

EASING SYDNEY CONGESTION WILSON STREET CYCLEWAY ARBORICULTURAL REPORT

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TRANSPORT FOR NSW EASING SYDNEY CONGESTION

Arboricultural Report

The Wilson Street Cycleway Newtown - Detail Design Development Scope

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REVISIONS

Revision	Date	Description	Prepared by	Approved by
Draft A	06/11/23	First draft		
Draft B	29/11/23	Second draft to address client comments		
Draft C	30/6/25	Third draft report based on 100% design		
Final	15/07/2025	Final Arboricultural Report		

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1 INTRODUCTION

Transport for NSW (Transport) has engaged SustainJV to complete an Arboricultural Report for the Wilson Street Newtown cycleway upgrade (hereafter referred to as 'the proposal'), as part of the Easing Sydney's Congestion Program (ESC).

The proposal comprises active transport connectivity upgrades, including the provision of bi-directional separated cycleways and intersection upgrades, along Wilson Street, Erskineville Road, King Street and Eliza Street, Newtown. The arboricultural assessment was completed for an approximate 240 m section of the proposal, from the intersection of King Street to outside of 41 Wilson Street, Newtown, NSW (herein referred to as the 'subject site'), as shown in Figure 1.

This report has been prepared with reference to TfNSW (2021) *Arboricultural assessment considerations – Version 1.0* (TfNSW, 2021) and contains an arboricultural assessment of trees in the proposal footprint to assess the degree of potential impact, and provide advice on the viability of trees, that may be directly or indirectly impacted by the proposal. This report would also aim to inform the future design of the proposal during detailed design with an aim to retain trees, where possible, and provide recommendations for compliance with the recently implemented TfNSW (2022) Biodiversity Policy (Policy No.CP22004 – the 'Biodiversity Policy') adopted by Transport.

1.1 Key features of the proposal

Key features of the proposal would include:

- Installation of an approximately 150 metre bi-directional cycleway along the north side of Wilson Street, from Eliza Street to east of Erskineville Road
- Removal of about 75 metres of existing cycleway along the south side of Wilson Street, east of the intersection of Wilson Street and Erskineville Road, where the existing cycleway will be replaced by the new bi-directional cycleway on the north side of Wilson Street
- Construction of a raised bike rider crossing on Wilson Street between Erskineville Road and Brown Street, to connect the existing cycleway on the south side of the road carriageway to the proposed cycleway on the north side of the road carriageway
- Installation of a new 12 metre loading zone on Erskineville Road between King Street and Wilson Street to operate during off-peak periods, between Monday to Friday 10am to 3.30pm
- Signalisation of the existing pedestrian crossing across Eliza Street, at its intersection with King Street
- Banning the left turn for vehicles turning left from Wilson Street onto Erskineville Road
- Restricting bike rider turns for the following movements:
 - Turning left from the proposed cycleway on Wilson Street onto King Street
 - Turning right from the proposed cycleway on Eliza Street onto King Street
 - Turning right from the proposed cycleway on Wilson Street (between King Street and Erskineville Road) onto Erskineville Road
 - Turning left from the proposed cycleway on Wilson Street (east of Erskineville Road) onto Erskineville Road
- Pavement resurfacing
- Construction of concrete medians
- Adjustment to utilities and drainage infrastructure
- Realignment of pram ramps and kerbs, and adjustment to linemarking
- Removal of an existing concrete median island on the west side of the Wilson Street and Erskineville Road intersection

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- Adjustment of stop line on King Street southbound lane on approach to Wilson Street intersection
- Adjustments to lighting on Wilson Street between King Street and Erskineville Road
- Removal of some existing road signage, and installation of new road signage to identify the cycleway and shared zone.

Refer to Section 3.1 of the REF for further information with regards to the design

It is noted that no excavations are expected east of Erskineville Road. Works would include:

- Mill and resheet of the road surface
- The construction of new medians and raised threshold
- No kerb removal would be required
- Some trimming of trees around the raised priority cycle crossing and street lights

1.2 Scope and limitations

This report has been prepared by SustainJV for Transport for NSW and may only be used and relied on by Transport for NSW for the purpose agreed between SustainJV and Transport for NSW.

SustainJV otherwise disclaims responsibility to any person other than Transport for NSW arising in connection with this report. SustainJV also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by SustainJV in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. SustainJV has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Conditions at other parts of the proposal footprint may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

1.3 Key terms used in this report

The following terms have been used throughout this report:

- The proposal is the proposed works associated with the Wilson Street Newtown cycleway upgrade
- The subject site is the section of the proposal from the intersection of King Street to outside of 41 Wilson Street, Newtown, NSW, as shown on Figure 1.
- **Subject trees** are the individual trees of trees surveyed for this report.

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1.4 Glossary

Table 1: Glossary and Terms

Acronym	Name
AHD	Australian height datum (in metres)
DBH	Diameter at Breast Height
DCP	Development Control Plan
DRC	Diameter of leader above root crown
GIS	Geographic information system
km	Kilometre
LEP	Local Environmental Plan
m	Metre
NSW	New South Wales
REF	Review of Environmental Factors
SRZ	Structural Root Zone
SULE	Safe Useful Life Expectancy
TfNSW	Transport for NSW
TPZ	Theoretical Tree Protection Zone
WHS	Workplace Health and Safety
WO	Works Order

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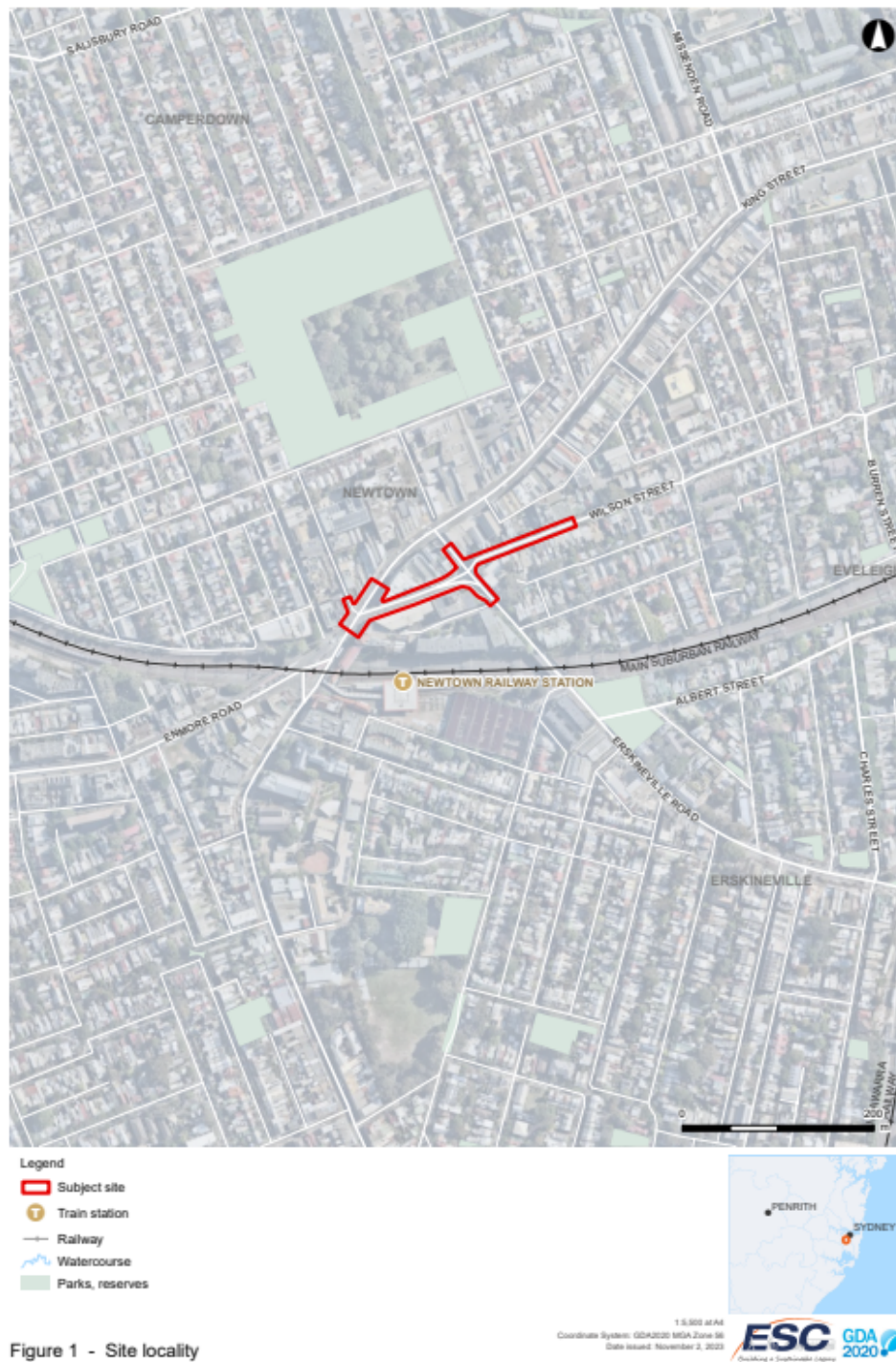


Figure 1: Subject site locality

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2 METHODS

2.1 Desktop review

Mapping of the site in Sydney City Council's Local Environment Plan (2012) was assessed in order to confirm the presence or absence of heritage trees or patches of significant vegetation within or adjacent to the subject site.

Additionally, the following databases, documents, plans and literature pertaining to the study area and locality were reviewed:

- Guide to managing risks of tree trimming and removal work (Safe Work Australia, 2016)
- Protection of Trees on Development Sites (Standards Australia, 2009)
- Taken for Granted. The Bushland of Sydney and its Suburbs (Benson, D and Howell, J., 1990)
- Soil Landscapes of the Sydney 1:100 000 Map (Chapman, G.A., Murphy, C.L., Tille, P.J., Atkinson, G. and Morse, R.J., 1989)
- TfNSW Biodiversity Policy, No.CP22004, (NSW Government, 2022)
- TfNSW Arboricultural assessment considerations – Version 1.0 (TfNSW, 2021)
- Significant Tree Register (2022) The National Trust
- City of Sydney (2023a) Tree Management and Donation Policy
- City of Sydney (2023b) Urban Forest Strategy
- City of Sydney (2023c) Street Tree Master Plan Technical Guidelines
- City of Sydney (2023d) Significant Trees Register.

2.2 Field survey

The field survey assessed all trees located in the road reserve of the subject site on 6 September 2023. The field survey was carried out by a GHD Senior Botanist and Arborist Australian Qualifications Framework (AQF) Level 10 together with a GHD Ecologist.

All trees within or immediately adjacent to the subject site were inspected. These included trees in the road reserve, as well as specimens growing in or adjacent to private and public properties.

The trees surveyed for this report are the individual trees which are identified and shown on Figure 2.

2.2.1 Definition of a 'tree'

With an aim to keep definitions and reports consistent across ESC projects, and at the request of Transport, the definition of a tree stipulated in the Transport for NSW (2022) *Tree and hollow replacement guidelines* (TfNSW, 2022), which is derived from AS 4970-2009¹ has been used. This following definition of a tree has been adopted in this report:

"A long-lived woody perennial plant greater than (or usually greater than) 3 m in height with one or relatively few main stems or trunks..."

Additionally, Transport has requested that all shrubs that have the potential to meet the above definition within five years (commencing from REF approval) are included in this assessment.

Therefore, all trees and shrubs according to the above criteria have been assessed in this report. For the purposes of this report, all trees and shrubs assessed are herein defined as a 'tree'.

¹ Australian Standard *Protection of trees on development sites*, AS4970-2009, Reconfirmed 2020

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2.2.2 Visual tree assessment

Trees were assessed by conducting a ground based Visual Tree Assessment (VTA) (see Lonsdale, 1999).

Identification of exotic trees was made according to Spencer 1997-2002.

Native trees were identified to species level according to current taxa outlined in Royal Botanic Gardens and Domain Trust (2023). The subject trees were identified to species level and the following details were recorded:

- Tree number
- Botanical name of tree species
- Common name of tree species
- Height of tree in metres (m)
- Spread (radius in metres)
- Diameter at Breast Height (DBH) and diameter of leader above root crown (DRC), both in metres
- Age and health
- Safe Useful Life Expectancy (SULE)
- Theoretical Tree Protection Zone (TPZ) and theoretical Structural Root Zone (SRZ), both in metres.

The height and crown spread of each subject tree was estimated. The DBH was measured to determine the theoretical TPZ. A mallet was used in order to test for decay in the leaders. No aerial inspection (climbing) was undertaken. Adjacent surface areas were surveyed to determine the extent of surface roots. Tagging of the trees was not necessary as they can be easily identified by other means, given the small number of trees to be assessed, and their proximity to street addresses.

Details relating to each subject tree are included in the tree table in Appendix B.

The information provided in this report reflects the condition of the trees at the time of inspection and only relates to the subject trees.

The details of individual trees were documented in a tree schedule with reference to the unique numerical identifier indicated on Figure 2.

2.2.3 Tree structure and health

For each tree, the Safe Useful Life Expectancy (SULE) was determined based on the health and structure of the subject tree (after Barrell, 2001). The SULE code is provided in Appendix B. The health and structural integrity of each tree were evaluated according to the criteria outlined in Table 2.

The estimate of each tree's age was based on the definitions outlined by Draper and Richards (2009). Trees were classed as follows:

- Young (Early Mature): age <20% of their life expectancy in situ;
- Mature: aged between 20 to 80% of their life expectancy in situ; and
- Over-mature: aged >80% of their life expectancy in situ.

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Table 2: Tree structure and health

Tree structure considerations	
Structural considerations *	
Presence/absence of cankers (abnormal growth caused by fungi or bacteria)	Evidence of 'end weight' (accumulation of mass at the end of a branch)
Presence/absence of cavities (open wound with evidence of decay)	Presence/absence of epicormic shoots (shoots arising from latent or adventitious buds)
Presence/absence of co-dominant stems (Stems or branches of equal diameter, often weakly attached)	Presence/absence of previous branch or trunk failure
Presence/absence of conks (fruiting body of decay fungi e.g. Bracket Fungus)	Evidence of girdling roots (roots that encircle the base [above ground] of the stem)
Presence/absence of decay (degradation of wood by fungi / bacteria)	Leaning trunk (bias)
Evidence of decline (loss of vigour)	Low canopy (branches that are close to ground may require heavy pruning for construction clearance)
Evidence of dieback (death of twigs and branches)	Presence/absence of wounds (injuries on the surface of a stem or branch)
Health Considerations	
Presence/absence of pest and diseases	Proportion of necrotic material in platform
Amount of extension growth	Absence/presence of epicormic growth
Density of canopy	Foliage size and colour

* Adapted from Matheny & Clark (1998).

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2.2.4 Tree Protection Zones

The Tree Protection Zone (TPZ) is used as a means to protect trees identified for retention from development impacts and to maintain their existing health and vigour during and after development. The TPZ is intended to be an area isolated from construction disturbance at a given distance from the base of the tree's leader, in order to protect an adequate proportion of the tree's root system for stability and healthy survival. The TPZ is prescribed in Standards Australia (2009).

The TPZ radius is calculated using the following formula:

$$\text{Diameter at Breast Height (DBH) (in metres) } \times 12.$$

Where the specimen had two or more leaders, the following formula was used to calculate DBH:

$$\text{DBH} = (\text{dbh1}^2 + \text{dbh2}^2 + \dots + \text{dbh}n^2)^{0.5}.$$

The calculation for Structural Root Zone (SRZ) radius is as follows:

$$\text{SRZ} = (\text{D SRZ} \times 50)^{0.42} \times 64.$$

Where: D = Difference between DBH and Diameter (in metres) at Base of Leader (DBL).

While there is some acceptance of disturbance (<10%) within a healthy tree TPZ, no disturbance within the tree Structural Root Zone (SRZ) is acceptable (Standards Australia, 2009).

According to Standards Australia (2009), encroachment of up to 10% of the TPZ is acceptable, but any encroachment into the SRZ may inhibit the tree's stability.

3 STUDY AREA DESCRIPTION AND ENVIRONMENTAL SETTING

3.1 Overview

The subject trees consist of street trees and trees in private property planted along both sides of Wilson Street, east of the intersection of Erskineville Road and Wilson Street, Newtown, as indicated on Figure 2. No trees are present west of this intersection within the subject site.

The subject site topography is level to gently inclined northwest at around 35 metres Australian Height Datum (AHD) and is mostly sealed, with surfaces of asphalt, paving and concrete.

It is understood that the location of a temporary site compound is to be determined at a later date. Further assessment to the potential impacts to trees in the site compound may be required.

3.2 Soils and geology

With reference to the 1:100,000 Sydney Soils Landscape Sheet, the original soil likely comprised residual soils from the Blacktown Landscape Group which are characterised by low fertility and poor drainage. However, it is likely that the original topsoil has been extensively disturbed and modified after initial clearing and subsequent suburban and road development.

According to the 1:100,000 Sydney Geology Sheet, the underlying rock is mapped as Ashfield Shale, which is dominated by black to dark-grey shale laminite.

3.3 Original vegetation

Based on the original soils and geology, the original vegetation on the subject site would have consisted of Turpentine-Ironbark Forest. "...the Turpentine-Ironbark Forest extended from Glebe and Newtown westward to Auburn. Early descriptions of these areas indicate an abundance of 'heavy timber and brush.'" (Benson and Howell 1990).

3.4 Subject trees

A total of 23 trees were surveyed in the field and have been identified as Tree 1 to 23, of which 22 are shown on Figure 2. Tree 5 is not shown as it was located in a private yard and has since been removed. As such, it is not considered further in this assessment. The results of the survey are provided in the Tree Table (Appendix B).

The street trees in the subject site include exotic and native Australian species, reflecting changes in attitudes towards urban planting. The most commonly occurring street tree species within the subject site is the exotic *Koelreuteria paniculata* (Golden Rain Tree). Golden Rain Tree is a small to medium deciduous tree with a broad, spreading canopy, ornamental yellow flowers and red fruit. It is noted that, within the subject site, recent plantings have been carried out to fill gaps between the line of original specimens.

Trees which are indigenous to Australia are mainly restricted to small patches of parkland outside of the proposal area, at the intersection of Erskineville Road, within Wilson Street Reserve and in adjacent gardens. Species include *Eucalyptus microcorys* (Tallowwood), *Melaleuca linariifolia* (Snow

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in Summer), *Tristaniopsis laurina* (Water Gum), *Ficus rubiginosa* (Port Jackson Fig), *Callistemon* cultivars (Bottle brush) and *Grevillea robusta* (Silky Oak).

Most of the surveyed trees are in moderate to good condition, although in most cases, form has been affected by regular pruning, mostly to restrict canopy growth close to overhead powerlines.

Photos 1 to 3 below show representative examples street trees assessed during the survey.



Plate 1: Two large Tallowwoods (trees 11 and 13), growing in small patch of parkland, corner Erskineville Road and Wilson Street (facing south)



Plate 2: Street tree with small, unsealed area over part of the SRZ. Note exposed surface roots (facing east)

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Plate 3: Water gum - Tree 7 (facing east)

3.4.1 Values of the trees

Sydney City Council (2023) lists the following aims of the Tree Management Policy:

- Prioritise the maintenance and protection of the existing tree population
- Broaden the emphasis of urban tree management to include urban forestry principles, with trees managed as a collective asset, to maximise the benefits canopy cover provides
- Improve the quality and quantity of City of Sydney's canopy cover
- Increase species diversity and improve the age spread of the urban forest
- Recognise and protect trees considered significant due to heritage, cultural, social and ecological criteria
- Increase awareness and educate the community, developers and Council staff on the value of trees in the urban landscape
- Enhance the City of Sydney's reputation within the community as a steward and manager of trees.

Proposals to remove trees do not comply with the stated aims of Council's Tree Management Policy.

A search of the list of Sydney City Council's Significant Trees register indicates that there are five Significant Trees listed in Newtown, but no Significant Trees listed in, or in the immediate vicinity of, the subject site.

A search of the National Trust's Significant Tree Register indicates that there are no Significant Trees listed in or near the subject site.

In terms of the trees in the subject site, the broad spreading canopies of the mature Golden Rain Trees provide shade over the footpath, road and cycleway, and are critical for reducing the impacts of

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the urban heat island effect, which is consistent with the City of Sydney (2023a) Tree Management Policy. The trees also provide visual amenity, as well as forage for insects, birds and other organisms.

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Figure 2 - Site features

Figure 2: Subject trees in the subject site

4 IMPACTS OF THE PROPOSED WORKS

4.1 Impacts on the subject trees

The determination on whether a tree is likely to be removed or whether or was likely to remain viable during construction was based on the location of the tree TPZ, and how much of that TPZ falls within the subject site. As a general rule, and with reference to AS4970:

- A 10 per cent encroachment into the TPZ is considered as a minor encroachment, one that the tree is likely to remain viable during and following construction;
- Anything greater than 10 per cent into the TPZ is considered a major encroachment, and likely to adversely affect the tree to such a degree that it may not remain viable;
- As noted in Section 2.2.4, any impact into the SRZ is considered unacceptable as it impacts on the tree's structural stability, i.e. the root growth required to keep the tree upright. The SRZ does not relate to the tree's long-term viability; this would comprise a larger area.

As noted in Section 1.1, excavation east of Wilson Street is not expected. As such, while encroachment into the TPZ would occur, impacts to the root zone of trees is not anticipated. Instead, encroachment would be limited to the trimming of tree branches in the vicinity of the raised priority cycle crossing and street lights.

As per Australian Standard 4373-2007 - Pruning of Amenity Trees (AS 4373), no more than 10 percent of a tree's canopy is to be removed. Any pruning should be completed by a qualified arborist.

The TPZ and SRZ of all trees surveyed have been calculated and are shown in Appendix B. Refer to Section 5.2.4 for information related to tree protection measures.

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5 MITIGATION MEASURES

5.1 Avoidance of impacts

The proposal would result in impacts on a highly modified subject site within an urban setting. The constraints of the subject site and lack of available alternative space means that avoidance of all impacts is not feasible. It is noted that the final design footprint is yet to be confirmed, and therefore, the range of impacts to individual trees may vary.

5.2 Mitigation of impacts

5.2.1 Biodiversity Policy

Transport's Biodiversity Policy (TfNSW 2022) describes non-statutory offset requirements for proposals undertaken by Transport that result in tree loss. Broadly, the draft offset requirements are shown in Table 3 below.

Table 3: TfNSW (2022) Tree and hollow replacement guidelines

Tree size	Contribution required per tree/hollow	Number of trees to be planted per tree removed/ratio of hollow replacement per hollow removed
Very large tree (DBH greater than 100 cm)	\$2500	16
Large tree (DBH greater than 50 cm)	\$1000	8
Medium tree (DBH greater than 20 cm)	\$500	4
Small tree (DBH less than 20 cm)	\$125	2
Hollow	\$500	3

It is noted that the offset requirements provided above do not apply to exotic trees, unless that tree is considered to be a high amenity tree (e.g. a tree with high landscape, ecological or heritage value). Given that the exotic trees within the subject site have been planted, they are considered to be amenity trees.

No hollows were reported in any of the subject trees.

Given that no excavation works are required in the TPZ of any of the trees within the subject site, and provided that any pruning is completed in accordance with AS 4373, no trees are expected to require removal. As such, non-statutory offsetting is not required for the proposal.

The offsetting requirements may change if the project footprint or construction methodology changes in the future and varies the nature and scale of impacts to existing trees.

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5.2.2 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) would be required for the construction phase of the proposal. The CEMP would include, as a minimum, industry-standard measures for the management of soil, surface water and pollutants, as well as specific measures including the tree protection procedures outlined in Section 5.2.4 below. The CEMP should be prepared and implemented by the contractor.

5.2.3 Vegetation and fauna

The CEMP would be required to address and minimise the impacts of construction on native flora and fauna. Fauna management measures, include (but are not limited to) the following:

- An ecologist or suitably qualified wildlife handler to be present in the event of any unexpected finds (e.g. nestlings)
- Any unexpected finds should be removed by the wildlife handler and released into the care of WIRES, Sydney Wildlife or other appropriate wildlife rescue organisation as necessary.

5.2.4 Tree protection measures

A qualified arborist should be engaged for the pre-construction and construction phases of the proposal.

Any alterations to the subject site may result in changes to the viability of some trees. As such, the qualified arborist should review any changes during detailed design and provide further advice as required. Similarly, changes to the subject site may require recalculation of non-statutory offset obligations associated with the project, in line with the requirements of the Biodiversity Policy (TfNSW, 2022).

The following tree protection measures have been derived from AS4970:2009. Refer to AS4910:2009 for further information relating to tree protection measures. As shown in Figure 2, trees 4 to 16 will require protection during construction work.

General tree protection measures include:

- Milling of pavement in the TPZ of trees will be completed under the supervision of a project arborist. Any exposed roots should be covered to protect them from drying out, such as with hessian. The roots should be wetted to keep them moist while exposed
- Appropriate pruning may need to be carried out on trees if their canopies overhang, or their root zones enter, the construction site. The extent and amount of pruning that may be required (e.g. to facilitate plant/vehicle movement) is to be determined by the project arborist during works given that the amount of pruning required is determined by the size and types of machinery used in construction (e.g. a medium or standard will require more room to operate than a mini excavator). The amount of pruning required is also determined by the amount of clearance required around lighting and access to crossings, which is to be determined by the project arborist prior to and following construction. All pruning works are to be completed in conjunction with AS 4373 by a qualified arborist
- Impacts to trees may be minimised by installing temporary protective fencing prior to construction. An example of appropriate temporary fencing is indicated in Figure 3 of Appendix C. It is, however recognised that the use of temporary fences may be inconvenient, in the context of machinery access, materials storage and parking, therefore the recommendation for fencing over such a short time period may not be practicable. If the use of temporary fencing such as the exemplified shown in Figure 3 is not achievable, an alternative form of temporary protective fencing, such as trunk, branch or ground protection, is recommended. A minimum height for the protection of trunks and

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branches is 2 metres. Nails should not be used to secure protection materials to tree trunks and branches. An example of branch, trunk and ground protection is shown in Figure 4, Appendix C

- Signs identifying the TPZ should be placed so as to be visible in the development site. An example of TPZ signage is provided in Figure 5, Appendix C.

Specific tree protection measures include TPZ radius sizes for each tree, which are provided in Table 4, Appendix B.

During excavation and construction, the following actions should not be permitted within the TPZ for those trees proposed for retention:

- Storage of materials, plants or equipment
- Installation of site sheds or portable toilets
- Excavations, trenching, ripping or cultivation of soils
- Modification of existing soil level or addition of fill materials
- Disposal of waste materials and chemicals (both solid and liquid)
- Mechanical removal of vegetation
- Vehicular movement.

The health and vigour of any retained trees should be monitored by a suitably qualified arborist after completion of construction. Any remedial treatment, including removal of damaged laterals, application of fertiliser or irrigation and inspection for stress factors should be carried out in response to the monitoring inspection.

A follow-up inspection six months after completion of works should also be carried out by the arborist and any required remedial actions should be carried out.

5.2.5 Erosion and Sedimentation

Erosion and sediment control plans and measures would be established prior to the commencement of construction in accordance with the principles and guidelines included in Managing Urban Stormwater: Soils and Construction - Volume 1 (Landcom, 2004) and Volume 2D of Managing Urban Stormwater: Soils and Construction (DECC 2008). Any controls would be managed and maintained in accordance with the CEMP to ensure their ongoing functionality. Erosion and sediment control controls would be regularly inspected, particularly following rainfall events, to ensure their ongoing functionality. All stockpiled material should be stored in bunded areas and kept away from waterways to avoid sediment or contaminants entering waterways.

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6 CONCLUSION

As part of the Easing Sydney's Congestion Program (ESC), Transport is proposing the installation of bi-directional separated cycleways and intersection upgrades, along Wilson Street, Erskineville Road, King Street and Eliza Street, Newtown. This report was prepared to provide advice on the viability of trees that may be directly or indirectly impacted by the proposal.

No excavations are required, instead the removal of pavement is to be completed by milling of the surface. As such, no trees are proposed to be removed as a part of works, though some trees will require pruning and protection throughout the construction phase of works.

It is expected that all trees will remain viable during and following works, provided that the recommended mitigation measures are implemented and care is taken during construction. To prevent unnecessary damage to a tree, and potentially the death of a tree, it is recommended that a qualified arborist (AQF Level 5 and above) is engaged for all works at the intersection of Wilson Street and Erskineville Road, and along Wilson Street east of the intersection.

Any alterations to the subject site may result in changes to the potential viability of some trees. As such, a qualified arborist should review any changes during detailed design and provide further advice as required. Similarly, changes to the subject site may require recalculation of non-statutory offset obligations associated with the project, in line with the requirements of the Biodiversity Policy (TfNSW, 2022).

Several environmental safeguards and management measures will be implemented by the construction contractor as part of the Construction Environmental Management Plan for the proposal to further minimise the potential for any adverse impacts on retained trees and native fauna species that may be present during construction.

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APPENDIX A – SAFE USEFUL LIFE EXPECTANCY (SULE) MATRIX

The SULE value generated by the below matrix gives an indication of the time a tree is expected to be usefully retained. Adapted from Barrell (2001).

	1 Long SULE	2 Medium SULE	3 Short SULE	4 Removal	5 Move or Replace
A	Trees that appear to be retainable at the time of assessment for >40 years with an acceptable degree of risk, assuming reasonable maintenance.	Trees that appear to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk, assuming reasonable maintenance.	Trees that appear to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk, assuming reasonable maintenance.	Trees which should be removed within the next 5 years.	Trees which can be readily moved or replaced.
B	Structurally sound trees located in positions that can accommodate for future growth.	Trees that may only live for 15-40 years.	Trees that may only live for another 5-15 years.	Dead, dying, suppressed or declining trees.	Small trees <5 (m) in height.
C	Trees that could be made suitable for retention in the long term by remedial tree care.	Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.	Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.	Dangerous trees because of instability or loss of adjacent trees.	Young trees less than 15 years old but over 5m in height.
D	Trees of special significance that would warrant extraordinary efforts to secure their long-term retention.	Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide for new planting.	Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide for a new planting.	Dangerous trees because of structural defects.	
E		Trees that could be made suitable for retention in the medium term by remedial tree care.	Trees that require substantial remedial tree care and are only suitable for retention in the short term.	Damaged trees not safe to retain.	
F					Trees that could live for more than 5 years but may be removed to prevent interference with more suitable

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	1 Long SULE	2 Medium SULE	3 Short SULE	4 Removal	5 Move or Replace
				individuals or to provide for a new planting.	

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APPENDIX B – TREE TABLE

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Table 4: Tree assessment table

ID	Botanical name	Common name	Height (m)	Canopy Radius (m)	Age	Health	Form	DBH DRH	TPZ	SRZ (radius)	SULE	Comments	Expected impact
1	* <i>Kolreuteria paniculata</i>	Golden Rain Tree	4	1.5	M	F	M	0.12 0.14	2	1.5	A3	Suppressed and distorted growth	Protection or removal not required
2	* <i>Kolreuteria paniculata</i>	Golden Rain Tree	5	2	M	P	M	0.15 0.18	2	1.6	A3	Sparse growth. Leader biased and distorted	Protection or removal not required
3	* <i>Kolreuteria paniculata</i>	Golden Rain Tree	3	1.5	EM	F	M	0.12 0.15	2	1.5	A3	Biased growth; distorted leader.	Protection or removal not required
4	* <i>Kolreuteria paniculata</i>	Golden Rain Tree	8	3.5	M	G	M	0.31 0.35	3.7	2.1	A3	Suppressed growth and biased leader, probably caused by proximity of Tree 15.	Protection required
6	* <i>Kolreuteria paniculata</i>	Golden Rain Tree	2.5	1	EM	F	F	0.09 0.12	2	1.5	A3	Suppressed and biased growth	Protection required
7	<i>Tristanopsis laurina</i>	Water Gum	7	2	M	G	M	0.17 0.2	2.4	1.8	A2	NIL	Protection required
8	* <i>Fraxinus excelsior</i>	English Ash	3	1	EM	F	M	0.08 0.11	2	1.5	A3	Sparse canopy; suppressed growth	Protection required
9	<i>Tristanopsis laurina</i>	Water Gum	7	1.5	M	M	M	0.16 0.19	2	1.7	A2	Co-dominant leaders	Protection required
10	*(?) <i>Juniperus chinensis</i> 'Keteleeri'	Chinese Juniper	9	2.5	M	G	G	0.24 0.29	2.9	2	A3	Growing in mulched bed, adjacent to building	Protection required
11	* <i>Eucalyptus microcorys</i>	Tallow wood	14	6	M	G	G	0.48 0.53	5.8	2.5	A2	Growing in mulched bed	Protection required
12	*(?) <i>Juniperus chinensis</i> 'Keteleeri'	Chinese Juniper	9	2.5	M	G	G	0.24 0.29	2.9	2	A3	Growing in mulched bed, adjacent to building	Protection required

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ID	Botanical name	Common name	Height (m)	Canopy Radius (m)	Age	Health	Form	DBH DRH	TPZ	SRZ (radius)	SULE	Comments	Expected impact
13	<i>Eucalyptus microcorys</i>	Tallow wood	15	5	M	M	G	0.47 0.52	5.6	2.5	A2	Epicormic regrowth on leader; necrotic laterals in canopy	Protection required
14	<i>*Ulmus parvifolia</i>	Chinese Elm	15	5	M	G	G	0.43 0.47	5.2	2.4	A2	NIL	Protection required
15	<i>*Kolreuteria paniculata</i>	Golden Rain Tree	8	2.5	EM	G	M	0.18 0.23	2.2	1.8	A3	Co-dominant leaders; Reaction wood	Protection required
16	<i>*Kolreuteria paniculata</i>	Golden Rain Tree	3	1.5	EM	G	M	0.07 0.09	2	1.5	A3	Distorted lateral growth	Protection required
17	<i>Melaleuca linariifolia</i>	Snow in Summer	7	2	M	M	M	0.22 0.25	2.6	1.9	A3	Co-dominant leaders; Mechanical damage from leader base; Canopy suppressed on northern side	Protection or removal not required
18	<i>Melaleuca linariifolia</i>	Snow in Summer	8	2	M	M	M	0.25 0.29	3	2	A3	Co-dominant leaders; Mechanical damage from leader base	Protection or removal not required
19	<i>Melaleuca linariifolia</i>	Snow in Summer	6	1.5	M	M	F	0.19 0.22	2.3	1.8	A3	Leader biased to west	Protection or removal not required
20	<i>Melaleuca linariifolia</i>	Snow in Summer	7	1	M	G	M	0.17 0.2	2	1.7	A3	Canopy suppressed	Protection or removal not required
21	<i>Melaleuca linariifolia</i>	Snow in Summer	8	2.5	M	G	M	0.25 0.28	3	1.9	A3	Canopy suppressed on southern side	Protection or removal not required
22	<i>^Callistemon</i> (syn. <i>Melaleuca</i>) 'Kings Park Special'	Bottle Brush	7	3	M	G	M	0.31 0.34	3.7	2.1	A3	Bias to spout; Co-dominant leaders	Protection or removal not required

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ID	Botanical name	Common name	Height (m)	Canopy Radius (m)	Age	Health	Form	DBH DRH	TPZ	SRZ (radius)	SULE	Comments	Expected impact
23	^ <i>Callistemon</i> (syn. <i>Melaleuca</i>) 'Kings Park Special'	Bottle Brush	7	2	M	G	M	0.26 0.29	3.1	2	A3	Bias to east	Protection or removal not required

Notes:

Health: G = good; M = moderate; F = fair

Age: EM = early mature; M = Mature; OM = over-mature

Structure: G = good; M = moderate; F = fair

SULE: Safe Useful Life Expectancy (see SULE matrix - Appendix A)

TPZ = Tree Protection Zone

SRZ = Structural Root Zone

DBH = Diameter at breast height

DRC = Diameter at root crown

NIL = No additional comments

^native species not indigenous to the Sydney Basin

*exotic/introduced species

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APPENDIX C TREE PROTECTION ZONE FENCING EXAMPLES AND SIGNAGE

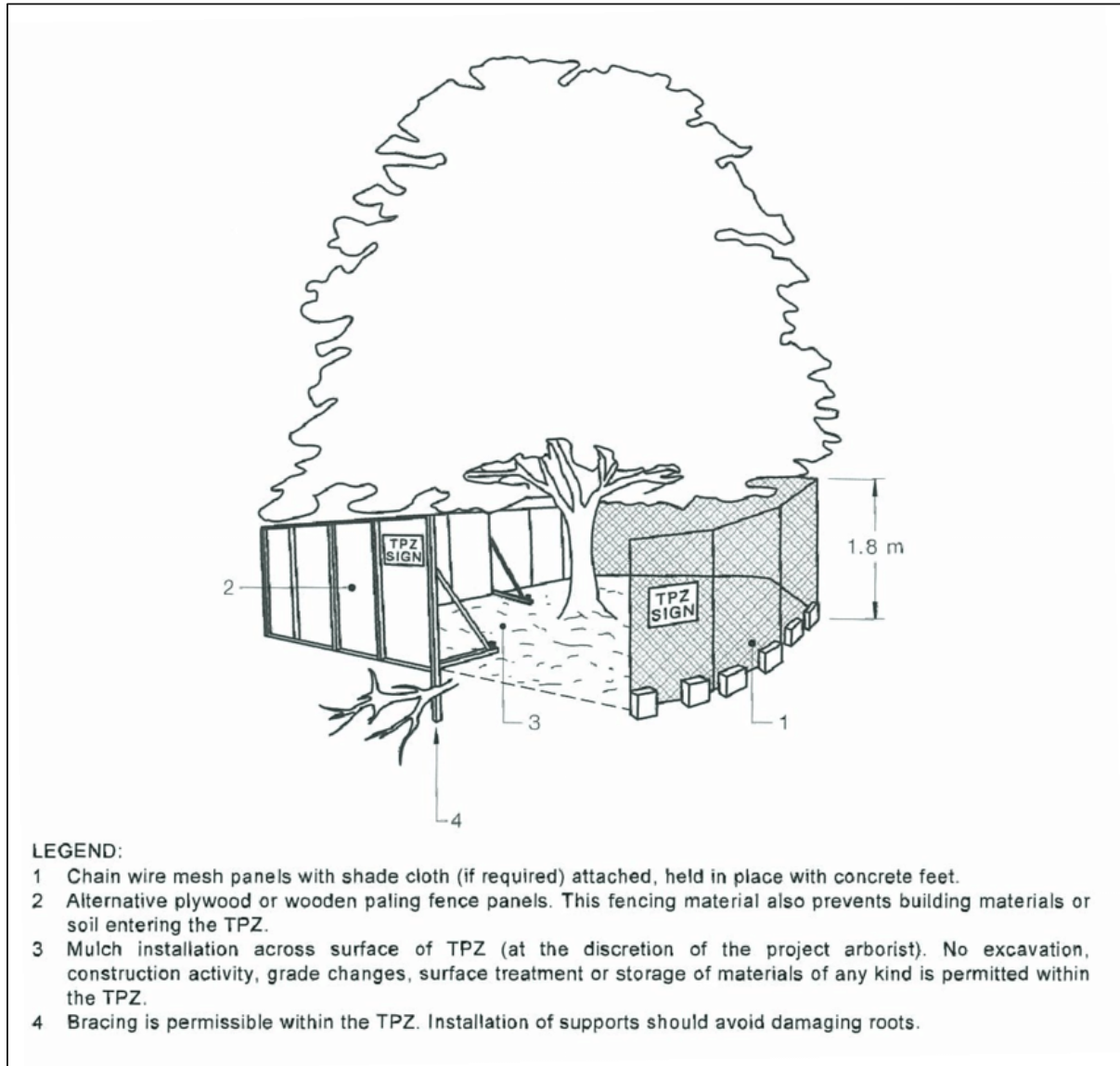


Figure 3: AS4970:2009 example of tree protection fencing

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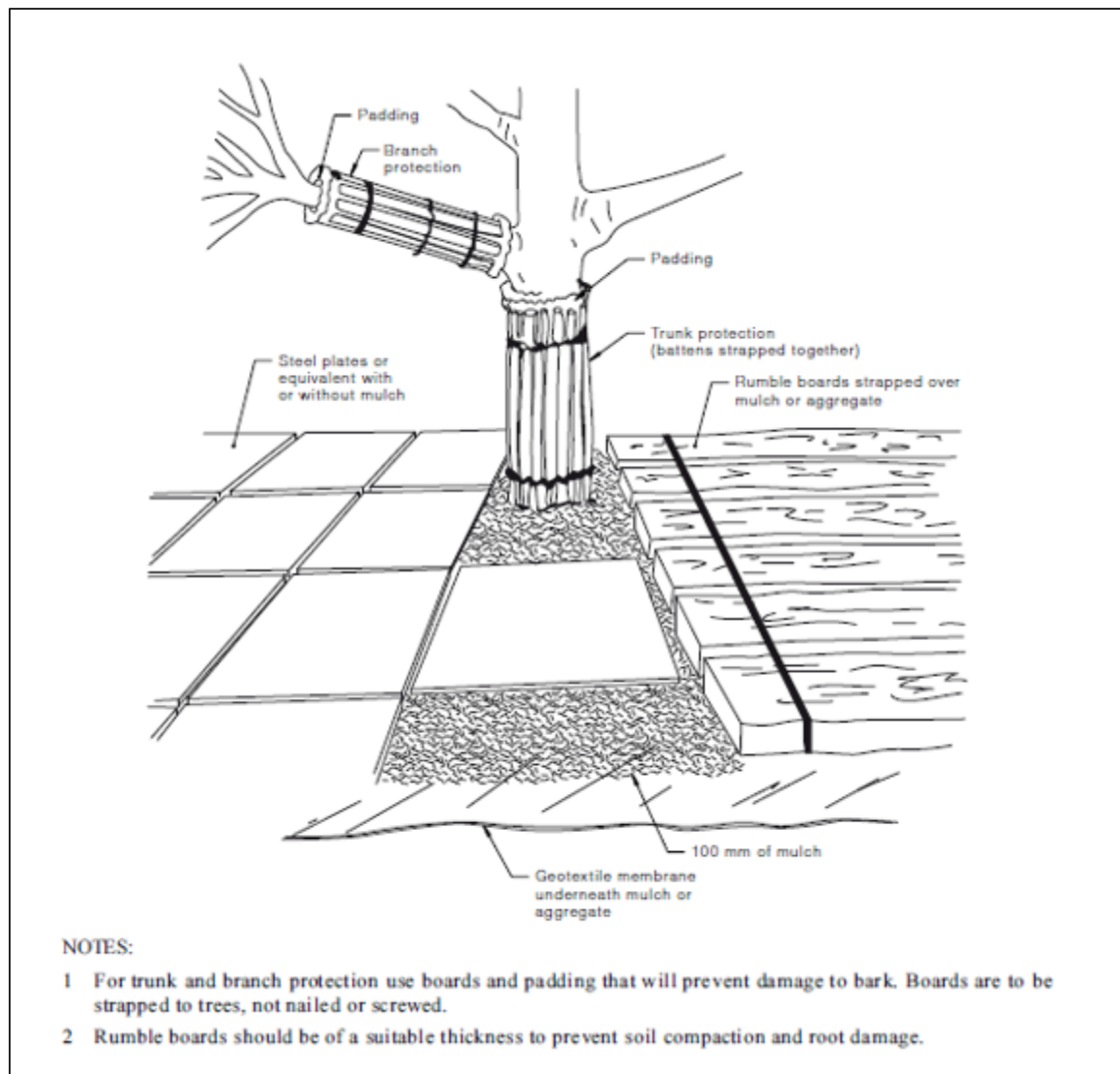


Figure 4: AS4970:2009 example of trunk, branch and ground protection

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Figure 5: AS4970:2009 example of tree protection zone fencing

