



Review of Environmental Factors The Cooks to Cove GreenWay (In-Corridor Works)

Appendix G: Arboricultural Impact Assessment (ELA, 2021)

June 2021



The Greenway In-Corridor Works – Arboricultural Impact Assessment

Inner West Council

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Contents

1. Background	1
1.1 Scope of works.....	1
1.1.1 Central Links.....	1
1.1.2 Southern Links	2
2. Method.....	4
2.1 Definition of a tree.....	4
2.2 Visual tree assessment	4
2.3 Retention value.....	5
2.4 Protection zones	5
2.4.1 Tree protection zone (TPZ)	5
2.4.2 Structural root zone (SRZ).....	5
2.5 Potential impacts	6
3. Results and discussion	8
3.1 Trees proposed to be removed	8
3.2 Trees proposed to be retained	9
3.3 Trees proposed to be retained if possible	9
4. Tree protection plan	10
4.1 Tree pruning and removal	10
4.2 Tree protection measures	10
4.3 Hold points, inspection and certification	11
4.4 Replacement planting.....	11
5. References	14
5.1 General references	14
5.2 Project specific references.....	14
Appendix A Tree retention assessment method	16
A1 Tree Significance Assessment Criteria - STARS©.....	16
A2 Matrix assessment - STARS©	17
Appendix B Encroachment into tree protection zones - AS 4970-2009.....	18
Appendix C Maps	19
Appendix D Table of results	45
Appendix E Tree protection guidelines	81
E1 Tree protection fencing	81

E1 Crown protection.....	81
E2 Trunk protection	81
E3 Ground protection	82
E4 Root protection and investigation	83
E5 Underground services.....	83
Appendix F Site photos.....	84
F1 Taverners Hill Light Rail Station: North of Parramatta Rd	84
F2 Taverners Hill Light Rail Station: South of Parramatta Rd	86
F3 Lewisham West Light Rail Station	90
F4 Waratah Mills to Arlington Light Rail Stations.....	92
F5 Arlington to Dulwich Grove light Rail station	93
F6 Dulwich Grove to Dulwich Hill Light Rail Stations	96

List of Figures

Figure 1: Location of assessment site	3
Figure 2: Representative tree structure and indicative TPZ and SRZ.....	6
Figure 3: Shared cycleway along Hawthorn Canal lined with <i>Casuarina cunninghamiana</i>	84
Figure 4: Shared cycleway along Hawthorn Canal lined with <i>Casuarina cunninghamiana</i> weedy bushland on embankment between canal and light rail corridor. Row of <i>Ficus macrocarpa</i> visible north of site boundary	84
Figure 5: Standing on Taverners Hill Light Rail Station looking west towards Hawthorn canal. Two mature <i>Eucalyptus botryoides</i>	85
Figure 6: Hawthorne Canal immediately South of Parramatta Road. Weedy bushland visible between light rail corridor and canal. One fruit bat was observed roosting in a Camphor Laurel (Tree 25).	86
Figure 7: Bushland on steep embankment between Hawthorne Canal and light rail corridor South of Parramatta Road. <i>Casuarina cunninghamiana</i> dominant species on slope and <i>Phoenix cannariensis</i> near canal edge.	86
Figure 8: Bushland on steep embankment between Hawthorne Canal and light rail corridor South of Parramatta Road. Access not possible so trees assessed from other side of canal. Two young Eucalyptus trees visible.	87
Figure 9: Tree 192 in bushland next to dog park on steep embankment between Hawthorne Canal and light rail corridor South of Parramatta Road. Tree 192 is a large dominant <i>Eucalyptus tereticornis</i> or <i>Eucalyptus amplifolia</i> . Juvenile foliage not clearly visible although bark pattern and small fruit (4mm width) suggest <i>E. amplifolia</i>	87
Figure 10: Close up of Tree 192.....	88
Figure 11: <i>Eucalyptus tereticornis</i> with nest boxes located in dog park near Cadigal Reserve.	88
Figure 12: Tree 254 in bushland next to dog park on steep embankment between Hawthorne Canal and light rail corridor South of Parramatta Road. Tree 254 is a large dominant <i>Eucalyptus tereticornis</i> or <i>Eucalyptus amplifolia</i> . Juvenile foliage not clearly visible although bark pattern and small fruit (4mm width) suggest <i>E. amplifolia</i>	89

Figure 13: Vegetation and trees in rail corridor between Lewisham West light rail station and Old Canterbury Road. Trees dominated by row of *Melaleuca quinquenervia* encroached by weeds including large leaf privet *Ligustrum lucidum* and the African olive *Olea europaea subsp Africana*.90

Figure 14: Young planted native trees and weeds in bed next to station platform. Planted trees include: *Acacia saligna* and *Angophora costata*.90

Figure 15: Planted Acacia at Lewisham West station likely *Acacia saligna* (Golden wreath wattle) and not *Acacia pycnantha* (Golden wattle) because phyllods are narrow and flower clusters on short branches.91

Figure 16: Tallowwood tree, *Eucalyptus microcorys* planted in Johnson Park opposite Arlington platform.92

Figure 17: weedy bushland along rail corridor composed of sweet pittosporum, *Pittosporum undulatum* and large leaf privet, *Ligustrum lucidum*.93

Figure 18: Most trees lopped under electrical wires. This poor pruning practice encourages the growth of vigorous and weakly attached epicormic shoots.....93

Figure 19: Row of Tallowwood, *Eucalyptus microcorys* belonging to townhouse complex. Lower branches have been pruned row of trees (crown raised) to allow clearance for electrical wires.94

Figure 20: Planted and weeds trees growing on escarpment above Dulwich Grove light rail platform. Trees include black wattle *Acacia decurrens*, Camphor laurel *Cinnamomum camphora*, and some planted water gum, *Tristanopsis laurina*94

Figure 21: Shared cycle path above Dulwich Grove station. One remaining Blue Berry Ash, *Elaeocarpus reticulatus* (right) in planted row.95

Figure 22: Golden wattle *Acacia pycnantha* growing along wasteland in rail corridor.96

Figure 23: Mainly weed trees growing in Rail corridor above Terrace Rd and east of Hercules Street Dulwich Hill.....96

Figure 24: Coast Redwoods, *Sequoia sempervirens* growing in rail corridor behind Hercules Street houses.97

List of Tables

Table 1: Proposed impacts7

Table 2: Summary of number of trees to be removed or retained.....8

Table 3: Summary of proposed action and tree retention values8

Table 4: Summary of proposed action to native trees, unhealthy/dead trees and weeds/undesirable species.....8

Table 5: Mitigation measures.....13

Abbreviations

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

1. Background

This Arboricultural Impact Assessment (AIA) was prepared for Inner West Council in relation to the proposed pedestrian path extension within the Inner West Light Rail Corridor between Leichhardt and Dulwich Hill. The study area is mapped Figure 1. The purpose of this report is to:

- identify the trees within the site that are likely to be affected by the proposed works
- undertake a visual tree assessment of the subject trees
- assess the current overall health and condition of the subject trees
- evaluate the retention value of the subject trees
- identify trees to be removed, retained or transplanted
- determine the likely impacts on trees to be retained
- recommend tree protection measures to minimise adverse impacts.

1.1 Scope of works

A summary of the proposed scope of works for the project is provided below based on information from Council.

1.1.1 Central Links

The Central Links works will include the construction of the following:

- An elevated path cantilevered over the Hawthorne Canal, north of Parramatta Road (owned by Sydney Water) on the eastern side, with footings integral with the Canal wall
- A suspended path under Parramatta Road (a state road managed by Transport for NSW) over the Hawthorne Canal, suspended from beams supported from the road bridge abutments
- An elevated path, south of Parramatta Road, cantilevered over the Hawthorne Canal on the eastern side, with footings integral with the Canal wall
- Realignment of a length of a 500 mm water main and modification to another existing water main, plus sewer and disused gas main near and under Parramatta Road
- Stairs linking from the GreenWay path to the southern side of Parramatta Road and Light Rail lift east of the Canal
- An on-grade path on the eastern side of the Hawthorne Canal (on land owned by Rail Corp NSW currently under control of Council), within Gadigal Reserve
- Channel access ramp and bridge construction in Gadigal Reserve to facilitate construction and maintenance
- Ecological restoration, a rest/nature play area on the eastern side and a separate observation area on the western side of Gadigal Reserve
- An elevated path under the main western rail line and whipple truss (on land owned by Rail Corp NSW)
- A jacked box culvert tunnel under Longport Street (a regional road managed by Council)
- A path through the light rail corridor (owned by Rail Corp NSW and operated by Transdev) west of the light rail tracks from Longport Street to Old Canterbury Road, connecting to the Summer Hill Flour Mills near Lewisham West light rail, and inclusive of rest areas

- Dog off leash area on the eastern side of the light rail tracks and north of Lewisham West Light Rail Stop
- A wetland on the eastern side of the light rail tracks and south of Lewisham West Light Rail Stop
- A path linking from the light rail corridor to Old Canterbury Road in the road reserve on the northern side of Old Canterbury Road
- Lighting and electrical work for all sections, including ecological sensitive lighting in Gadigal Reserve
- Associated fencing, landscaping, ecological restoration, signage and ancillary works.

1.1.2 Southern Links

The Southern Links works will include the construction of the following:

- A cut and cover tunnel (or jacked culvert) under Davis Street
- A low-level boardwalk from Davis Street to Jack Shanahan Reserve, inclusive of stormwater drainage works near Terry Road
- Upgrade of the path through Jack Shanahan Reserve including modification to the existing playground and surrounds
- A cut and cover tunnel (or jacked culvert) under Constitution Road, including retaining walls on the northern approach and a secant pile wall on southern approach, in close proximity to private property
- Protection and/or diversion of existing water and gas mains in Constitution Road during tunnel construction
- An elevated path from south of Constitution Road to south of New Canterbury Road, including through the back span under the New Canterbury Road bridge and connecting to the existing path south of New Canterbury Road
- A new on-grade path from Hercules Street near Consett Street to Jack Shanahan Reserve and Hercules Street near Terrace Road
- Creation of new parklands and ecological restoration area Hercules Street near Consett Street to Jack Shanahan Reserve and Hercules Street near Terrace Road, including earthworks and stormwater drainage improvements
- Lighting and electrical work for all sections, including ecological sensitive lighting in Gadigal Reserve
- Associated fencing, landscaping, ecological restoration, signage and ancillary works.

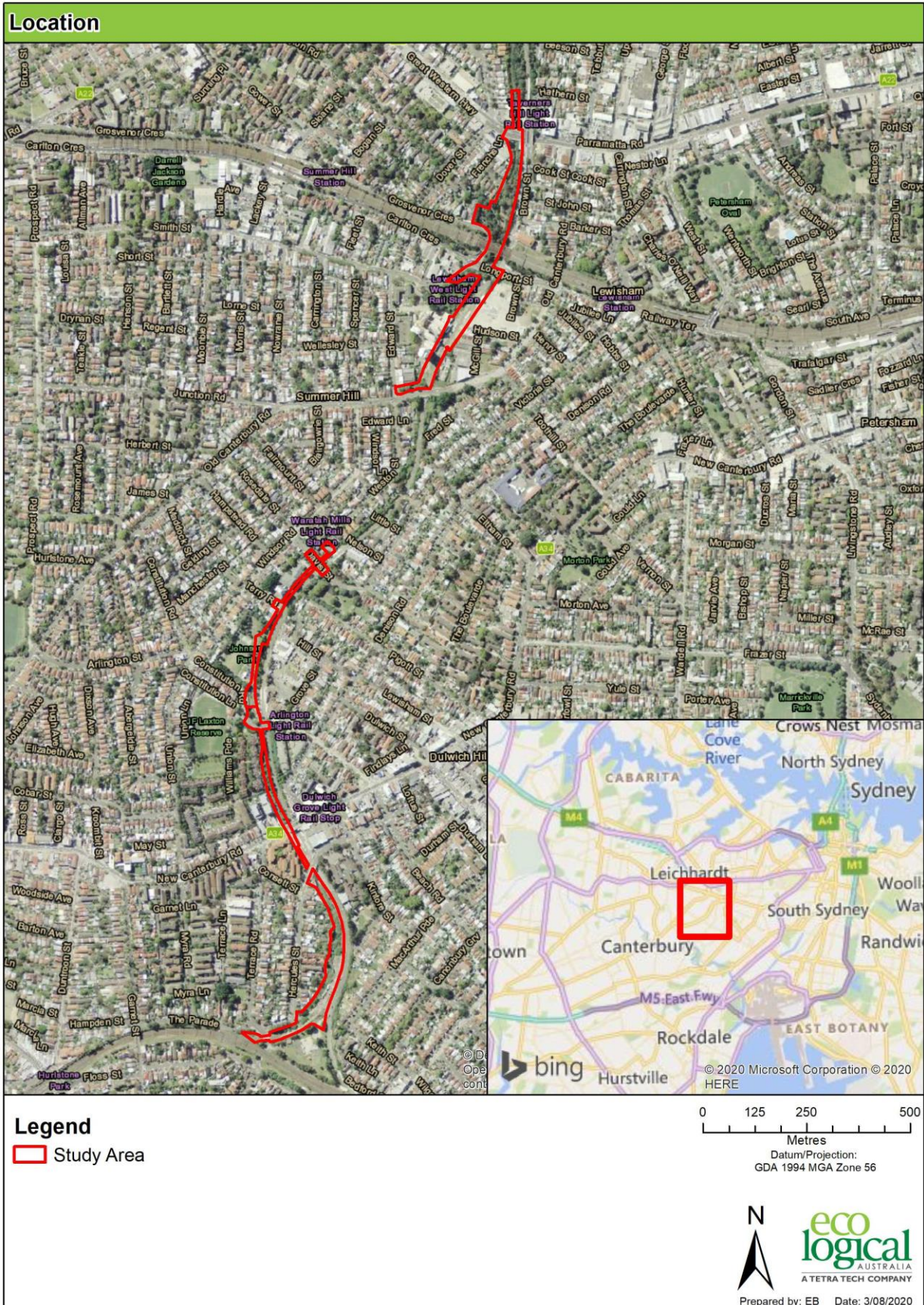


Figure 1: Location of assessment site

2. Method

2.1 Definition of a tree

A tree is defined under the Australian Standard, AS 4970-2009, *Protection of Trees on Development Sites* as a long lived woody perennial plant usually greater than 3 m in height with one or relatively few main stems or trunks.

Inner West Council, Leichhardt Development Control Plan (DCP) defines a ‘prescribed tree’ as:

‘any tree with a height equal to or greater than 6 m above ground level (existing); or any tree that is under 6 m in height that has a trunk diameter of more than 300 mm at ground level (existing); or any tree with a canopy spread equal to or greater than 3 m; or any palm or fern with a stem length equal to or greater than 4 m above ground level (existing); or any tree that is required as the habitat of native animals’ (Inner West Council 2020).

2.2 Visual tree assessment

The subject trees were assessed in accordance with a stage one visual tree assessment (VTA) as formulated by Mattheck and Breloer (1994) and practices consistent with modern arboriculture.

A total of 372 subject trees were inspected in August and September 2020 by AQF Level 5 Consulting Arborist, Sophie Diller. In addition to the trees assessed by ELA, this impact assessment report includes the 59 trees assessed by the Inner West Council (2018) and the 303 trees assessed by Birds Tree Consulting (2019). The trees assessed in 2018 and 2019 were different to those assessed by ELA in 2020. Detailed notes of the assessment and proposed impacts are provided in Appendix D. A total of 734 trees were assessed. Where appropriate, trees were assessed as groups and as such only 666 records are shown in Appendix D.

The following limitations apply to this methodology:

- Trees were inspected from ground level, without the use of any invasive or diagnostic tools and testing.
- Trees were inspected within limits of site access.
- No aerial inspections or root mapping was undertaken.
- Tree heights, canopy spread and diameter at breast height (DBH) were estimated, unless otherwise stated.
- Tree identification was based on broad taxonomical features present and visible from ground level at the time of inspection.
- Tree locations assessed by the Inner West Trees, Birds Tree Consulting and ELA were recorded using hand-held GPS, which is typically accurate to 2-20 m. Where possible, ELA has adjusted the spatial data using GIS, aerial imagery and the 2018 detailed survey data, so these tree locations would be accurate to approximately 1 m.
- Trees were not tagged in the 2018, 2019 and 2020 assessments.
- Tree retention values were not assessed by the Consulting Arborists during fieldwork in the 2018 and 2019 studies therefore, an approximation of tree retention values was derived for the

purposes of this report through a desktop review of the health, condition, useful life expectancy (ULE) and diameter at breast height (DBH) of the previously assessed trees.

2.3 Retention value

The retention value or importance of a tree or group of trees, is determined in accordance with the Institute of Australian Consulting Arborists (IACA) Significance of a Tree Assessment Rating System (STARS©), which is summarised in Appendix A. The method considers the Useful Life Expectancy (ULE) and landscape significance of a tree. Trees are provided one of the following ratings:

- **High - priority for retention.** These trees are considered important and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by Australian Standard AS 4970–2009 Protection of trees on development sites.
- **Medium - consider for retention.** These trees are moderately important for retention. Their removal should only be considered if adversely affected by the proposed works and all other alternatives have been considered and exhausted.
- **Low - consider for removal.** These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
- **Priority for removal:** These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

2.4 Protection zones

2.4.1 Tree protection zone (TPZ)

The TPZ is a specific area above and below ground and at a distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by the development. The TPZ (as defined by AS 4970-2009) requires restriction of access during the development process. Groups of trees with overlapping TPZs may be included within a single protection area. Tree sensitive measures must be implemented if works are to proceed within the TPZ.

2.4.2 Structural root zone (SRZ)

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

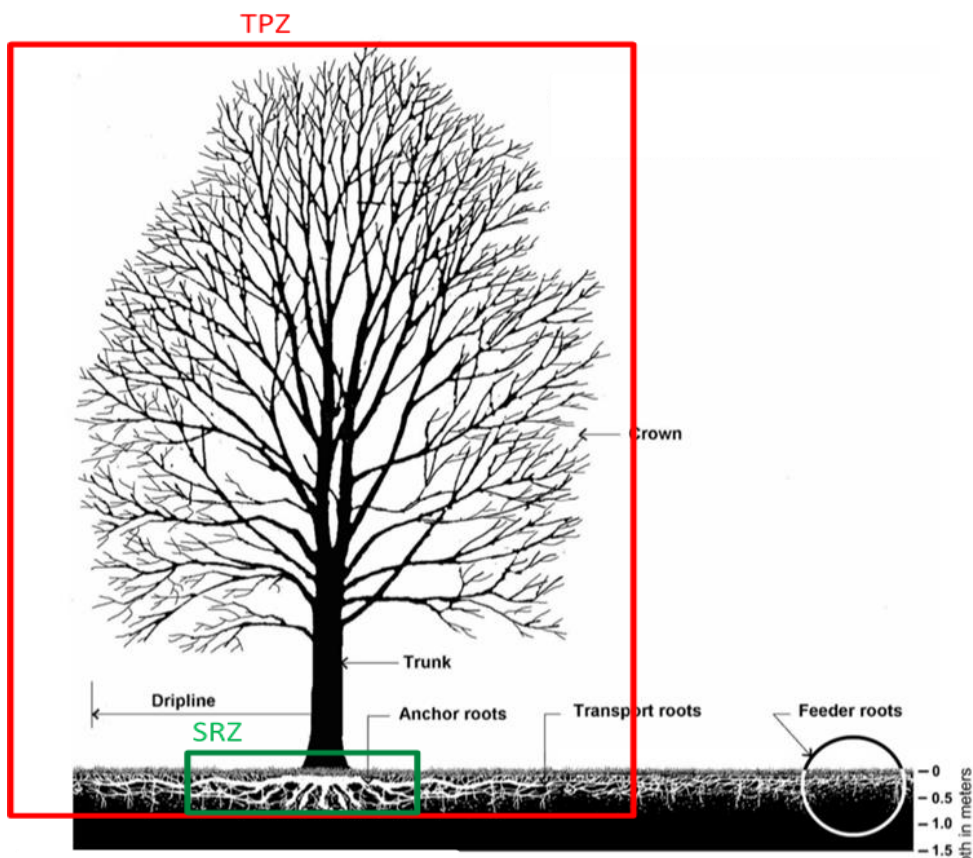


Figure 2: Representative tree structure and indicative TPZ and SRZ

2.5 Potential impacts

Trees may be impacted by physical or chemical damage to roots or above tree parts. Examples include impacts associated with site grading, soil compaction, excavation, stock piling within TPZ as well as changes in site hydrology, changes in soil level and site contamination. The extent of encroachment to the TPZ and SRZ determines the level of potential impact. AS 4970-2009 defines types of encroachment as follows and as illustrated in Appendix B:

- **Major encroachment** - If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable. The location and distribution of roots may be determined through non-destructive excavation (NDE) methods such as hydro-vacuum excavation (sucker truck), Air Spade or manual extraction. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.
- **Minor encroachment** – If the proposed encroachment is less than 10% of the TPZ, and outside of the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.

Encroachment can result from the proposed activities tabulated below. These types of impacts are shown in the maps in Appendix C.

Table 1: Proposed impacts

Proposed impact	Description
Path	Asphalt milling will be undertaken to remove existing paths, which may disturb tree roots. Sections of 'path' shown on the maps in Appendix C indicate where sealed concrete path will be constructed on-grade by shallow excavation. The path and light conduits will be installed using minimal impact techniques where possible (i.e. non-destructive digging (NDD)) to retain high value trees.
Elevated path	An elevated path will be suspended below tree canopies and have piled footings installed a minimum 2 m below surface level within tree protection zones. Existing path levels will be utilised at the start and end of the suspended path.
Water main relocation	Excavation will be undertaken for the water main relocation and construction of stairs
Nature play and bank naturalised bank edge	Non destruction landscaping (no excavation) will be undertaken in this area with the exception of a proposed maintenance ramp into Hawthorne Canal.
Wetland	Minimal excavation or disturbance of root zones is required.
Dog off leash area	The existing concrete slab will be demolished in this area, which is likely to damage tree roots.

In the impact assessment, consideration was also given to the following:

- Weeds of National Significance (WoNS): trees listed on the National Significance Weed List (NSW Department of Primary Industries 1999)
- Priority Weeds: trees listed on the Priority Weed List under the *NSW Biosecurity Act 2015* (e.g. Camphor Laurel)
- Undesirable Species List: trees listed on the Inner West Council's Undesirable Species List
- Dead or Unhealthy: trees assessed by the arborist as dead and/or having a useful life expectancy (ULE) of less than five years

Detailed notes of the proposed impacts and presence of weed species are provided in Appendix D.

3. Results and discussion

Results of the arboricultural assessment are summarised in the tables below and indicate that 31% (or 231 trees) of the total 734 trees in the subject area will be removed. None of the trees to be removed have a high retention value; 21% of the trees to be removed have a medium retention value, and 49% have a low retention value. This demonstrates that Council has designed the proposed path to avoid impacts to high retention value trees where possible, and remove trees that are dead, unhealthy or weeds. Approximately 42% of the trees to be removed are WoNS or priority weeds.

Table 2: Summary of number of trees to be removed or retained

Proposed action	Total no. of trees
Remove	231 (31%)
Retain	402 (55%)
Retain if possible	115 (15%)
Total	734

Table 3: Summary of proposed action and tree retention values

Retention value	Remove	Retain if possible	Retain	Total	% trees to be removed (Retention value)
High retention	0	2	43	45	0% of high retention value trees to remove
Medium retention	79	80	220	379	21% of medium retention value to remove
Low retention	152	24	134	310	49% of low retention value trees to remove
Total	231	106	397	734	31% of total number of trees to remove

Table 4: Summary of proposed action to native trees, unhealthy/dead trees and weeds/undesirable species

Category	Remove	Retain if possible	Retain	Total	% trees to be removed (Category)
Native Trees	69	96	326	491	14% of native trees to remove
WoNS	10	0	1	11	91% of WoNS to remove
Priority Weeds	88	6	47	141	62% of priority weeds to remove
Undesirable Species	45	4	23	72	62% of undesirable spp to remove
Dead or Unhealthy	19	0	0	19	100% of dead or unhealthy to remove
Total	231	106	397	734	31% of total number of trees to remove

Detailed results of the arboricultural assessment are in Appendices C and D. Tree protection guidelines for trees to be retained are outlined in Appendix E and site photos provided in Appendix F.

3.1 Trees proposed to be removed

A total of **231 trees** are proposed to be removed due to the proposed works. Their tree retention values are as follows:

- **Medium retention value:** a total of 79 medium retention value trees
- **Low retention value:** a total of 152 low retention value trees.

3.2 Trees proposed to be retained

A total of **397 trees** are proposed to be retained. Their tree retention values are as follows:

- **High retention value:** a total of 43 high retention value trees
- **Medium retention value:** a total of 220 medium retention value trees
- **Low retention value:** a total of 134 low retention value trees

3.3 Trees proposed to be retained if possible

A total of **106 trees** are proposed to be retained subject to mitigation measures being implemented in consultation with an AQF level 5 Consulting Arborist. Tree retention values are as follows:

- **High retention value:** a total of 2 high retention value trees
- **Medium retention value:** a total of 80 medium retention value trees
- **Low retention value:** a total of 24 low retention value trees

4. Tree protection plan

It is recommended that a Project Arborist (AQF Level 5 Consulting Arborist) is closely involved in the supervision and monitoring of all construction activities within TPZs of trees to be retained to ensure landscaping and tree protection measures are implemented as outlined in the Tree Protection Plan.

Construction methods for the path will be tailored to mitigate impacts to trees where possible. Refer to the maps provided in Appendix C and actions summarised in Table 5.

4.1 Tree pruning and removal

- Permission must be granted from the relevant consent authority prior to remove or pruning of any of the subject trees.
- Any adjustments to the location of the pathway resulting in a greater TPZ and SRZ encroachments will need to be identified and assessed by the Project Arborist to determine if tree retention is viable. Removal will need to be confirmed with the authority
- All tree work (pruning and removal) is to be carried out by an arborist with a minimum AQF Level 3 qualification in Arboriculture.
- All tree work must be in accordance with Australian Standard AS 4373-2007, *Pruning of Amenity Trees* and the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998).

4.2 Tree protection measures

The following measures are to be implemented to protect trees to be retained:

- Works within TPZs of trees to be retained should be done under supervision of an AQF Level 5 Consulting Arborist.
- Non-destructive excavation is to be used when working within the TPZ of trees to be retained and must be supervised by an AQF level 5 consulting arborist.
- Encroachment within the TPZ must be offset with a range of mitigation measures to ensure that impacts to the subject trees are reduced or restricted wherever possible. Mitigation must be increased relative to the level of encroachment within the TPZ to ensure the subject tree remains viable. Table 2 outlines mitigation requirements under AS 4970-2009 within each category of encroachment and Appendix B illustrates these concepts.
- Activities such as replacing or installing pavements should be done with minimal ground and root disturbance within the TPZs of trees that are proposed to be retained. Hand digging should be applied where possible, and under supervision of the project arborist.
- Tree protection fencing must be established around the perimeter of the TPZ, where feasible. If the protective fencing requires temporary removal, trunk, branch and ground protection must be installed and must comply with AS 4970-2009 - *Protection of trees on development sites*. Existing fencing and site hoarding may be used as tree protection fencing.
- Pruning required for vehicle movements or other construction impacts will need to be assessed and supervised by an AQF level 5 consulting arborist, subject to authority approval.
- If temporary access for machinery is required within the TPZ, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction

within the TPZ. Ground protection may include a permeable membrane such as geotextile fabric beneath a layer of mulch, crushed rock or rumble boards.

- Any additional construction activities within the TPZ of the subject trees must be assessed and approved by the project arborist and must comply with *AS 4970-2009 - Protection of trees on development sites*.

Further information and guidelines on tree protection are in Appendix E.

4.3 Hold points, inspection and certification

A copy of this report must be available on-site prior to the commencement of works, and throughout the entirety of the project. Hold points have been specified in the schedule of works below to ensure trees are adequately protected during construction. It is the responsibility of the principal contractor to complete each of the tasks and to engage a Project Arborist (minimum qualification to be AQF Level 5 Consulting Arborist).

Pre-construction

- Indicate clearly (with spray paint on trunks) trees marked for removal.
- Demolition works within tree protection zones should be supervised by the project arborist and be undertaken using tree sensitive methods.
- Construction methodology for the works surrounding all trees subject to 'High Impact (Retain if possible)' are to be in consultation with an AQF level 5 consulting arborist to determine if retention is viable.
- If any additional trees are proposed to be removed during the design phase that are not identified for removal in the REF (i.e. those in the 'retain' or 'retain if possible' categories), this will require approval by Council's tree officer.

During construction

- Monthly inspection of trees by the project arborist (or other timing as agreed with the project arborist)
- Notification to be given prior to the commencement of work within the tree protection zone, with supervision by the project arborist of any work undertaken in this zone.
- If any additional trees are proposed to be removed during the construction phase that are not identified for removal in the REF (i.e. those in the 'retain' or 'retain if possible' categories), this will require approval by Council's tree officer.

Post-construction

- Final inspection of trees by project arborist after all major construction has ceased and following the removal of tree protection measures.
- Once each stage is reached, the work will be inspected and certified by the project arborist and the next stage may commence. Alterations to this schedule may be required due to necessity, however, this shall be through consultation with the project arborist only.

4.4 Replacement planting

Any loss of trees should be offset with replacement planting at a ratio of 1:1 in accordance with the Leichhardt Development Control Plan 2013 Part C Place, C1.14 Tree Management (Inner West Council

2020). Replacement trees are to be advanced tree stock (minimum 200 L). Replacement species will be locally native and selected based on the Greenway Masterplan.

Table 5: Mitigation measures

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

* If any additional trees are proposed to be removed during design or construction that are not identified for removal in the REF (i.e. those in the ‘retain’ or ‘retain if possible’ categories), this will require approval by Council’s tree officer.

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5.1 General references

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5.2 Project specific references

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Appendix A Tree retention assessment method

A1 Tree Significance Assessment Criteria - STARS©

The tree is to have a minimum of three criteria in a category to be classified in that group.

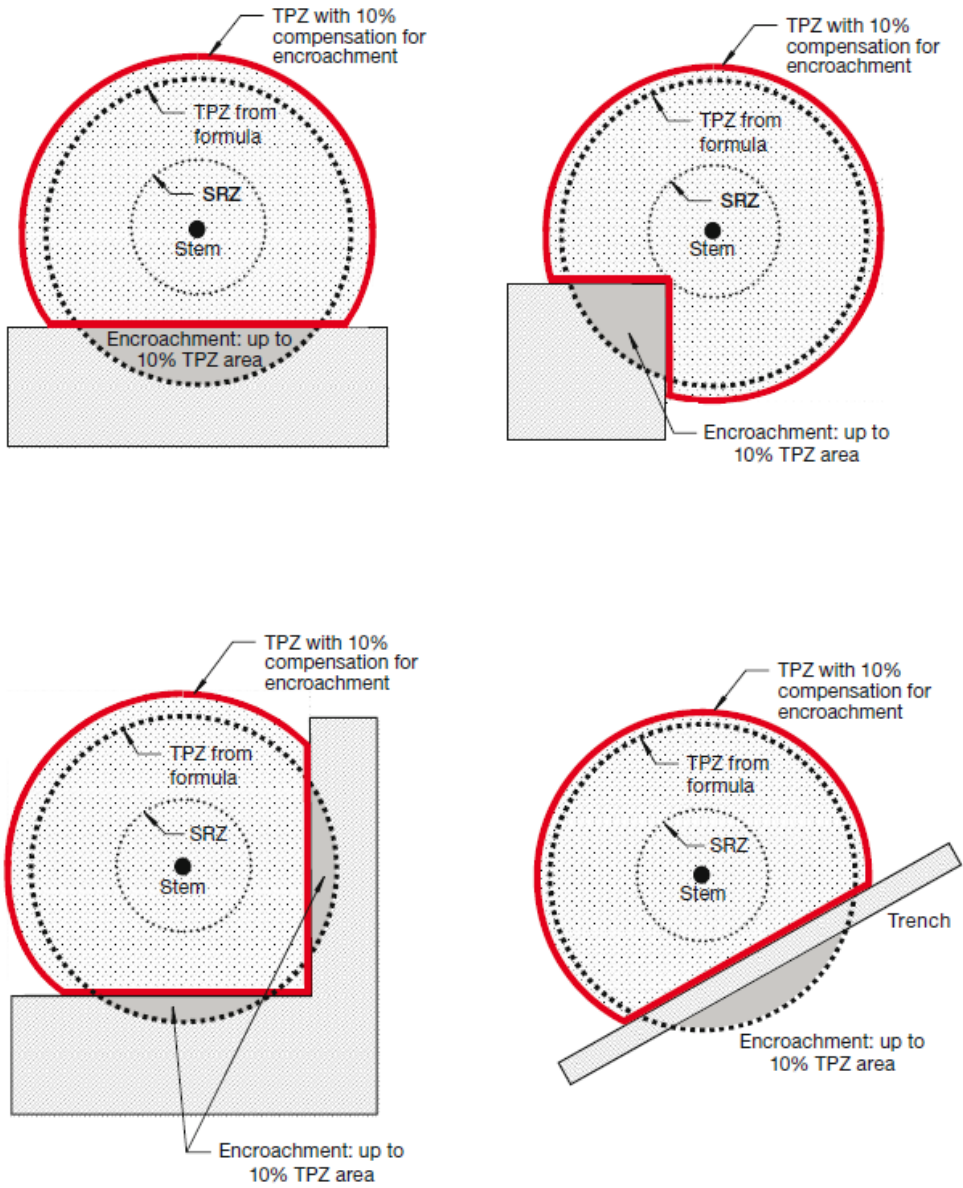
Low	Medium	High
<p>The tree is in fair-poor condition and good or low vigour.</p> <p>The tree has form atypical of the species</p> <p>The tree is not visible or is partly visible from the surrounding properties or obstructed by other vegetation or buildings</p> <p>The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area</p> <p>The tree is a young specimen which may or may not have reached dimensions to be protected by local Tree Preservation Orders or similar protection mechanisms and can easily be replaced with a suitable specimen</p> <p>The tree’s growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ – tree is inappropriate to the site conditions</p> <p>The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms</p> <p>The tree has a wound or defect that has the potential to become structurally unsound.</p> <p>Environmental Pest / Noxious Weed</p> <p>The tree is an environmental pest species due to its invasiveness or poisonous/allergenic properties. The tree is a declared noxious weed by legislation.</p> <p>Hazardous /Irreversible Decline</p> <p>The tree is structurally unsound and / or unstable and is considered potentially dangerous.</p> <p>The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.</p>	<p>The tree is in fair to good condition and good or low vigour</p> <p>The tree has form typical or atypical of the species</p> <p>The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area</p> <p>The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street</p> <p>The tree provides a fair contribution to the visual character and amenity of the local area</p> <p>The tree’s growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ</p>	<p>The tree is in good condition and good vigour</p> <p>The tree has a form typical for the species</p> <p>The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age.</p> <p>The tree is listed as a heritage item, threatened species or part of an endangered ecological community or listed on Council’s significant tree register</p> <p>The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity.</p> <p>The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values.</p> <p>The tree’s growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ – tree is appropriate to the site conditions.</p>

A2 Matrix assessment - STARS©

		Tree significance				
		High	Medium	Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest/Noxious Weed Species	Hazardous/ Irreversible Decline
Useful Life Expectancy	Long >40 years					
	Medium 15-40 years					
	Short <1-15 years					
	Dead					

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

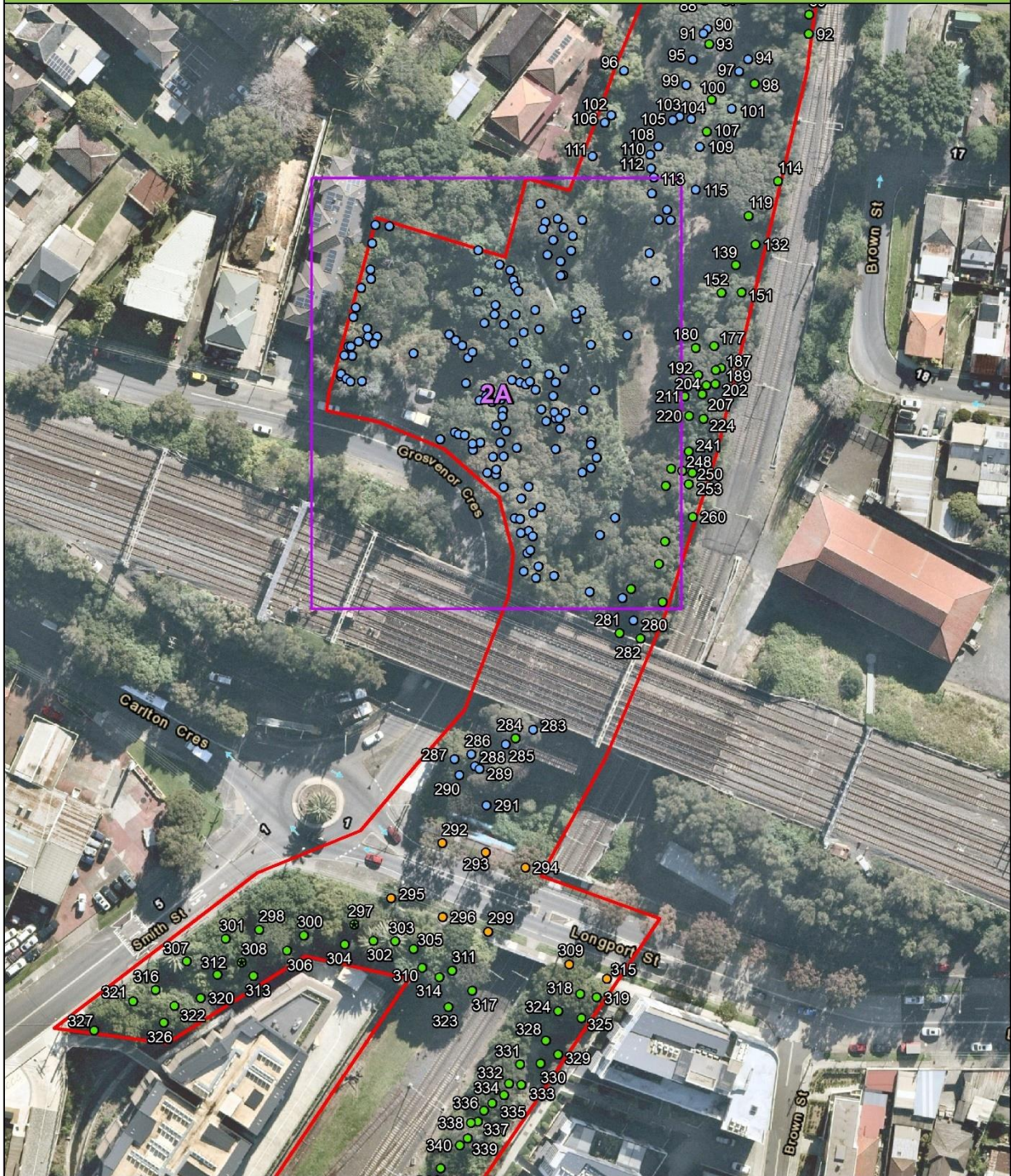
Appendix B Encroachment into tree protection zones - AS 4970-2009



Appendix C Maps

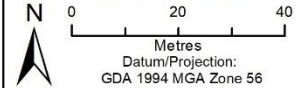


Tree Locations - Page 2

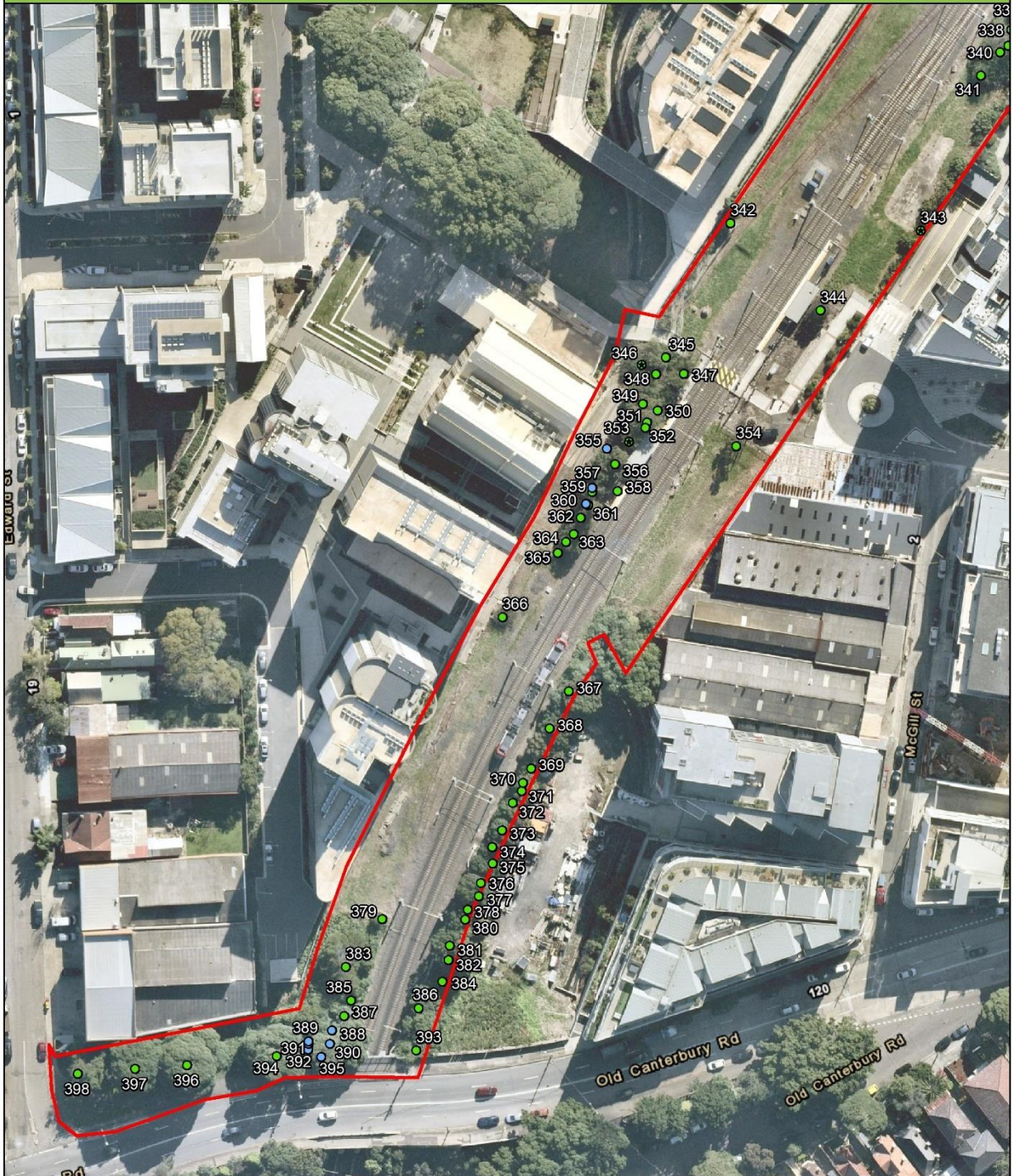


Legend

- Study Area
- ★ Group of trees
- Tree Locations (ELA 2020)
- Tree Locations (Birds Tree 2019)
- Tree Locations (Marrickville Council)

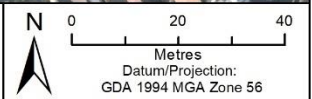


Tree Locations - Page 3



Legend

- Study Area
- ★ Group of trees
- Tree Locations (ELA 2020)
- Tree Locations (Birds Tree 2019)
- Tree Locations (Marrickville Council)





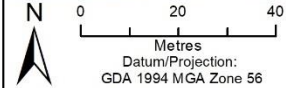
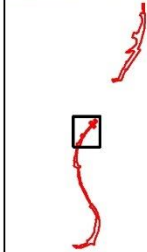

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Tree Locations - Page 4



Legend

- Study Area
- ★ Group of trees
- Tree Locations (ELA 2020)
- Tree Locations (Birds Tree 2019)
- Tree Locations (Marrickville Council)





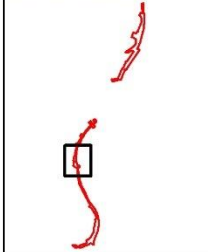

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Tree Locations - Page 5



Legend

- Study Area
- ★ Group of trees
- Tree Locations (ELA 2020)
- Tree Locations (Birds Tree 2019)
- Tree Locations (Marrickville Council)



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Metres

Datum/Projection: GDA 1994 MGA Zone 56

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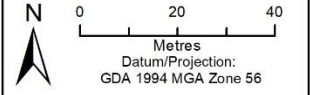
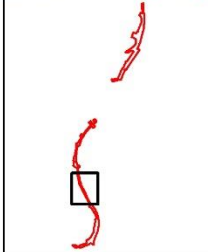
Prepared by: SC Date: 29/09/2020

Tree Locations - Page 6



Legend

- Study Area
- ★ Group of trees
- Tree Locations (ELA 2020)
- Tree Locations (Birds Tree 2019)
- Tree Locations (Marrickville Council)



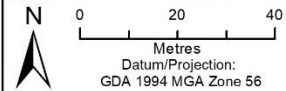



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Tree Locations - Page 7



- Legend**
- Study Area
 - ★ Group of trees
 - Tree Locations (ELA 2020)
 - Tree Locations (Birds Tree 2019)
 - Tree Locations (Marrickville Council)





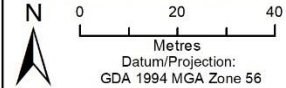
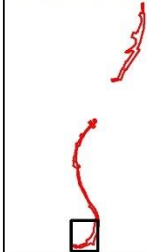
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Tree Locations - Page 8



Legend

- Study Area
- ★ Group of trees
- Tree Locations (ELA 2020)
- Tree Locations (Birds Tree 2019)
- Tree Locations (Marrickville Council)






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Retention Values - Page 1

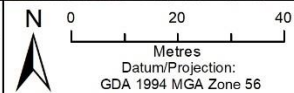


Legend

- Study Area
- ★ Group of trees

Retention Value

- ELA Arborist data 2020
- △ derived from Birds Tree & Council data
- High
- Medium
- Low

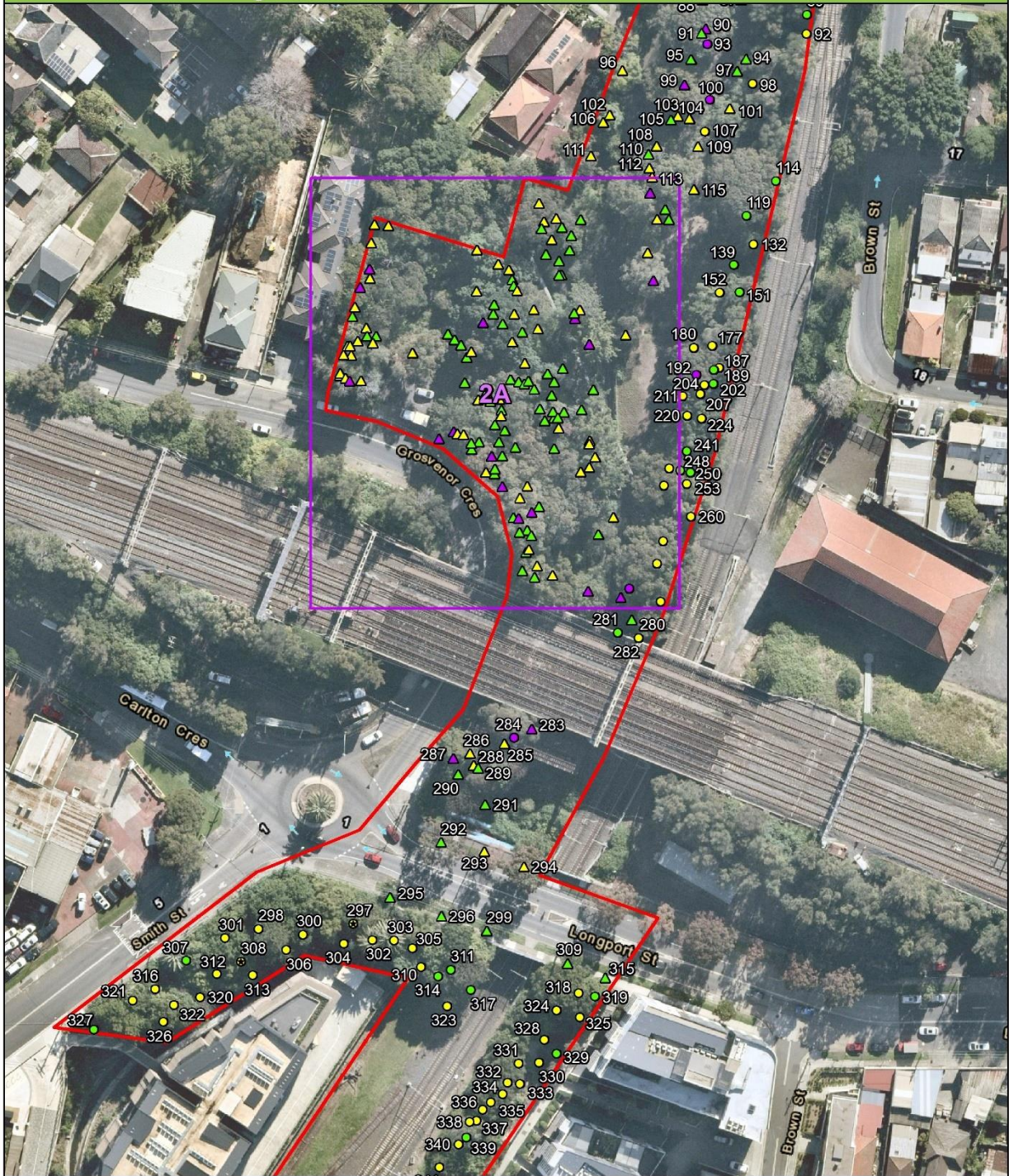


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Retention Values - Page 2

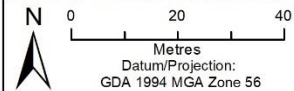


Legend

- Study Area
- ★ Group of trees

Retention Value

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- △ derived from Birds Tree & Council data
- High
- Medium
- Low



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Retention Values - Page 2A




Legend

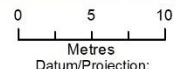
- Study Area
- ★ Group of trees

Retention Value

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- △ derived from Birds Tree & Council data
- High
- Medium
- Low





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Datum/Projection:
GDA 1994 MGA Zone 56

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Retention Values - Page 3

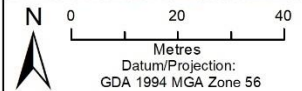


Legend

- Study Area
- ★ Group of trees

Retention Value

- ELA Arborist data 2020
- △ derived from Birds Tree & Council data
- High
- Medium
- Low



Retention Values - Page 4




Legend

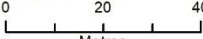
- Study Area
- ★ Group of trees

Retention Value

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- △ derived from Birds Tree & Council data
- High
- Medium
- Low





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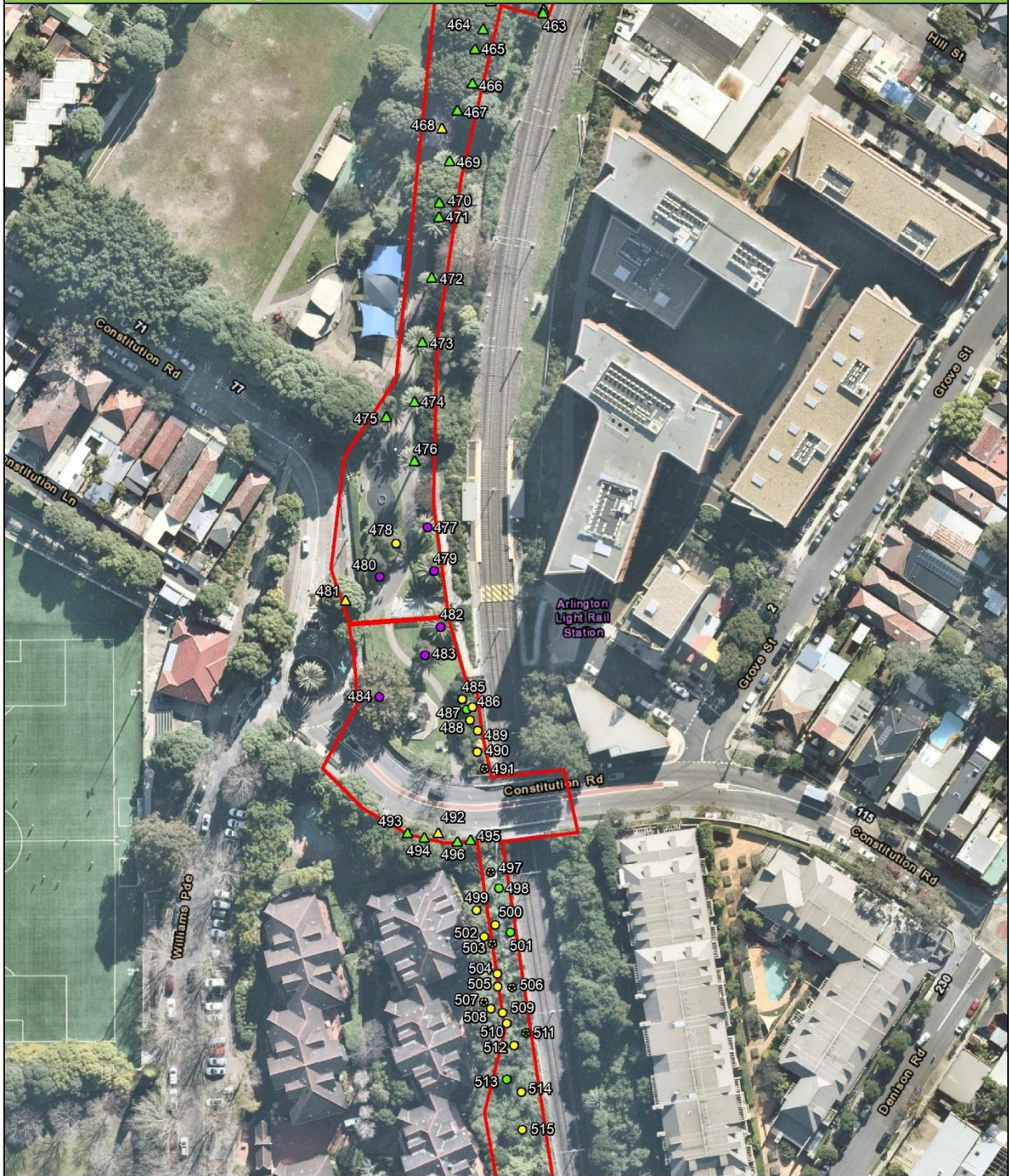
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Datum/Projection:
GDA 1994 MGA Zone 56

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Retention Values - Page 5



Legend

- Study Area
- ★ Group of trees

Retention Value

- ELA Arborist data 2020
- △ derived from Birds Tree & Council data
- High
- Medium
- Low

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Retention Values - Page 6




Legend

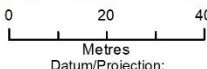
- Study Area
- ★ Group of trees

Retention Value

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- △ derived from Birds Tree & Council data
- High
- Medium
- Low





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Datum/Projection:
GDA 1994 MGA Zone 56

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Retention Values - Page 7




Legend

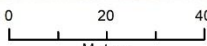
- Study Area
- ★ Group of trees

Retention Value

- ELA Arborist data 2020
- △ derived from Birds Tree & Council data
- High
- Medium
- Low





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0 20 40
Metres

Datum/Projection:
GDA 1994 MGA Zone 56

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Retention Values - Page 8




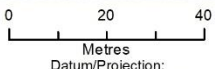
Legend

- Study Area
- ★ Group of trees

Retention Value


- ELA Arborist data 2020
- △ derived from Birds Tree & Council data
- High
- Medium
- Low







Metres

Datum/Projection:
GDA 1994 MGA Zone 56



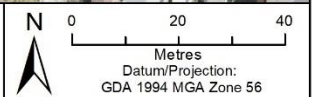
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Arboricultural Impact Assessment - Page 1



- Legend**
- Study Area
 - Path
 - Elevated Path
 - Naturalised swale
 - Water main relocation

- ★ Group of trees
- Impact**
- Remove
 - Retain if Possible
 - Retain

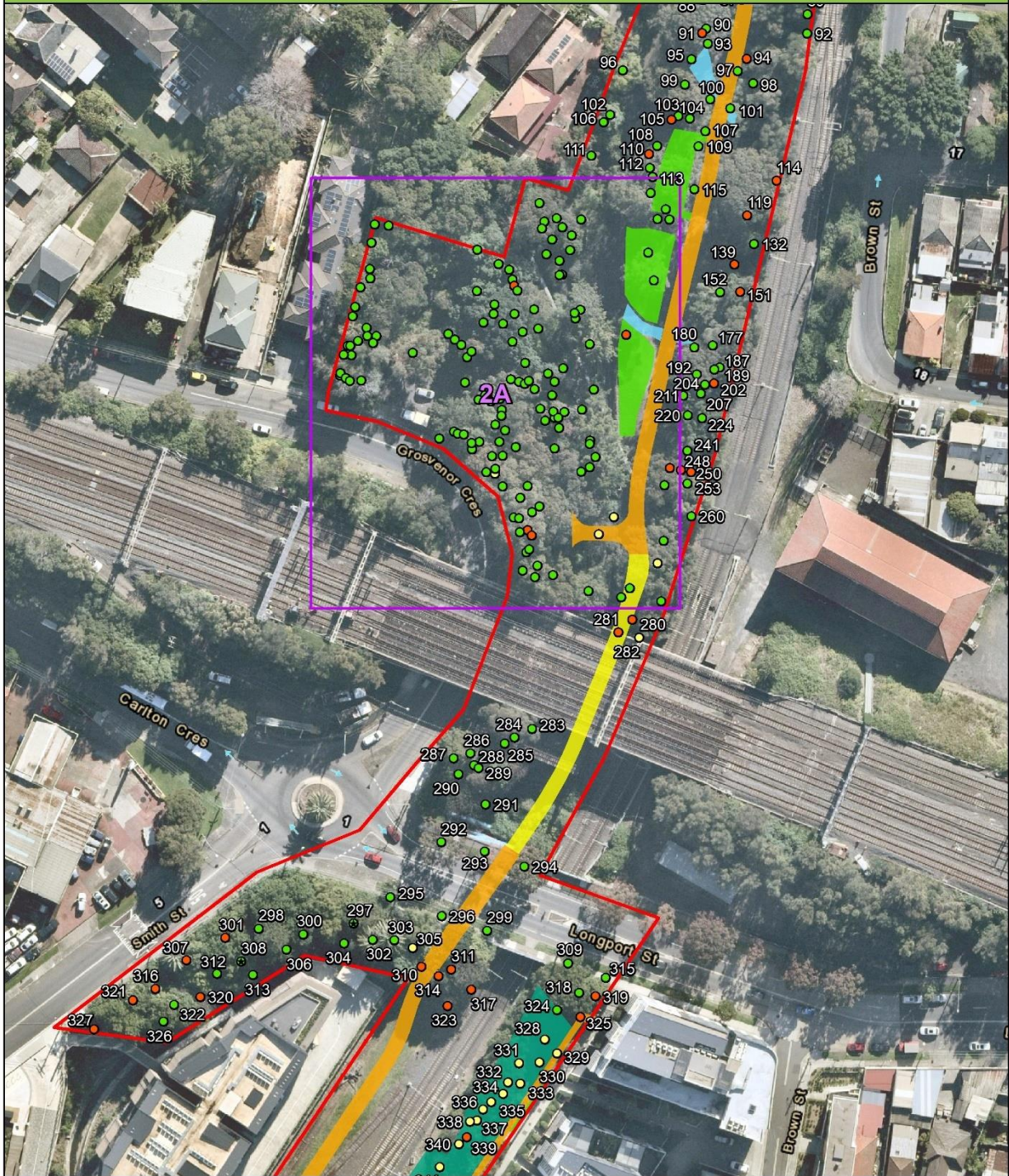


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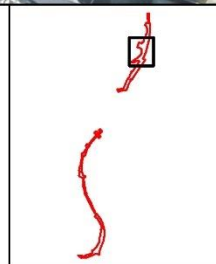
Prepared by: SC Date: 1/02/2021

Arboricultural Impact Assessment - Page 2



Legend

Study Area	Group of trees
Path	Impact
Elevated Path	Remove
Nature play and bank naturalised bank edge	Retain if Possible
Dog off leash area	Retain
Naturalised swale	



N 0 20 40
Metres
Datum/Projection:
GDA 1994 MGA Zone 56

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Arboricultural Impact Assessment - Page 2A



Legend Study Area Path Elevated Path Nature play and bank naturalised bank edge Naturalised swale		Impact Remove Retain if Possible Retain			 0 5 10 Metres Datum/Projection: GDA 1994 MGA Zone 56
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Arboricultural Impact Assessment - Page 3



<p>Legend</p> <ul style="list-style-type: none"> Study Area Path Elevated Path Nature play and bank naturalised bank edge Dog off leash area 		<ul style="list-style-type: none"> * Group of trees <p>Impact</p> <ul style="list-style-type: none"> ● Remove ● Retain if Possible ● Retain 			<p>N</p> <p>0 20 40 Metres Datum/Projection: GDA 1994 MGA Zone 56</p>
		<p>Prepared by: SC Date: 29/04/2021</p>			

Arboricultural Impact Assessment - Page 4

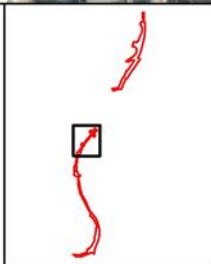


Legend

- Study Area
- Path
- ★ Group of trees

Impact

- Remove
- Retain if Possible
- Retain



N

0 20 40
Metres

Datum/Projection:
GDA 1994 MGA Zone 56

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Arboricultural Impact Assessment - Page 5



<p>Legend</p> <p> Study Area Path Elevated Path </p>		<p>★ Group of trees</p> <p>Impact</p> <p> ● Remove ● Retain if Possible ● Retain </p>		<p>N</p> <p>0 20 40</p> <p>Metres</p> <p>Datum/Projection: GDA 1994 MGA Zone 56</p>
		<p></p> <p></p> <p>Prepared by: SC Date: 1/02/2021</p>		

Arboricultural Impact Assessment - Page 6



Legend

- Study Area
- Path
- Elevated Path
- ★ Group of trees

Impact

- Remove
- Retain if Possible
- Retain

N

0 20 40

Metres

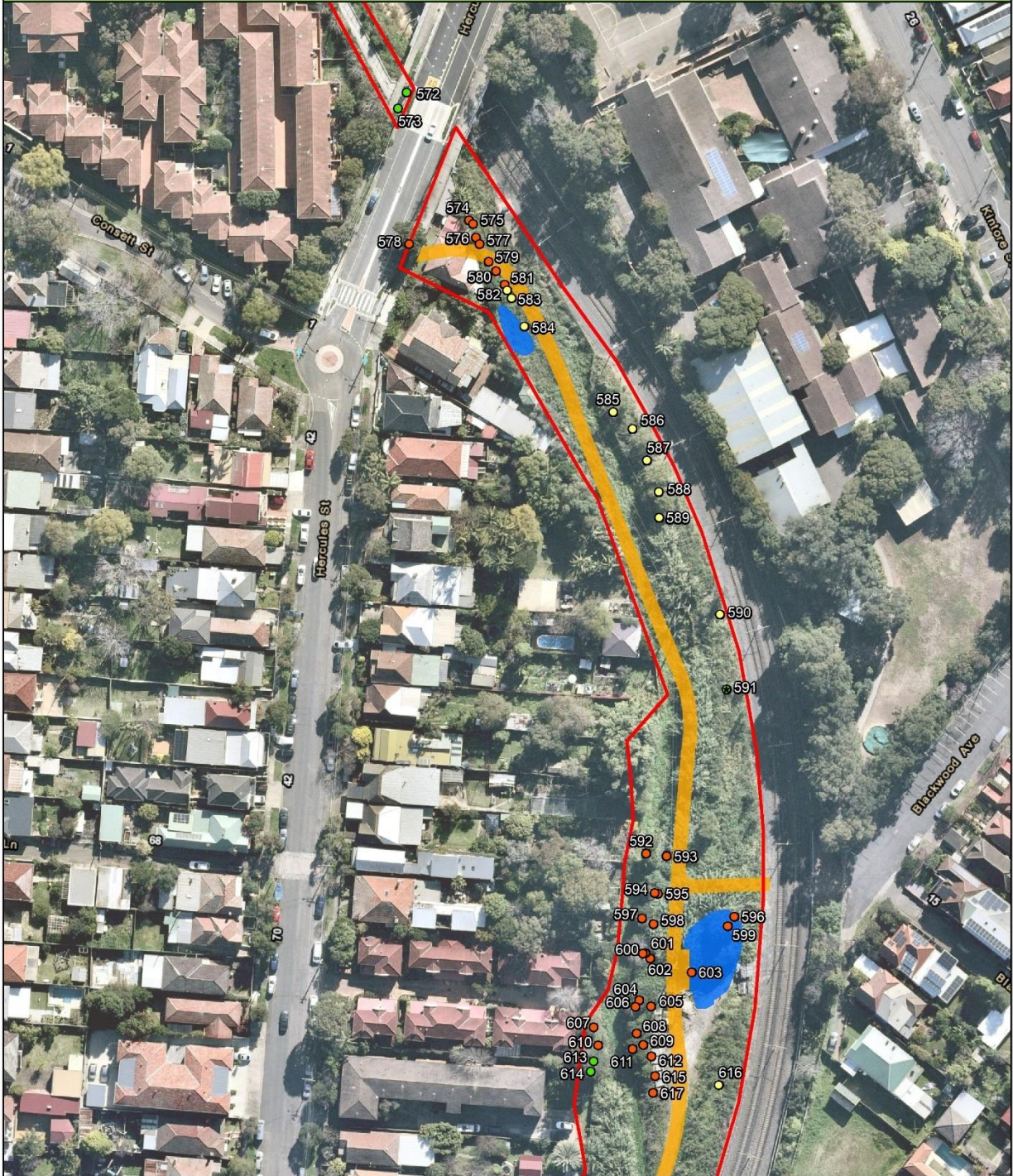
Datum/Projection:
GDA 1994 MGA Zone 56

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Arboricultural Impact Assessment - Page 7



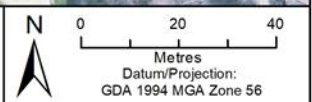
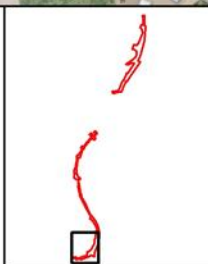
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Arboricultural Impact Assessment - Page 8



- Legend**
- Study Area
 - Path
 - Wetland

- ★ Group of trees
- Impact**
- Remove
- Retain if Possible
- Retain



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