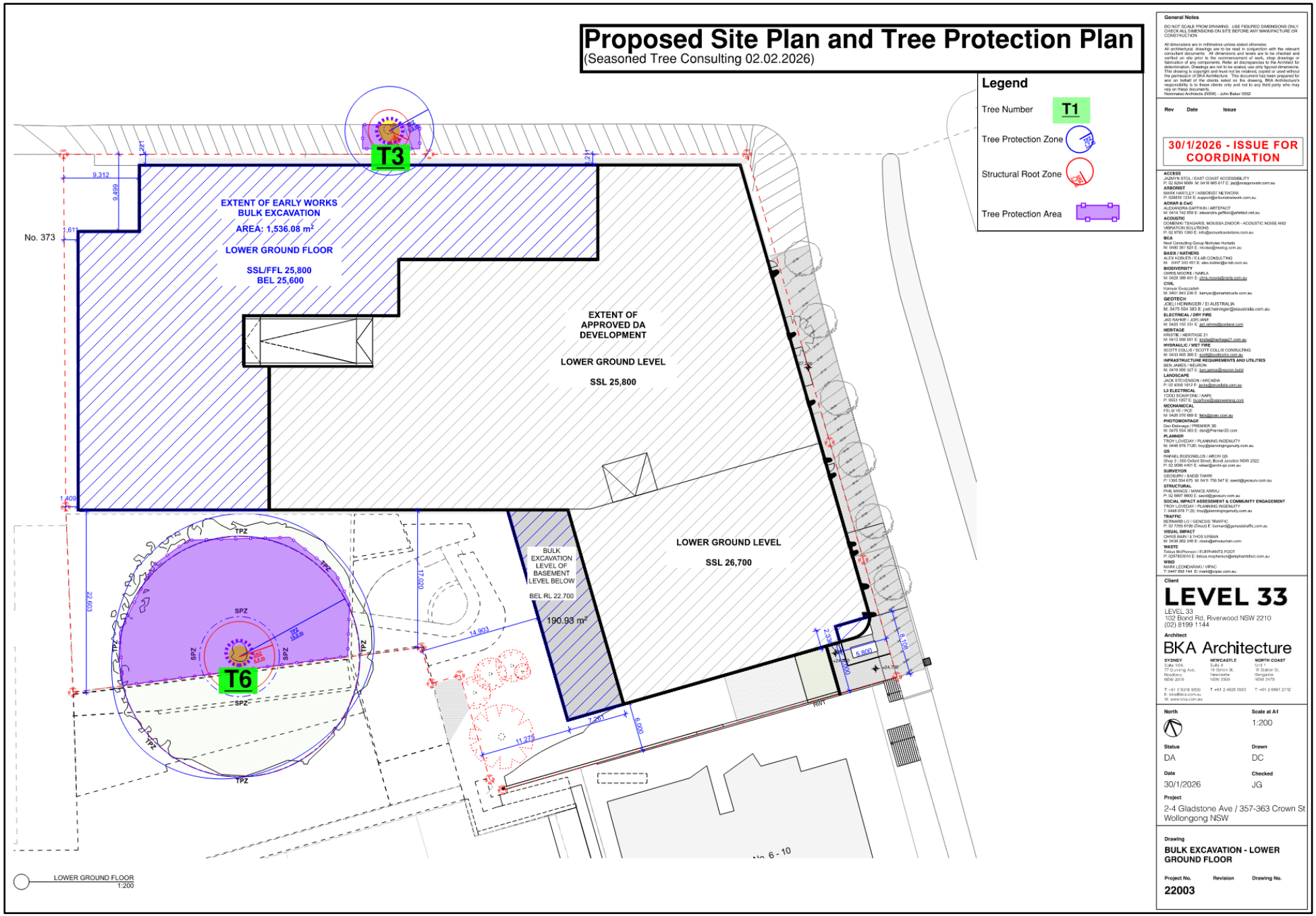
APPENDIX 1 – TREE LOCATION PLAN



APPENDIX 1A – PROPOSED SITE PLAN AND TREE PROTECTION PLAN (TPP)



APPENDIX 2- TREE INSPECTION SCHEDULE

Tree Inspection Site: 2-4 Gladstone Ave, 357-363 Crown St, Wollongong

Surveyed by: David Gowenlock **Date of Inspection: 28/10/2022** **Tagged: No**

Tree ID	Tree Species	DSH (CM)	NRZ radius (M)	NRZ Area (Sq.M)	DAB (CM)	SRZ radius (M)	Height (M)	Spread (M)	Age Class	Health	Structure	Amenity value	SULE (yrs.)	TreeAZ retention Value	Comments
1	Has been removed														
2	Has been removed														
3	*Platanus* × *acerifolia*, London plane	46	5.52	95.7	54	2.6	13	15	Mature	Good	Good	High	>40	A1	Constrained by existing building. Rubber wet pour matting on root system.
4	Has been removed														
5	Has been removed														
6	*Ficus macrophylla*, Moreton Bay Fig	150	15	706.9	200	4.4	13	30	Mature	Fair / good	Good	Very high	>40	AA/ A4	Local heritage item (6290 in Schedule 5). Some crown and tip dieback.
7	Has been removed														
8	Has been removed														
9	Has been removed														
10	Has been removed														
11	Has been removed														
12	Has been removed														
13	Has been removed														

Explanatory Notes
Tree Species - Botanical name followed by common name in brackets. Where species is unknown it is indicated with an '*spp'*.
DSH – Diameter at Standard Height (Measurement used for NRZ calculation). Measured or estimated at approximately 1.4m above ground level by use of diameter tape. If trees are inaccessible due to dense bush or being located in private property they are generally estimated.
NRZ – Notional Root Zone. DSH x 12 measured in radius from the centre of the trunk (Palm NRZ - The NRZ of palms, other monocots, cycads and tree ferns is not calculated, but should not be less than 2m)
NRZ Area (Sq.M)- The area of the TPZ calculated in square metres.
Diameter At Base (DAB): Measured with a DBH tape or estimated above root buttresses (DAB) for calculating the SRZ.
Structural Root Zone (SRZ) - (DAB x 50) $^{0.42}$ x 0.64. Measured in radius from the center of the trunk. Rounded up to nearest 0.1m.
Height - Height from ground level to top of crown. All heights are estimated unless otherwise indicated.
Spread - Diameter of crown at widest section. All tree spreads are estimated unless otherwise indicated.
Age Class - Over mature (OM), Mature (M), Early mature (EM), Semi mature (SM), Young (Y), Dead (D).
Health - Good/Fair/Poor/Dead

Structure - Good/Fair/Poor
Amenity Value - Very High/High/Medium/Low/Very Low.
Safe Useful Life Expectancy (SULE) - 1. Long (40+years), 2. Medium (15 - 40 years), 3. Short (5 - 15 years), 4. Remove (under 5 years), 5. Small/young.
TreeAZ retention Value- See Appendix 8

Appendix 3 – Assessment of Health

Category	Example condition	Summary
Good	• Crown has good foliage density for species. • Tree shows no or minimal signs of pathogens that are unlikely to have an effect on the health of the tree. • Tree is displaying good vigour and reactive growth development.	• The tree is in above average health and condition and no remedial works are required.
Fair	• The tree may be starting to dieback or have over 25% deadwood. • Tree may have slightly reduced crown density or thinning. • There may be some discolouration of foliage. • Average reactive growth development. • There may be early signs of pathogens which may further deteriorate the health of the tree. • There may be epicormic growth indicating increased levels of stress within the tree.	• The tree is in below average health and condition and may require remedial works to improve the trees health.
Poor	• The may be in decline, have extensive dieback or have over 30% deadwood. • The canopy may be sparse or the leaves may be unusually small for species. • Pathogens or pests are having a significant detrimental effect on the tree health.	• The tree is displaying low levels of health and removal or remedial works may be required.
Dead	• The tree is dead or almost dead.	• The tree should generally be removed.

Appendix 4 - Structural condition

Category	Example condition	Summary
Good	• Branch unions appear to be strong with no sign of defects. • There are no significant cavities. • The tree is unlikely to fail in usual conditions. • The tree has a balanced crown shape and form.	• The tree is considered structurally good with well developed form.
Fair	• The tree may have minor structural defects within the structure of the crown that could potentially develop into more significant defects. • The tree may a cavity that is currently unlikely to fail but may deteriorate in the future. • The tree is an unbalanced shape or leans significantly. • The tree may have minor damage to its roots. • The root plate may have moved in the past but the tree has now compensated for this. • Branches may be rubbing or crossing.	• The identified defects are unlikely cause major failure. • Some branch failure may occur in usual conditions. • Remedial works can be undertaken to alleviate potential defects.
Poor	• The tree has significant structural defects. • Branch unions may be poor or weak. • The tree may have a cavity or cavities with excessive levels of decay that could cause catastrophic failure. • The tree may have root damage or is displaying signs of recent movement. • The tree crown may have poor weight distribution which could cause failure.	• The identified defects are likely to cause either partial or whole failure of the tree.

Appendix 5 - Age class

Determining the exact age of a tree is difficult without carrying out potentially invasive testing. The age class of the subject tree has been estimated using the definitions below.

Category	Description
Young/Newly planted	• Young or recently planted tree.
Semi Mature	• Up to 20% of the usual life expectancy for the species.
Early mature/Mature	• Between 20% - 80% of the usual life expectancy for the species.
Over mature	• Over 80% of the usual life expectancy for the species.
Dead	• Tree is dead or almost dead.

Appendix 7 - Safe Useful Life Expectancy (SULE), (Barrel, 2001)

A trees safe useful life expectancy is determined by assessing a number of different factors including the health and vitality, estimated age in relation to expected life expectancy for the species, structural defects, and remedial works that could allow retention in the existing situation.

Category	Description
1. Long	Useful life expectancy over 40 years
2. Medium	Useful life expectancy 15 to 40 years
3. Short	Useful life expectancy 5 to 15 years
4. Remove	Useful life expectancy under 5 years
5. Small/Young	Trees that could be transplanted or replaced with similar specimen.
6. Unstable	Tree has become hazardous or structurally unstable.

Appendix 8 – Trees AZ Field Sheet

TreeAZ Categories (Version 10.04-ANZ)

CAUTION: TreeAZ assessments must be carried out by a competent person qualified and experienced in arboriculture. The following category descriptions are designed to be a brief field reference and are not intended to be self-explanatory. They must be read in conjunction with the most current explanations published at www.TreeAZ.com.

Category Z: Unimportant trees not worthy of being a material constraint

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity and species	
Z1	Young or insignificant small trees, i.e. below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e. exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e. scheduled noxious weeds, out of character in a setting of acknowledged importance, etc
High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure	
Z4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e. poor anchorage, increased exposure, etc
Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people	
Z7	Excessive, severe and intolerable inconvenience to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. dominance, debris, interference, etc
Z8	Excessive, severe and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e. severe structural damage to surfacing and buildings, etc
Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population	
Z9	Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e. cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc
Z10	Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc
Z11	Removal would benefit better adjacent trees, i.e. relieve physical interference, suppression, etc
Z12	Unacceptably expensive to retain, i.e. severe defects requiring excessive levels of maintenance, etc

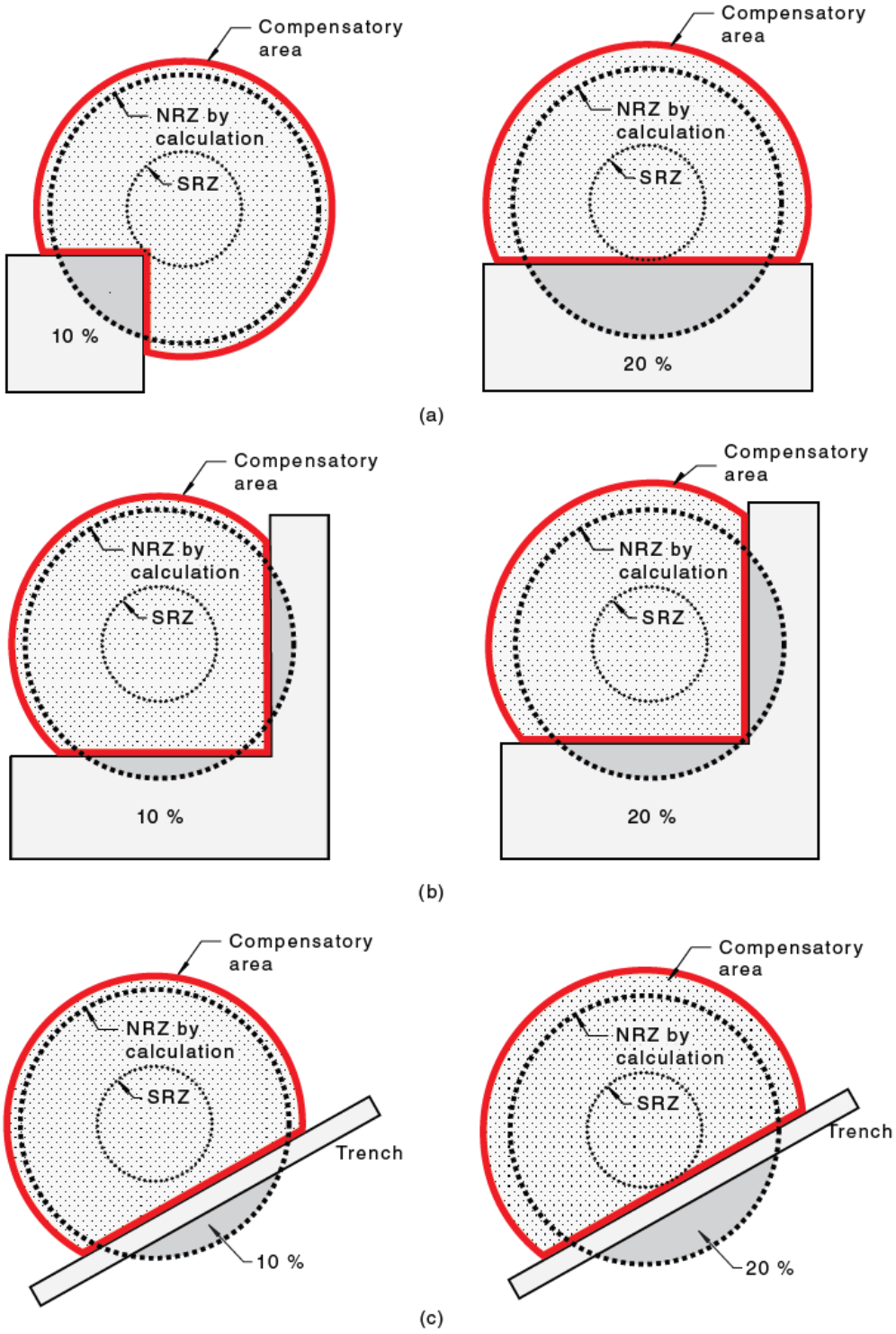
NOTE: Z trees with a high risk of death/failure (Z4, Z5 & Z6) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as ZZ. ZZ trees are likely to be unsuitable for retention and at the bottom of the categorization hierarchy. In contrast, although Z trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category A1 trees that are already large and exceptional, or have the potential to become so with minimal maintenance, can be designated as AA at the discretion of the assessor. Although all A and AA trees are sufficiently important to be material constraints, AA trees are at the top of the categorization hierarchy and should be given the most weight in any selection process.

Appendix 9 – NRZ Encroachment Examples



NOTE These examples are not to scale and are for illustrative purposes. The proposed encroachment is considered minor if it is less than or equal to 10 % of the area of the NRZ, has not had recent TPZ encroachments and is outside of the SRZ (see Clause 3.4). The proposed encroachment is considered moderate if it is greater than 10 % and less than or equal to 20 % of the area of the NRZ and is outside of the SRZ (see Clause 3.4).

Figure 1 — Sample minor and moderate encroachments

Appendix 10 – Arborist Statement (Arborist Network, 20.11.2025)

Arborist Network
Connecting people and trees™

Ph: (+612) 9835 1234
PO Box 3058 Llandilo NSW 2747
Email: info@arboristnetwork.com.au
The Australian College of Arboriculture P/L (ACN 069470944 ABN 59069470944) as licensee of Arborist Network

Prepared for:	Claudine Malanum, Level 33	**File date:**	20th November 2025
Site address:	2-4 Gladstone Ave, Wollongong	**File number:**	CD2686D

We've been provided the most recent plan set and have been informed following SDRP 02 the following changes were made:

"*Building height*

- *Tower A remains at level 32 with the penthouse level being duplicated on level 31 serving as a sub-penthouse and setting back the tower top. The balconies of the penthouses on level 32 are amended to have nil balconies to the south and only have the balconies project on the north.*
- *Tower B is still staggered with the highest level at level 36 with the pool level reduced to level 30.*
- *Lower levels have not changed in mass."*

As far as the Tree is concerned, the most relevant change is the increase in the height of the building and its effects on shading. No shadow diagram was provided; however, we are of the belief that that the increase in shading is likely to be insignificant.

Mark Hartley
Senior Consulting Arborist - AQF Level 8, Grad Cert Arboriculture (1st Class Honours)
Dip Hort (Arboriculture) with Distinction,
Dip Arboriculture, Dip Horticulture
ISA Certified Arborist WC-0624 (since 1990),
Registered Consulting Arborist™ #0005
ISA Tree Risk Assessment Qualified,
Registered QTRA user (No. 807)
Member - Society of Risk Analysis Australia & NZ, LMAA; LMISA; LMIPS

Appendix 11 – Tree Study of a row of Morton Bay Fig located within Sydney University Grounds (09.07.2024)

Study of a Row of Moreton Bay Fig trees that are located within the School of Life and Environmental Sciences, the University of Sydney.

A site visit was undertaken on Friday 5th July 2024 (between the hours of 11am till midday) to the School of Life and Environmental Sciences at the University of Sydney (located along Princes Highway, Camperdown) by David Gowenlock of Seasoned Tree Consulting to assess development works that have occurred to the north of a row of Heritage Figs.
A total of 75 photos were taken of the health and condition of the Figs and their growing conditions, plus the building to the north of the Figs.
The 4 assessed Fig trees (I have identified as **F1, F2, F3 and F4**) are the same species (Moreton Bay Fig- *Ficus Macrophylla*) as the heritage listed fig (identified as **T6**) located within 2-4 Gladstone Ave / 357-363 Crown St Wollongong.
T6 is likely somewhat older than **F1, F2, F3 and F4**, but in terms of size and original health (before the development occurred directly to the north of **F1, F2, F3 and F4**), both **F1, F2, F3 and F4** and **T6** are extremely similar in size, health and overall condition.
Therefore **F1, F2, F3 and F4** are an excellent example of what a development of high impact including extreme levels of new shading can have on this species.
A review of the following documents has been undertaken for the School of Life and Environmental Sciences at the University of Sydney-

Title	Author	Date	Reference on document
Arboricultural Impact Assessment + Tree Protection Specification	Tree IQ Anna Hopwood + Martin Peacock	11.04.2016	Rev D
Architectural Plans DA01 to DA18	Rice Daubney	17.05.2016	Issue F
Shadow Diagrams *Summer Solstice DA19* *Autumn Equinox DA20* *Winter Solstice DA21*	Rice Daubney	14.04.2016	Issue A

Following this review of all the available documents it is clear that the development impact and especially the increase in shading to the canopy of to **F1, F2, F3 and F4** is vastly higher than the development impact to **T6**.
Canopy and root pruning of **F1, F2, F3 and F4** was also undertaken which will have further increased the development impact. Root pruning of **F1, F2, F3 and F4** was firstly undertaken in August 2016 which has now given us an 8-year period to observe decline from development impact and there has been no decline, only increase in health and condition.
Furthermore, there are no pruning of canopy or roots of **T6** proposed due to the considerable setbacks provided.

A review of the following documents has been undertaken for the proposed development of 2-4 Gladstone Ave / 357-363 Crown St Wollongong -

Title	Author	Date	Reference on document
HERITAGE TREE EYE OF SUN SHEETS COMBINED Drawings A455 A450 A451 A452 A453 A454	BKA Architecture	09.07.2024	Rev 01

The above shadow diagrams show that T6 receives direct solar access at all times of the year, and considerably more than the development that has occurred immediately beside **F1, F2, F3 and F4.**
I am therefore extremely firm in my opinion that T6 is retainable in a viable condition, and pending excellent management of all development works by an experienced project arborist, will improve in overall health and condition, much like the overall health and condition of **F1, F2, F3 and F4** has done.
I have included selected photos taken by myself of the row of **F1, F2, F3 and F4** within the final pages of this report.
I have also included selected screenshots of the Architectural Plans and the Shadow Diagrams from the School of Life and Environmental Sciences at the University of Sydney documents to provide further information from pages 24 onwards.
The whole photo album of 74 photos of **F1, F2, F3 and F4** is available to download here-
https://share.icloud.com/photos/0eaIawDcdWB0ySUUCEKYntMXQ
Please note that this iCloud photo link will expire on August 8th 2024.

Regards

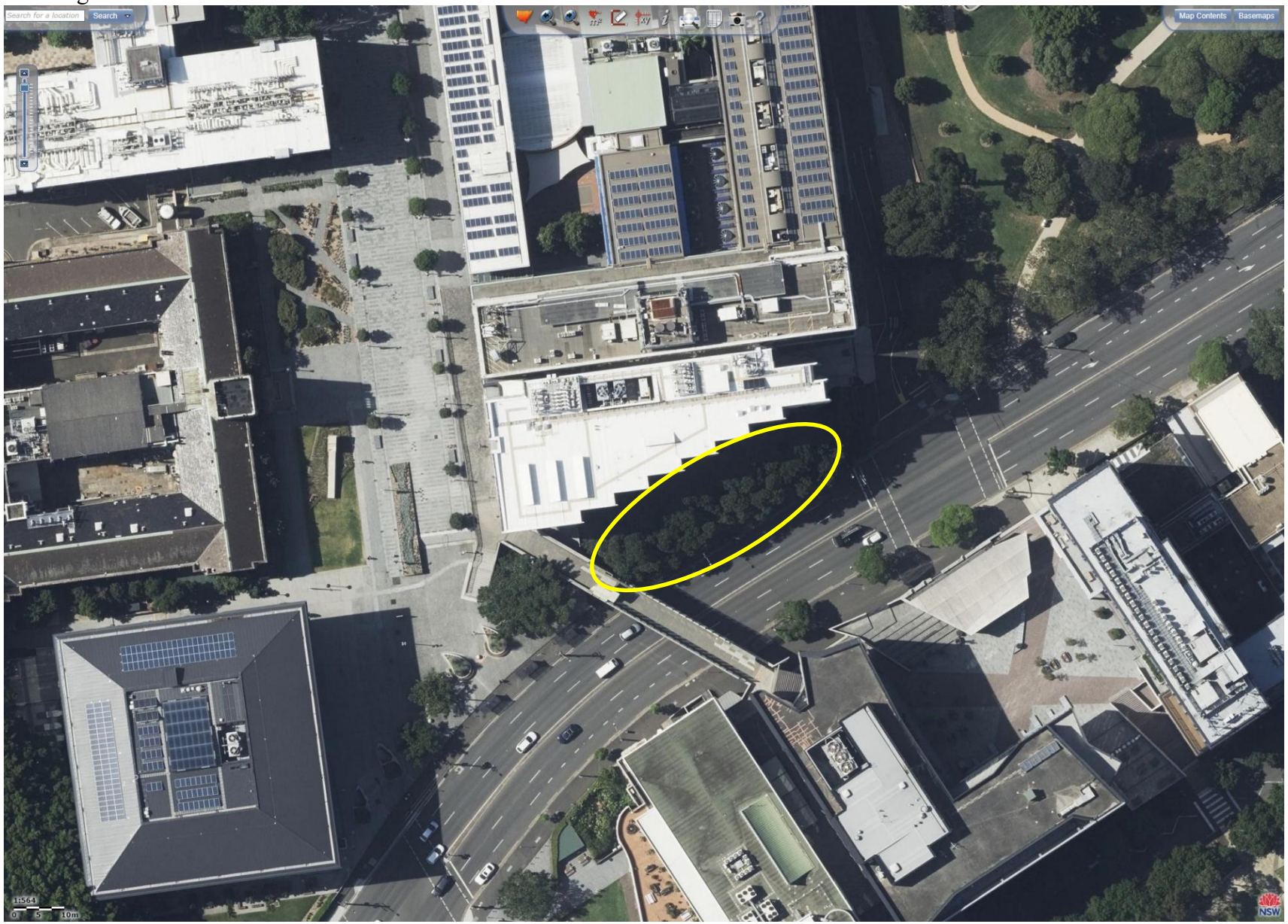
David Gowenlock

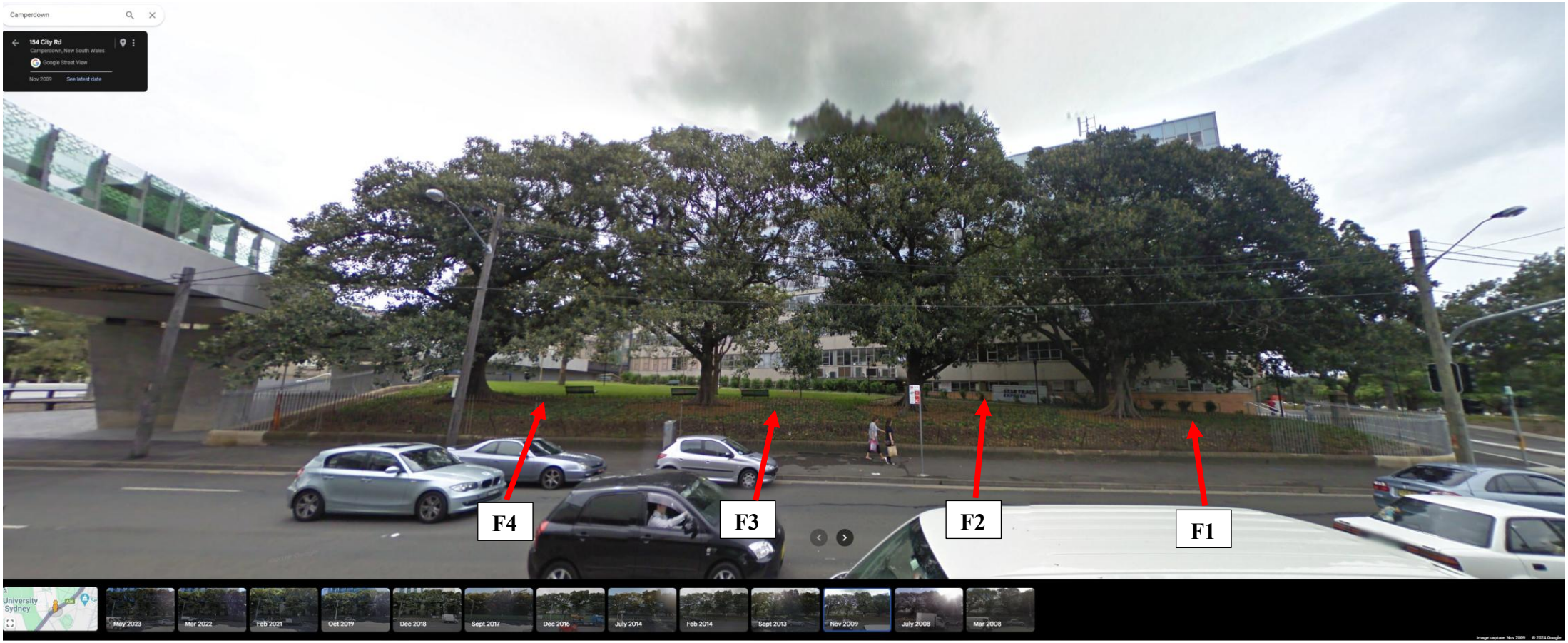
Diploma of Arboriculture AQF5
Diploma of Conservation and Land Management AQF5
TRAQ (International Society of Arboriculture – Tree Risk Assessment Qualification)
VALID Tree Risk Assessment Qualified
AQF2 + AQF3 Arboriculture

Trees **F1, F2, F3 and F4** in 1943 appear mature-

Large building (Carslaw Building) built to the north of the trees prior to 1971

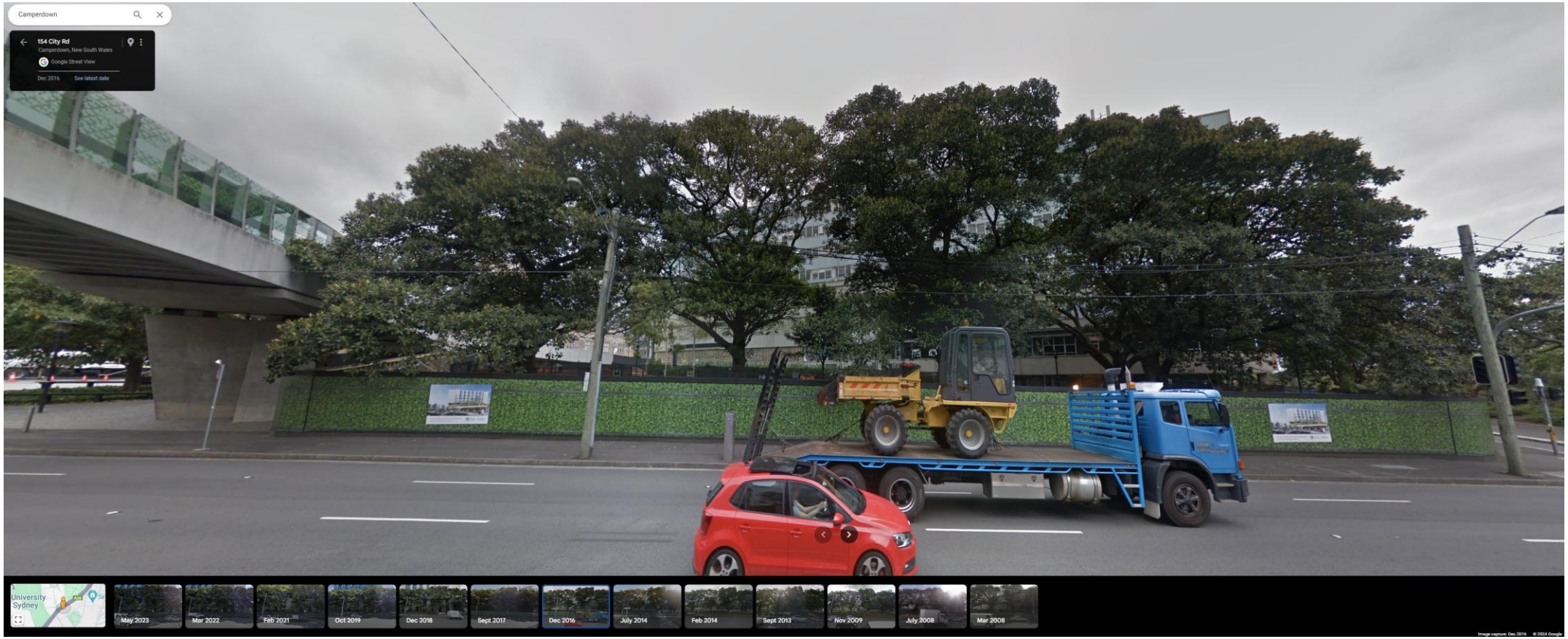
This image most recent satellite image with the row of F1, F2, F3 and F4 circled- massive new construction (built 2016-2017) with large amount of shadowing to the north and west



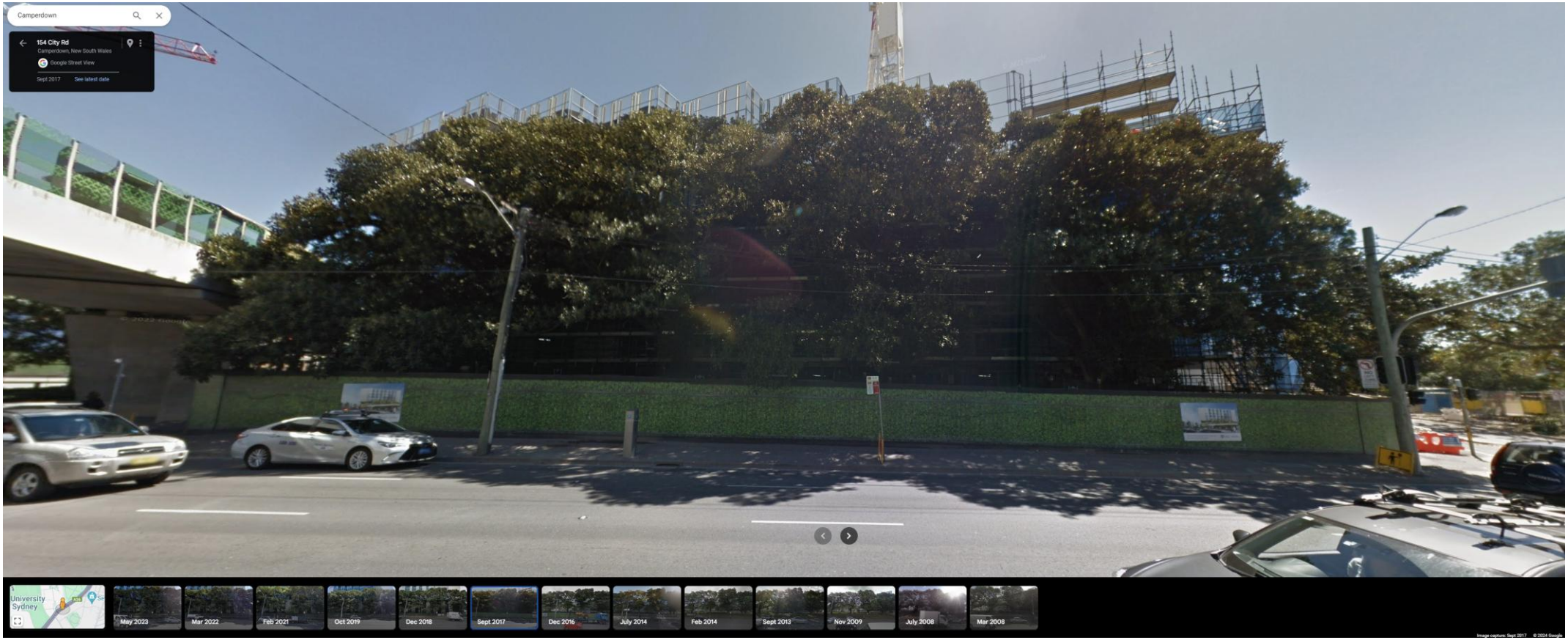


November 2009- Morton Bay Fig trees (**F1, F2, F3 and F4**) in fair to good health (similar health to **T6** at 2-4 Gladstone Ave, 357-363 Crown St, Wollongong)

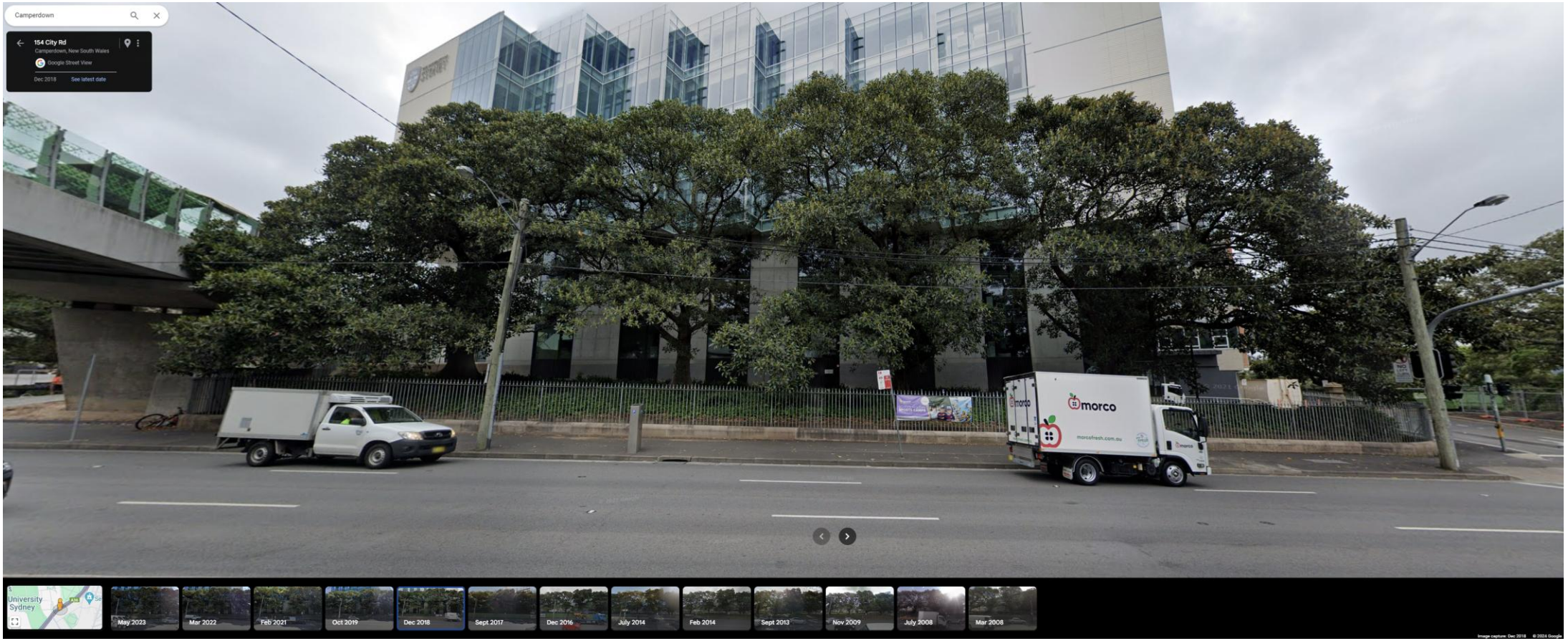
Feb 2014- similar health and condition as 5 years prior



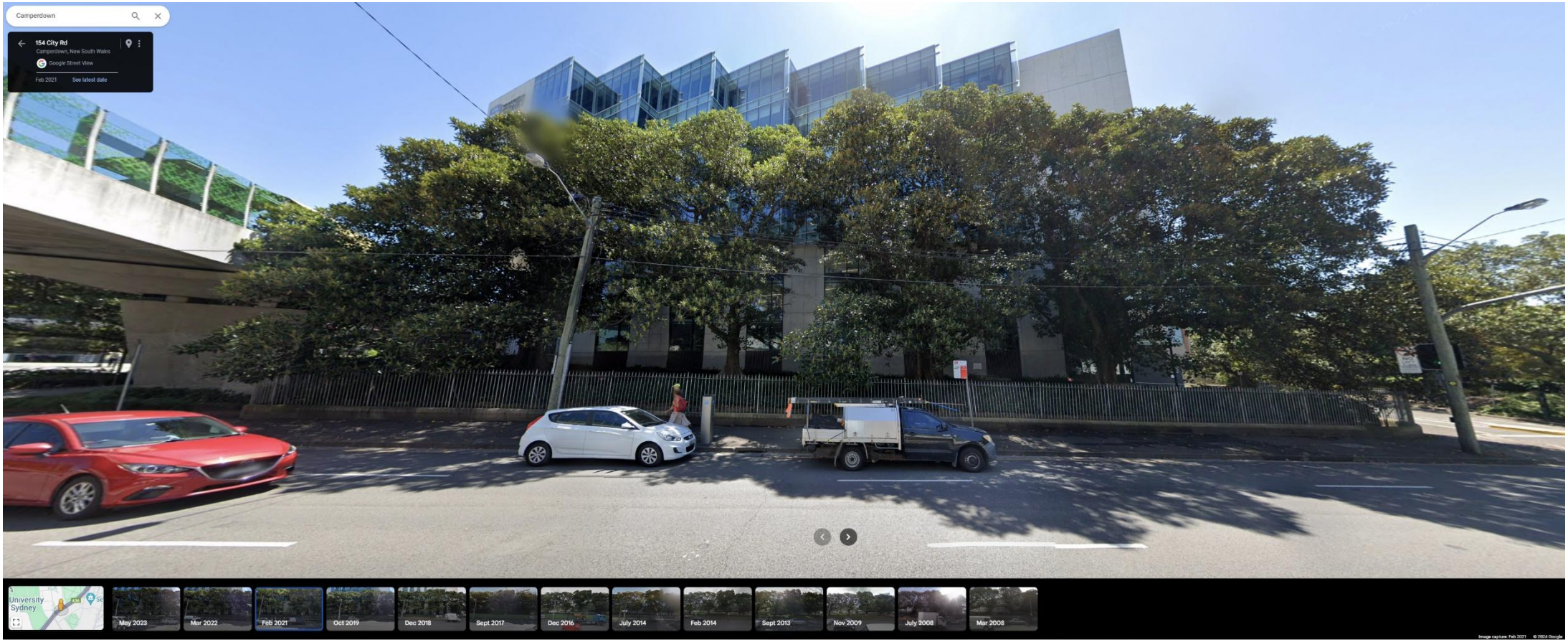
Dec 2016- similar health and condition as prior- Construction appears imminent



Sept 2016- health appears better, glossier leaves, deeper green, construction has started

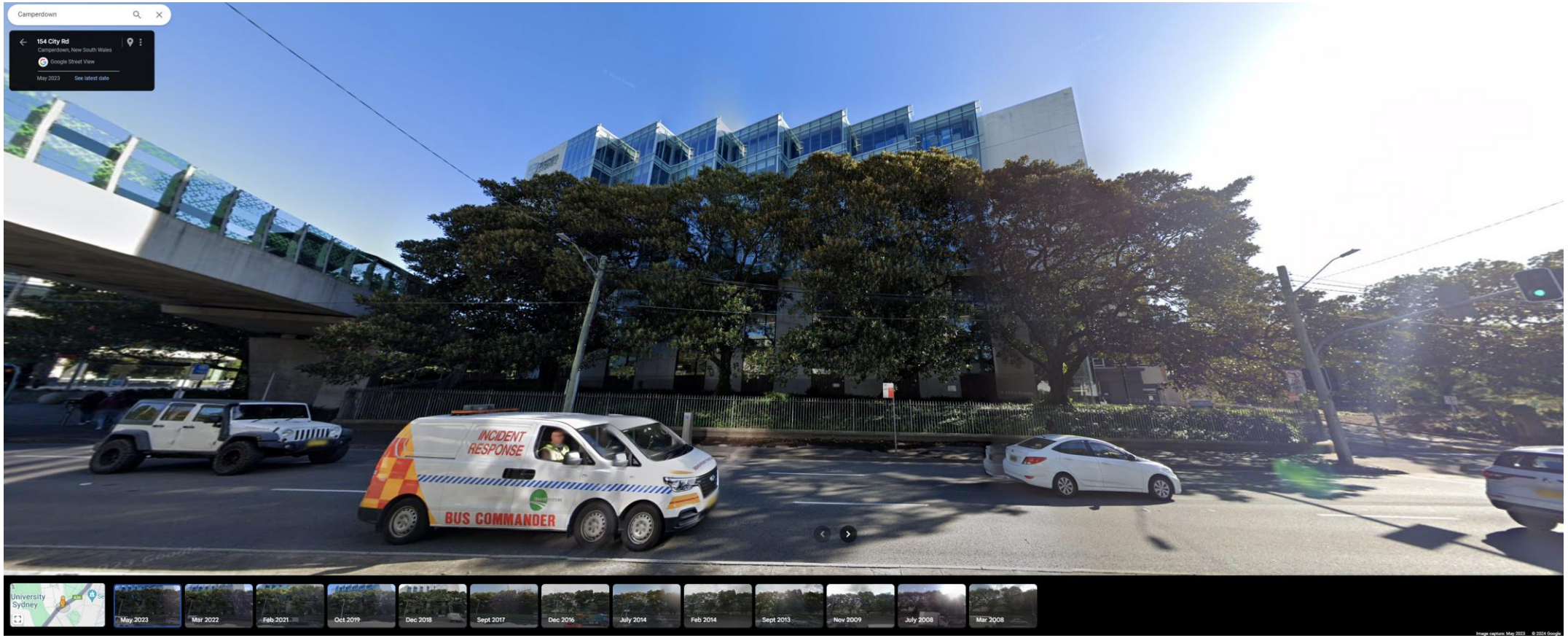


Dec 2018- health appears consistent, construction has finished



Feb 2021- health appears consistent, trees in great condition

Mar 2022- health appears consistent, trees in great condition

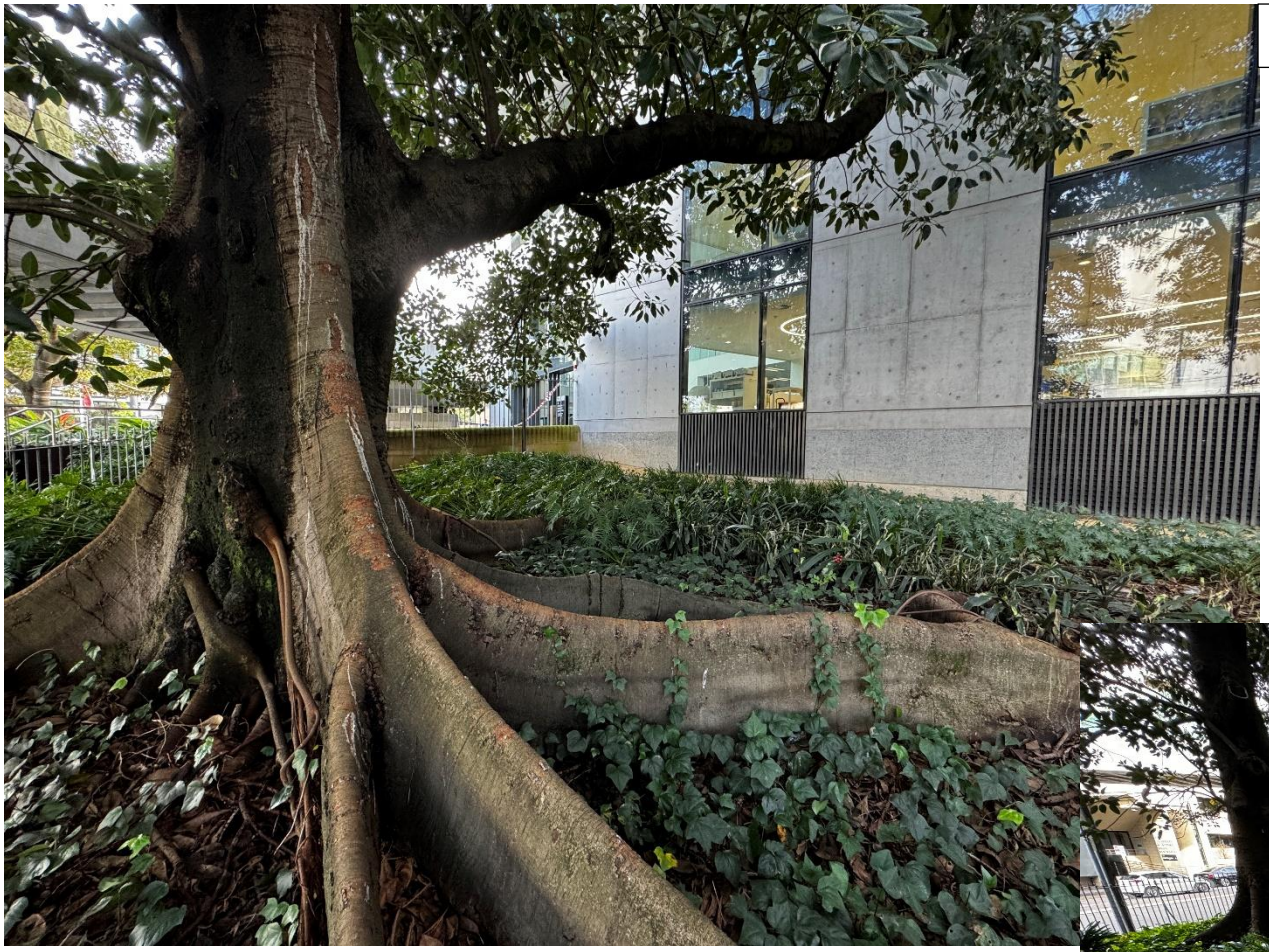


May 2023- health appears even better with lots of new growth over all the canopy, trees in great condition

All photos below were taken by David Gowenlock on 05.07.2024 at between 11am till midday

F1, F2, F3 and F4 health appears excellent with lots of new growth over all the canopy, trees in great condition

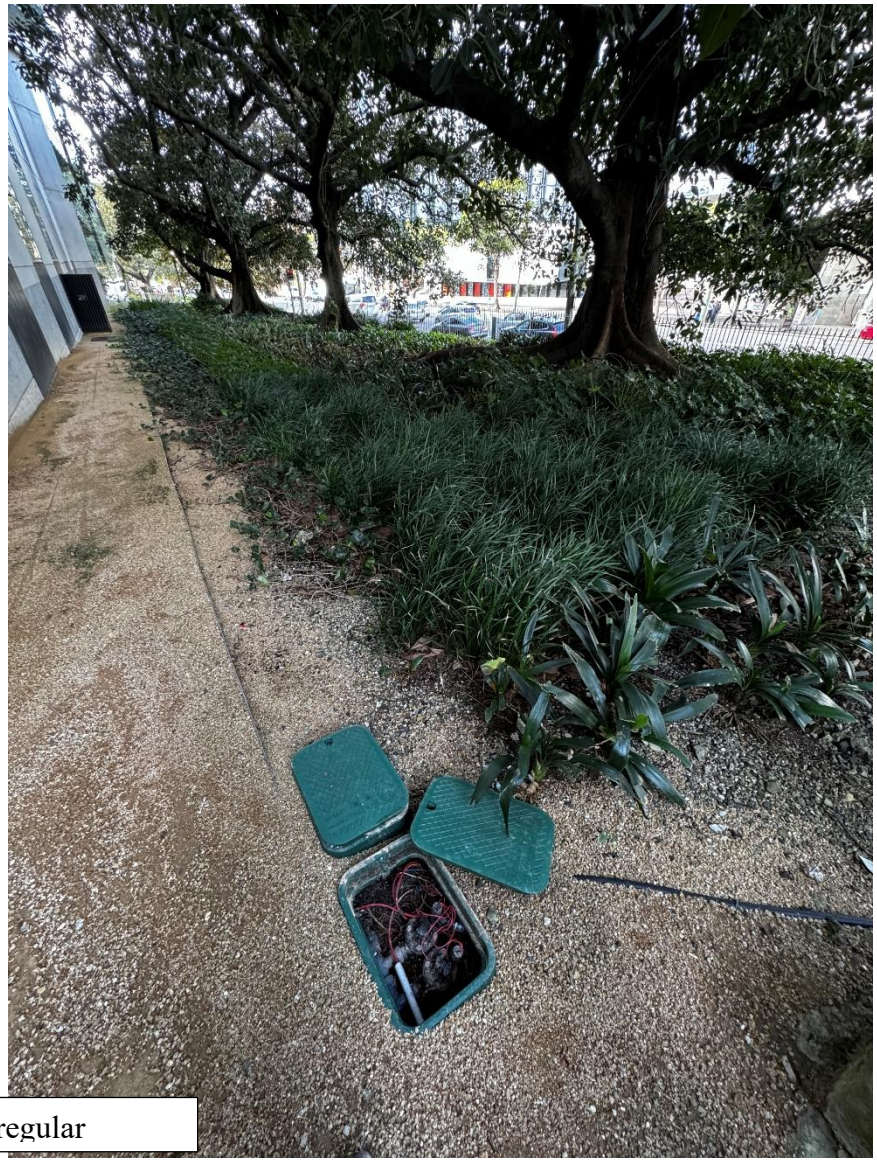
Significant canopy pruning of **F1, F2, F3 and F4 has occurred to accommodate the development**



The most western tree of **F1, F2, F3 and F4**

Decomposed gravel was used as a permeable path solution

Note that extensive drip irrigation has been installed, plus mulched, and then Ivy and other low plantings growing on ground as a natural mulch product



Drip irrigation solenoids for regular

The amount of overshadowing is massive here.

The most western tree of **F1, F2, F3 and F4, this photo taken as standing from the west of the tree**

The amount of overshadowing is massive here.

The most western tree of **F1, F2, F3 and F4, this photo taken as standing from the west of the tree**

The amount of overshadowing is massive from the northern development.

The most western tree of **F1, F2, F3 and F4, this photo taken as standing from due west of the tree**

Health of the trees is excellent.

This single Fig here is much more recently planted an considered to be semi mature

The most western tree of **F1, F2, F3 and F4, this photo taken as standing from due west of the tree.**

The most western tree of **F1, F2, F3 and F4, this photo taken as standing from due west of the tree underneath the pedestrian overpass**

ISSUED FOR DA — GG — 17.05.2016

CONSULTANT

CLIENT: RICHARD CROOKES CONSTRUCTIONS; THE UNIVERSITY OF SYDNEY

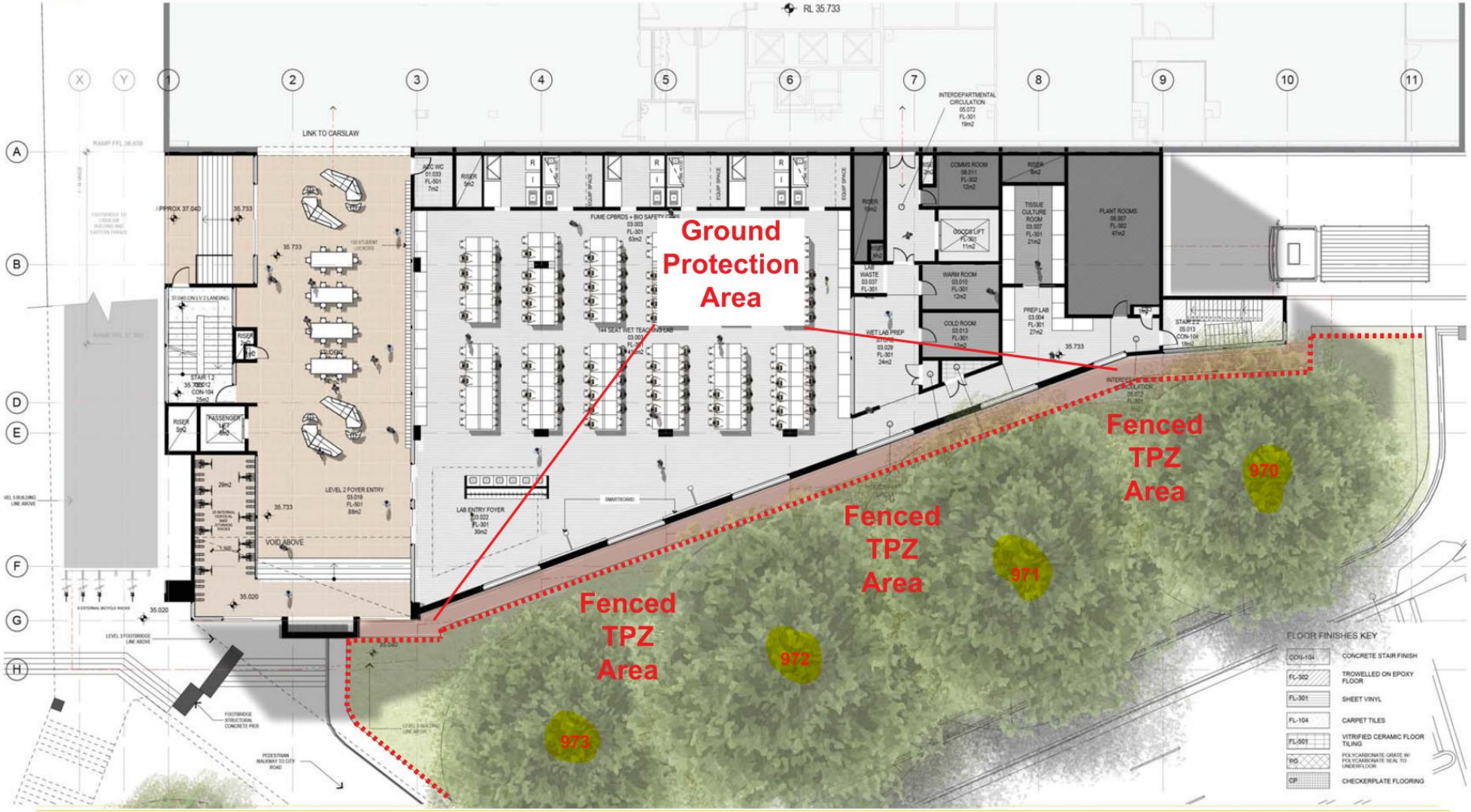
ARCHITECTS: FDR RICE DAUBNEY

PROJECT: LEES1 BUILDING (F07)
THE UNIVERSITY OF SYDNEY
CITY ROAD, CAMPERDOWN

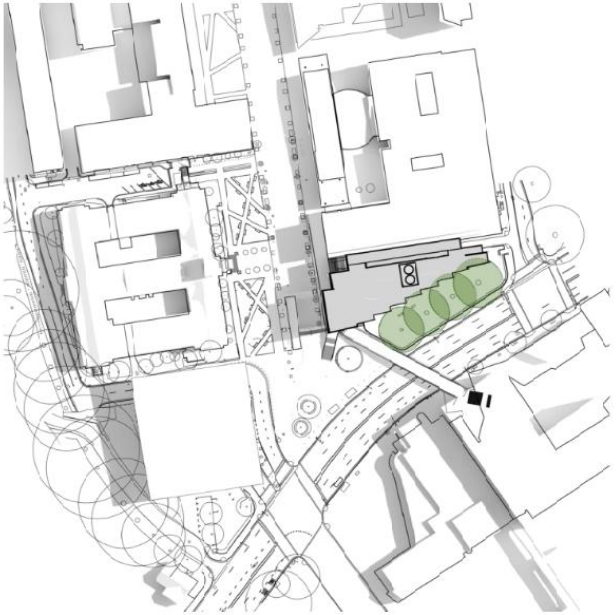
DRAWING TITLE: PLAN LEVEL 01

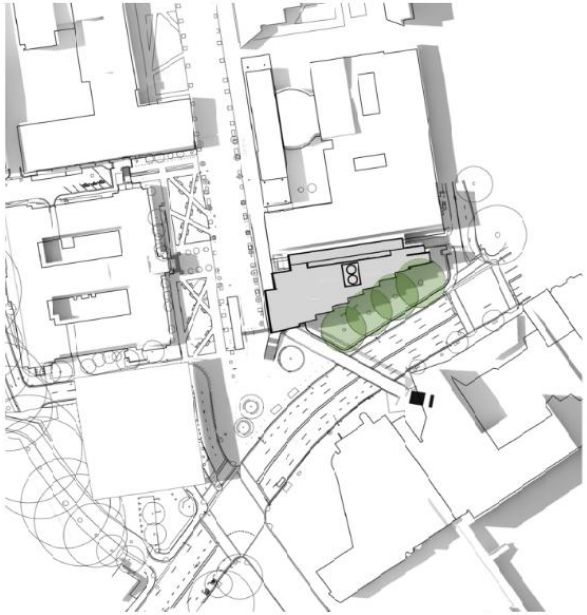
SCALE: 1 : 100 @ A1 | CHECKED: GG | DATE: 17.05.2016
CONTRACT NUMBER | DRAWING NUMBER: DA01 | ISSUE: F

THE UNIVERSITY OF SYDNEY



TREE PROTECTION PLAN





9:00 AM - 22 DECEMBER | 12:00 PM - 22 DECEMBER | 2:00 PM - 22 DECEMBER

CONSULTANT

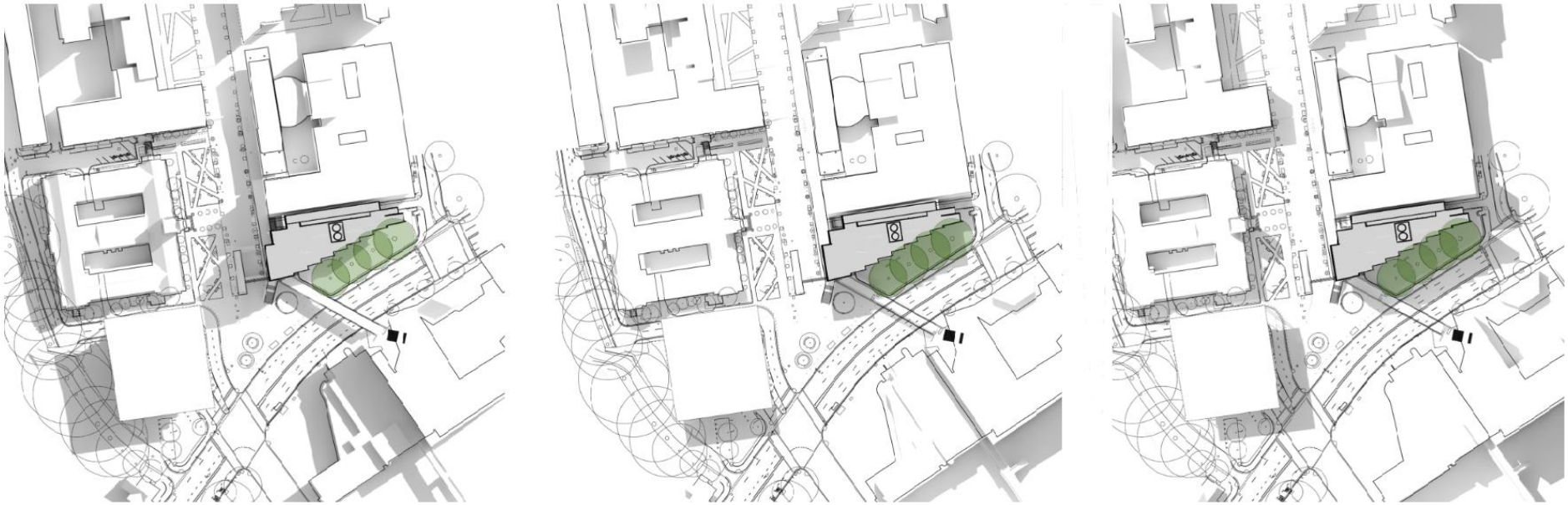
CLIENT
RICHARD CROOKES CONSTRUCTIONS
THE UNIVERSITY OF SYDNEY

ARCHITECT
RICE DAUBNEY

PROJECT
LEES 1 BUILDING (F07)
THE UNIVERSITY OF SYDNEY
CITY ROAD, SYDNEY

DRAWING TITLE
SHADOW DIAGRAMS
SUMMER SOLSTICE

SCALE 1:1000@A1 | CHECKED AM | DATE 14.04.16
CONTRACT NUMBER | DRAWING NUMBER DA 19 | ISSUE A



9:00 AM - 21 MARCH | 12:00 PM - 21 MARCH | 2:00 PM - 21 MARCH

CONSULTANT

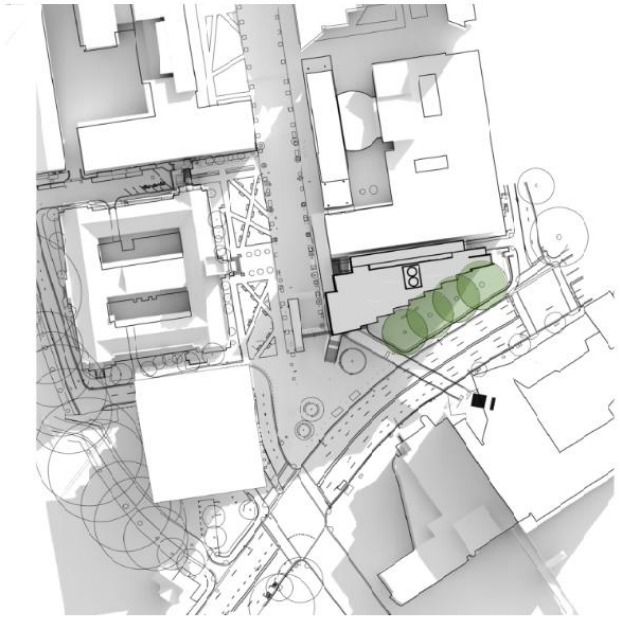
CLIENT
RICHARD CROOKES CONSTRUCTIONS
THE UNIVERSITY OF SYDNEY

ARCHITECTS
RICE DAUBNEY

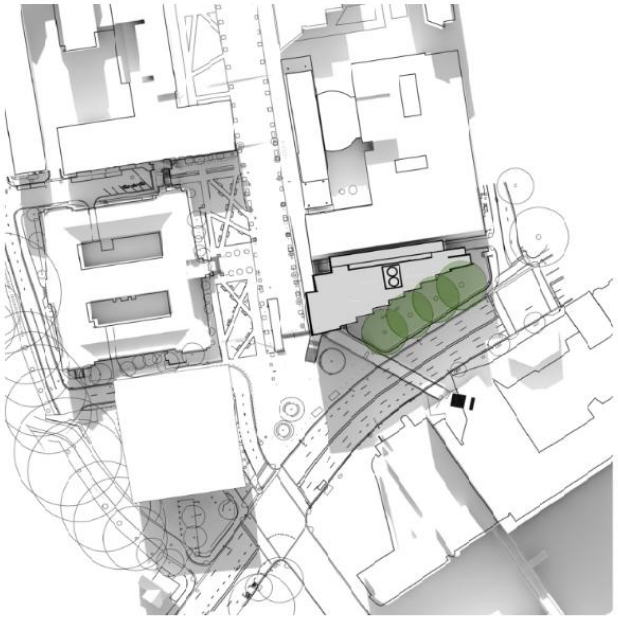
PROJECT
LEES 1 BUILDING (F07)
THE UNIVERSITY OF SYDNEY
CITY ROAD, SYDNEY

DRAWING TITLE
SHADOW DIAGRAMS
AUTUMN EQUINOX

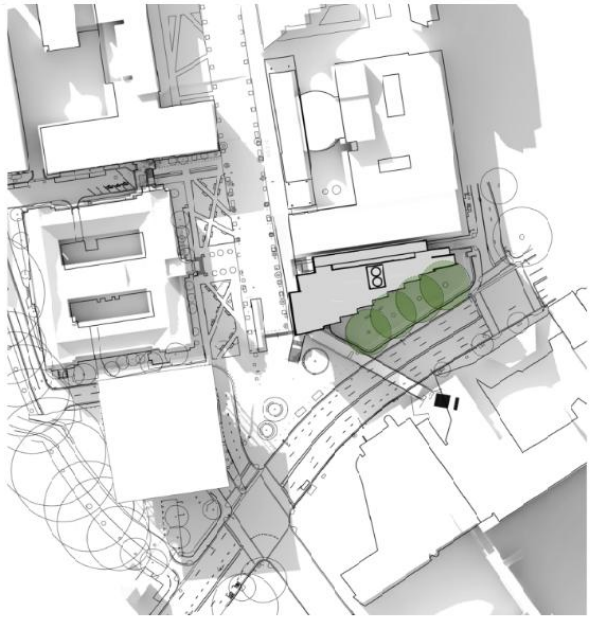
SCALE: 1:1000@ A1 | CHECKED: AM | DATE: 14.04.16
DRAWING NUMBER: DA 20 | ISSUE: A



9:00 AM - 21 JUNE



12:00 PM - 21 JUNE



2:00 PM - 21 JUNE

A	ISSUE FOR DA	CZ	14/04/16					

CONSULTANT

CLIENT: RICHARD CROOKES CONSTRUCTIONS / THE UNIVERSITY OF SYDNEY

ARCHITECTS: HDR RICE DAUBNEY

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ABN 56 880 304 993

PROJECT: LEES 1 BUILDING (F07)
THE UNIVERSITY OF SYDNEY
CITY ROAD, SYDNEY

DRAWING TITLE: SHADOW DIAGRAMS
WINTER SOLSTICE

SCALE	CHECKED	DATE
1:1000@A1	AM	14/04/16

CONTRACT NUMBER	DRAWING NUMBER	ISSUE
	DA 21	A

Plate 8: Showing Tree 972-973

From page 17 of the Arboricultural Impact Assessment + Tree Protection Specification (Tree IQ, Anna Hopwood + Martin Peacock) 11.04.2016

*** Please note tree ID numbers are the wrong

Plate 7: Showings Tree 970-971

From page 17 of the Arboricultural Impact Assessment + Tree Protection Specification (Tree IQ, Anna Hopwood + Martin Peacock) 11.04.2016

*** Please note tree ID numbers are the wrong way around here