ARBORICULTURAL IMPACT ASSESSMENT

BATHURST HOSPITAL REDEVELOPMENT

VERSION 7

January 2025

Prepared for: NSW Government Health Infrastructure
TSA Riley

Prepared by: Mark Douglas
Douglas Arbor

10 Tobruk Cres, Orange NSW 2800
T 0421 480 750
E mark@douglasarbor.com.au
www.douglasarbor.com.au
ABN 937 997 468 42

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INTRODUCTION

Background

This Arboricultural Impact Assessment has been prepared by Douglas Arbor on behalf of Health Infrastructure for the redevelopment of the Bathurst Hospital at 361-365 Howick Street, Bathurst.

The site is located at 361-365 Howick Street, Bathurst, in the Bathurst Local Government Area. It is occupied by Bathurst Health Service, a Level C referral facility in the Western NSW Local Health District.

This report accompanies a State Significant Development Application that seeks approval for the construction and operation of a new-build expansion, refurbishment and repurposing works to the existing Bathurst Health Service main hospital building. Proposed works will include:

- A new-build, three-storey health services building expansion (including 1 plant level) to include overnight inpatient accommodation and non-admitted care services and a new hospital front-of house and entrance
- A new-build, two-storey expansion to the Emergency department and Operating Theatres (plus 1 plant level)
- A new-build, single-storey expansion to the existing Cancer Service building – Daffodil Cottage
- Refurbishment and repurposing to areas of the existing hospital
- Site establishment, demolition of some existing structure, cut and fill and remediation works
- Vehicular circulation and car parking improvements
- Tree removal
- Landscape works
- Alteration and amplification of existing hospital plant and services infrastructure
- For a detailed project description, refer to the Environmental Impact Statement prepared by Ethos Urban.

Item	SEARS Requirement	Relevant Section of Report
8.0	**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.	Whole of report

The Bathurst Hospital site is located within the Bathurst Heritage Conservation Area as defined in Schedule 5 of the *Bathurst LEP.*

In preparing this report, the author is aware of and considers the objectives of the following:

- Bathurst Regional Development Control Plan 2014 *(Bathurst DCP)*
- Bathurst Regional Local Environmental Plan 2014 *(Bathurst LEP)*
- Bathurst Regional Council Tree Preservation and Management Policy
- Australian Standard AS 4970-2009 Protection of Trees on Development Sites (*AS4970)*
- *AS4790* has been used as a benchmark in preparing this report.

The following plans have been provided and referenced:

Title	**Author**	**Date**	**Reference on document**
Bathurst Hospital Redevelopment Site Context Plan - Proposed Works	Billard Lease Partnership Pty Ltd	6/9/24	BHR-BLP-DRW-ARC-SSD-003-XX001 [F]
Bathurst Hospital Redevelopment Site Context Plan - Demolition	Billard Lease Partnership Pty Ltd	6/9/24	BHR-BLP-DRW-ARC-SSD-002-XX001 [E]
Bathurst Hospital Redevelopment Site Context Plan - Existing	Billard Lease Partnership Pty Ltd	22/7/24	BHR-BLP-DRW-ARC-SSD-001-XX001 [D]
Showing Tree Detail at Bathurst Base Hospital	Usher & Company	28/5/24	Plan ref: 8681-TREES-240423, Issue: Initial

Bathurst Tree Preservation and Management Policy (Bathurst TPP)

Bathurst LEP, Clause 5.10 Heritage Conservation outlines the requirement for development consent to remove a (prescribed) tree within the heritage conservation area.

The *Bathurst TPP* describes a Prescribed Tree as any woody plant which is;

- greater than nine metres in height; or

- has a stem diameter of one metre or more at a height of one metre from the ground; or

- has a branch spread of fifteen metres or more; or

- is not an exempt tree;

- and to which clause 5.10 of the *Bathurst LEP* applies

Tree Protection Zone (TPZ)

Australian Standard AS 4970-2009 Protection of trees on development sites (AS4970) defines the TPZ as *'A specified area above and below the ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability of a tree to be retained where it is potentially subjected to damage by development.'*

AS4970 states, *'If the proposed encroachment is less than 10% of the TPZ or outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contagious with the TPZ.'* And *'If the encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable';* therefore, specific arboricultural assessment would be required.

Structural Root Zone (SRZ)

AS4970 defines the SRZ as *'The area around the base of a tree required for the tree's stability in the ground.'* Earthworks should be prohibited within the SRZ.

Methodology

A site visit was conducted on 24th January 2023 and 7th December 2023 to assess the relevant trees, collect data and make comments concerning the trees and the site.

The assessment is based on a visual inspection using the Visual Tree Assessment (VTA) approach developed by Mattheck & Broeler (1994). The assessment was limited to visually inspecting the trees at ground level, without dissection, probing, aerial inspections (climbing) or tree root mapping. The assessment information relates to observations and data collected on the day of the inspection only and does not include changes after that.

Trunk diameter at breast height (DBH) was measured 1.4m above ground level (unless otherwise stated) using a Yamayo Diameter Tape. Tree heights and canopy spread were estimated. Structural Root Zones (SRZ) and Tree Protection Zones (TPZ) were calculated using *AS4790* guidelines. A TPZ calculator was used to determine TPZ measurements and encroachment percentages. Source: https://as4970calculator.web.app/

Aims

- Determine the impact of the proposed development on the subject trees, including identifying those trees requiring removal.
- To give recommendations and control measures to mitigate or reduce any negative impact on the retained trees.

OBSERVATIONS

The Site

The site is the Bathurst Hospital Services Facility at 361-365 Howick Street, Bathurst.

Refer to Appendix 3 for the Site Context Plan – Existing.

The Plan

The proposed Bathurst Hospital Redevelopment will require a range of demolition and new works, including:

Refer to Appendix 4 for Site Context Plan – Proposed.

Howick Street Loop

- Demolition of the existing crossing at Howick Street, converting and widening of the pedestrian access path to allow for a two-way internal roadway.
- Part removal of a dwarf boundary brick wall to enable a new pedestrian access path.
- A new pedestrian pathway leading to the hospital entrance from Howick Street.
- Removal of the existing road accessway off the Howick Street carpark.
- Demolition of existing landscaping and tree removal along the existing internal roadway and car park.
- New car parking spaces within the Howick Street carpark.

Expansion of the Existing Hospital Building

- The existing hospital building will be expanded east toward Mitre Street, including a new hospital front entrance off Mitre Street.

Expansion of the Emergency Department and Daffodil Cottage

- The existing hospital building will be expanded to the south to connect to Daffodil Cottage.
- Daffodil Cottage will be expanded to the south.

The Trees

One hundred and seven trees are located within the Bathurst Hospital site.

Refer to Appendix 1 – Tree Schedule for the full tree data and Appendix 2 for the Tree Location Plan.

Protected Trees

The following 17 trees are protected under the *Bathurst DCP,* and approval is required by the consenting authority for their removal:

Tree No.	**Retention Value**
72	Low
4, 5, 13, 15, 16, 22, 23, 25, 27, 30, 71, 72, 73, 74, 97, 101	Medium

Unprotected Trees

The following trees are not protected under the *Bathurst DCP* and may be removed without council approval. Many trees have a medium retention value and should be considered for retention if possible.

Tree No.	**Retention Value**
11, 24, 29, 37, 38, 39, 59, 61, 62 - 67, 70, 75, 76, 77, 86 -89, 91, 93, 99, 114, 164, 165	Low
1, 2, 3, 6 – 10, 12, 14, 17 – 21, 26, 28, 31, 32, 34, 35, 36, 40 – 58, 60, 68, 69, 78 – 85, 90, 92, 94, 95, 96, 98, 100, 102, 103, 109, 110	Medium

DISCUSSION

Trees to be Retained and Protected

The following trees do not conflict with the development and should be retained with tree protection measures implemented to ensure the development does not impact them.

Tree No.
30, 34, 35, 36, 41, 42 - 55, 61, 62, 68, 69, 75 - 76, 79 - 82, 87 - 90, 110

Trees Requiring Removal

The following 73 tree's TPZs conflict with the current design layout and are either within the footprint of the proposed plans or have TPZ or SRZ encroachment and will require removal. 22 of the trees have a low retention value, 51 trees have a medium retention value.

Tree No.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 37, 38, 39, 40, 56, 57, 58, 59, 60, 63, 64, 65, 66, 67, 70, 71, 72, 73 74, 77, 78, 83, 84, 85, 86, 91, 92, 93, 94, 95, 96, 97, 98, 99 ,100, 101, 102, 103, 109, 114, 164, 165

Tree 72 – poor specimen with narrow

The supressed Atlas Cedar is growing between the canopy of the dominant Trees 71 and 73 which will be removed due to conflict with the design. Tree 72 has a minor TPZ encroachment by the additional Howick Street Carpark design and has a low retention value. Once Trees 71 and 73 are removed the tree will be newly exposed to wind forces and the likelihood of failure will increase, therefor it is recommended that the tree is also removed.

Trees with TPZ Encroachment

The following trees either have a minor TPZ encroachment or are established trees with a medium retention value and should be retained where possible.

Tree No.
42 – 55, 68, 69

If tree protection measures outlined in this report are followed, the impact of the development is expected to be low, with the trees remaining healthy and viable post construction.

Removal of the existing road accessway off the Howick Street carpark.

The existing Howick St road access passes through the TPZs of Trees 68 and 69. The road will be removed and replaced with landscaping**.**

Trees 68 and 69 are established trees with a medium retention value and should be retained if possible. To ensure minimal impact and tree viability, the existing asphalt road and concrete edging must be removed in a tree sensitive manner that minimises root disturbance.

The roadway shall be removed using light machinery (tracked skid-steer loader or alternative approved method) or by hand in a manner that does not damage significant roots in the soil below and minimises further compaction. The machinery should operate from beyond the

TPZs where possible or be restricted to the footprint of the road. The soil fill material should be of a courser material than the natural soil beneath.

New pedestrian access path leading to the hospital entrance from Howick Street.

The new pathway runs through the TPZ of Trees 69, 70 and 73. Tree 70 has a poor structure and a short life expectancy, so removal is recommended.

To minimise the impact on the trees and potential root disturbance, the footpath within the TPZs should be installed above grade, with minimal topsoil removed by hand of <50mm, with no woody roots of >30mm diameter to be damaged. A course sub-base material with minimal fines using low compaction methods is permitted to a depth of 100mm.

Demolition of the existing pedestrian access path off Howick Street, converting and widening to allow for a two-way internal roadway.

The existing pedestrian access path requires removal and will be replaced with a new two-way internal concrete road requiring further soil excavation, widening, compaction, and a minimum road depth of 190mm.

The required excavation will likely damage any roots from Trees 63 – 67 that have managed to grow beneath the existing concrete path. The SRZ of all trees is encroached by the road footprint, and damage to the structural roots can lead to tree instability therefore, these trees will require removal and should be replanted post construction with an appropriate small tree species.

Trees 164 and 165 are within the footprint of the new road and require removal.

The reconfiguring of the layout for the internal car park near the existing entrance to the hospital will require the removal of Trees 31, 32, 56, 57, 58 and 109.

Tree 73

Tree 73 is a visually prominent, large, mature tree with a medium retention value. The new roadway has a TPZ encroachment of 27% and is deemed a ‘Major Encroachment ‘ under *AS4970*, and the project arborist must demonstrate that the tree will remain viable if it is to be retained.

Due to the major TPZ encroachment root mapping and likely tree sensitive construction methods or potentially design changes would be required if the tree is to be retained.

The design team has indicated that these parameters will likely lead to significant issues with the project and indicated removal is preferred.

The current plans require widening the existing footprint by 1.6m to approximately 4.4m from the trunk centre into an existing sloping garden bed with an minimum excavation depth of approximately 0.7m. This has the potential to require the removal of several significant wood roots that could impact tree health. The encroachment is beyond the SRZ required for tree stability.

New car parking spaces within the Howick Street carpark.

The proposed additional carparks within the Howick Street carpark has a major encroachment of the TPZ and SRZ of Tree 71 and design changes would be required if the tree is to be retained.

The design team has indicated that these parameters will likely lead to significant issues with the project and indicated removal is preferred.

The additional carparks have a minor TPZ encroachment of Tree 72 which is to be removed.

Existing Internal car park

Trees 42 - 55, located south of the existing car park, will be retained and unimpacted by the development.

The reconfiguring of the layout for the internal car park near the existing entrance to the hospital will require the removal of Trees 31, 32, 56, 57, 58 and 109.

Expansion of the Existing Hospital Building

All trees to the east of the existing Hospital building will require removal for the construction of the building extension and the new hospital front entrance.

Expansion of the Emergency Department and Daffodil Cottage

Trees 37, 38, 39, 40, 41, 59 and 60 are within the footprint of the expansion of the emergency department and will require removal.

Tree 74 has a major encroachment of its TPZ and SRZ due to the Daffodil Cottage expansion, and it will require removal.

Northern and Western car park reconfiguration

Trees 77, 78, 83, 84, 85, 86, 91, 92, 93 and 94 are within the footprint of the reconfiguration of the northern and western car park areas and will require removal.

RECOMMENDATIONS

Trees to be Removed

- The following 73 trees are within the footprint of the proposed buildings or have a major TPZ encroachment and will require removal:

  Trees 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 37, 38, 39, 40, 56, 57, 58, 59, 60, 63, 64, 65, 66, 67, 70, 71, 72, 73 74, 77, 78, 83, 84, 85, 86, 91, 92, 93, 94, 95, 96, 97, 98, 99 ,100, 101, 102, 103, 109, 114, 164, 165

- **Trees 4, 5, 13, 15, 16, 22, 23, 25, 27, 71, 72, 73, 74, 101, 102 and 103 are protected under the *Bathurst DCP* and require approval from the consenting authority for their removal.**
- Removed trees should be replaced with suitable tree species and numbers within the site to replace the lost tree canopy cover.
- 22 of the trees to be removed have a low retention value, 51 trees have a medium retention value.

Retained On-site Trees

- The following 34 trees are to be retained with tree protection measures implemented to ensure they remain healthy and viable post construction:

  Trees 30, 34, 35, 36, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 61, 62, 68, 69, 75, 76, 79, 80, 81, 82, 87, 88, 89, 90, 110.

Removal of the existing road accessway off the Howick Street carpark.

- To ensure minimal impact and the viability of Trees 68 and 69, the existing asphalt road and concrete edging must be removed in a tree sensitive manner that minimises root disturbance and under the supervision of the Project Arborist.
- The asphalt roadway shall be removed by hand or using light machinery (tracked skid-steer loader or alternative approved method). The machinery should operate from beyond the TPZs if possible or be restricted to the road's footprint. Care shall be taken to avoid damage to significant woody roots and the tree canopy above.
- The soil fill material should be a courser material (sandy loam) than the natural soil beneath.

New Pedestrian access path leading to the hospital entrance from Howick Street.

- The footpath within the TPZs of the retained Tree 69 and should be installed above grade, with minimal topsoil removed by hand of <50mm, with no woody roots of >30mm diameter to be damaged.
- A course sub-base material with minimal fines using low compaction methods is permitted to a depth of 100mm.

Demolition of the existing pedestrian access path off Howick Street, converting and widening to allow for a two-way internal roadway.

- Tree 73 is to be removed so there are no tree sensitive construction methods or limitations to the roadway width required.

New car parking spaces within the Howick Street carpark.

- Trees 72 and 73 are to be removed so there are no tree sensitive construction methods or limitations to the car park required.

ARBORICULTURAL METHOD STATEMENT

- Prior to any work commencing at the site, a Project Arborist shall be appointed to supervise all tree protection procedures detailed in this report. The Project Arborist shall have a minimum Level 5 AQF qualification in Arboriculture.
- A pre-commencement site meeting shall take place between the Project Arborist and Project Manager, the meeting is to take place before any development activity to determine specific arboricultural inspections and required tree protection measures.
- The Project Arborist shall conduct site monitoring at intervals as agreed at the pre-commencement site meeting. These visits are to ensure that the protection measures are followed and that the works within the TPZ meet with this Arboricultural Method Statement, the recommendation outlined in this report, and *AS4970*.
- The Project Manager is responsible for providing sufficient notice to the Project Arborist when attendance is required.
- Should the proposed design change from that reviewed, additional arboricultural assessment will be required.
- The following pre-determined stages are hold points and will require the attendance of the Project Arborist to document the works, provide certification and advice if needed and demonstrate an inspection has taken place.

Arboricultural Hold Points

Hold Points	**Stage**	**Responsibility to organise visit.**	**Certification**	**Completed Y/N. Date**
A pre-commencement site meeting shall take place between the Project Arborist and Project Manager, the meeting is to take place before any development activity to determine specific arboricultural inspections and required tree protection measures.	Prior to work commencing	Project Manager	Project Arborist	
Project Arborist to assess and certify that tree protection has been installed in accordance with this report and *AS4970* prior to works commencing at site.	Prior to development work commencing	Project Manager	Project Arborist	
Project Arborist to supervise the removal of the existing roadway off Howick St carpark through the TPZ of Trees 68 and 69.	Removal of existing roadway of Howick St carpark.	Project Manager	Project Arborist	
After all construction works are completed, the Project Arborist should assess that the retained trees are in the same condition and vigor and authorise the removal of the tree fencing. If changes to conditions are identified, the Project Arborist should provide recommendations for remediation.	At completion of construction	Project Manager	Project Arborist	

Tree Protection Measures

- Unless otherwise specified, all retained on-site trees must be protected from development impact by tree protection fencing installed at the extent of their TPZs in accordance with *AS4970*. Refer to Appendix 1 for TPZ measurements.
- Tree protection fencing shall be installed at the beginning of the job before any groundwork or construction is started.
- Where the design has an approved TPZ incursion (e.g. Trees 42 – 55, 68, 69), the tree protection fencing shall be located at the immediate edge of the construction excavation line.
- Where new or existing paths, roads, car parks or public access areas exist within retained trees TPZ, the fencing is to be located on the immediate edge of the area to encompass as much of the TPZ as possible.
- For the work required for the removal of the existing road accessway off the Howick St carpark and for the construction of the footpath running through the TPZs of Trees 68 and 69 minimal sections of the fencing are to be removed immediately before the work is started and are to be reinstated immediately after completion. No unapproved machinery access is permitted within the tree protection fencing.
- Refer to Appendix 6 for the Tree Protection Fencing Plan, showing the approximate fencing location.
- Refer to Appendix 7 for Standard Tree Protection Zone Measures.
- No significant landscaping is to occur within the TPZs that will cause substantial root loss or impact the tree. Any landscaping plan within the TPZ shall be established with the consultation of the Project Arborist.
- No underground services will be routed through the TPZs without consulting the Project Arborist.

Mark Douglas
Diploma in Arboriculture (AQF Level 5)
Registered QTRA and TRAQ Assessor
Arboriculture Australia Member – Registered Consulting Arborist
Institute of Australian Consulting Arborists (IACA) Associate Member

Disclaimer: The information in the report is true and accurate to the author's best knowledge. Best professional judgement was used to make recommendations. However, the author of this report is not responsible for any action taken or not taken in reliance on it. This report remains the property of the author and "the Client". It may not be used or reprinted without their express permission.

APPENDIX 1 – TREE SCHEDULE

Tree Id	Species	Age	Height [m]	Canopy [m]	DBH [cm]	D@Base [cm]	Health	Structure	ULE	Retention Value	Protection Status	TPZ [m]	SRZ [m]
1	Chinese Elm - *Ulmus parvifolia*	M	5	6	20	26	G	G	M	Medium	No	2.4	1.88
2	Chinese Elm - *Ulmus parvifolia*	M	4	5	14	17	G	G	M	Medium	No	2	1.57
3	Chinese Elm - *Ulmus parvifolia*	M	5	5	18	21	G	G	M	Medium	No	2.16	1.72
4	Eurabbie - *Eucalyptus globulus*	M	10	4	36	42	G	G	M	Medium	Yes	4.32	2.3
5	Eurabbie - *Eucalyptus globulus*	M	11	6	45	52	G	G	M	Medium	Yes	5.4	2.51
6	River She-Oak - *Casuarina cunninghamiana*	S	8	4	24	30	G	G	M	Medium	No	2.88	2
7	Blakely's Red Gum - *Eucalyptus blakelyi*	S	6	4	27	34	F	F	M	Medium	No	3.24	2.1
8	Chinese Elm - *Ulmus parvifolia*	M	5	5	22	26	G	G	M	Medium	No	2.64	1.88
9	Chinese Elm - *Ulmus parvifolia*	M	5	6	20	26	F	G	M	Medium	No	2.4	1.88
10	Chinese Elm - *Ulmus parvifolia*	M	5	5	22	27	F	F	M	Medium	No	2.64	1.91
11	Deodar - *Cedrus deodara*	S	4	3	14	19	F	G	M	Low	No	2	1.65
12	Kurrajong - *Brachychiton populneus*	M	6	6	43 (28,33)	57	G	F	M	Medium	No	5.19	2.61
13	Deodar - *Cedrus deodara*	M	12	11	76	89	F	G	M	Medium	Yes	9.12	3.15
14	Kurrajong - *Brachychiton populneus*	M	6	6	36	43	F	F	M	Medium	No	4.32	2.32
15	Atlas Cedar - *Cedrus atlantica*	M	14	13	68 (49,48)	78	F	F	M	Medium	Yes	8.23	2.98
16	Atlas Cedar - *Cedrus atlantica*	M	11	10	53	64	F	G	M	Medium	Yes	6.36	2.74
17	Chinese Elm - *Ulmus parvifolia*	M	5	5	31 (21,23)	36	F	F	M	Medium	No	3.74	2.15
18	Atlas Cedar - *Cedrus atlantica*	S	4	3	12	16	G	G	L	Medium	No	2	1.53
19	Eucalyptus sp.	S	6	4	23	26	F	F	M	Medium	No	2.76	1.88
20	Mugga Ironbark - *Eucalyptus sideroxylon*	M	6	4	32	38	G	F	L	Medium	No	3.84	2.2
21	Mugga Ironbark - *Eucalyptus sideroxylon*	M	8	7	39	46	G	F	M	Medium	No	4.68	2.39
22	Mugga Ironbark - *Eucalyptus sideroxylon*	M	9	7	41	46	G	F	M	Medium	Yes	4.92	2.39
23	Mugga Ironbark - *Eucalyptus sideroxylon*	M	9	7	33	38	G	F	M	Medium	Yes	3.96	2.2
24	Leyland Cypress - Cupressocyparis leylandii	S	5	5	15 (9,9,8)	22	G	F	M	Low	No	2	1.75
25	River She-Oak - *Casuarina cunninghamiana*	S	9	4	27	33	F	F	M	Medium	Yes	3.24	2.08
26	Eucalyptus sp.	M	7	7	35	45	G	G	M	Medium	No	4.2	2.37

Tree Id	Species	Age	Height [m]	Canopy [m]	DBH [cm]	D@Base [cm]	Health	Structure	ULE	Retention Value	Protection Status	TPZ [m]	SRZ [m]
27	Mugga Ironbark - *Eucalyptus sideroxylon*	M	9	8	33	40	G	F	M	Medium	Yes	3.96	2.25
28	Mugga Ironbark - *Eucalyptus sideroxylon*	S	6	4	25	29	F	F	M	Medium	No	3	1.97
29	Blakely's Red Gum - *Eucalyptus blakelyi*	S	6	5	25	32	P	F	M	Low	No	3	2.05
30	Pin Oak - *Quercus palustris*	J	8	6	22	30	G	F	M	Medium	No	2.64	2
31	Chinese Elm - *Ulmus parvifolia*	S	4	4	16	20	G	G	M	Medium	No	2	1.68
32	Chinese Elm - *Ulmus parvifolia*	S	4	4	16	20	F	F	M	Medium	No	2	1.68
33	**No tree.**												
34	Chinese Elm - *Ulmus parvifolia*	M	6	6	28	33	G	G	M	Medium	No	3.36	2.08
35	Chinese Elm - *Ulmus parvifolia*	M	5	6	27	31	G	G	M	Medium	No	3.24	2.02
36	Chinese Elm - *Ulmus parvifolia*	S	4	4	15	19	G	G	M	Medium	No	2	1.65
37	Callery Pear - *Pyrus calleryana*	M	6	4	27	31	F	P	M	Low	No	3.24	2.02
38	Callery Pear - *Pyrus calleryana*	M	5	3	22	26	F	F	M	Low	No	2.64	1.88
39	Callery Pear - *Pyrus calleryana*	M	4	4	15	19	F	P	S	Low	No	2	1.65
40	Pin Oak - *Quercus palustris*	S	5	3	15	20	G	F	M	Medium	No	2	1.68
41	Pin Oak - *Quercus palustris*	S	6	5	21	27	G	F	M	Medium	No	2.52	1.91

Tree Id	Species	Age	Height [m]	Canopy [m]	DBH [cm]	D@Base [cm]	Health	Structure	ULE	Retention Value	Regulation Status	TPZ [m]	SRZ [m]	Comments
42	Atlas Cedar - *Cedrus atlantica*	J	5	3	14	19	G	G	L	Medium	No	2	1.65	
43	Atlas Cedar - *Cedrus atlantica*	SM	7	4	20	25	G	G	L	Medium	No	2.4	1.85	Edge of concrete footpath approx. 2m from base to N.
44	Chinese Elm - *Ulmus parvifolia*	J	4	5	14	17	G	F	L	Medium	No	2	1.57	Edge of concrete footpath approx. 2m from base to N.
45	Chinese Elm - *Ulmus parvifolia*	M	6	8	30	36	G	G	L	Medium	No	3.6	2.15	
46	Chinese Elm - *Ulmus parvifolia*	M	6	8	32	34	G	G	L	Medium	No	3.84	2.1	
47	Chinese Elm - *Ulmus parvifolia*	J	4	4	11	14	G	G	L	Medium	No	2	1.45	Edge of concrete footpath approx. 2m from base to N.
48	Chinese Elm - *Ulmus parvifolia*	M	7	8	26	27	G	G	L	Medium	No	3.15	1.91	Multi trunk.
49	Chinese Elm - *Ulmus parvifolia*	M	6	7	24	28	G	G	L	Medium	No	2.88	1.94	Edge of concrete footpath approx. 2m from base to N.
50	Chinese Elm - *Ulmus parvifolia*	M	6	7	19	21	G	G	L	Medium	No	2.31	1.72	Edge of concrete footpath approx. 2m from base to N. Multi trunk.
51	Chinese Elm - *Ulmus parvifolia*	M	6	7	19	25	G	G	L	Medium	No	2.31	1.85	Edge of concrete footpath approx. 2m from base to N. Multi trunk.

Tree Id	Species	Age	Height [m]	Canopy [m]	DBH [cm]	D@Base [cm]	Health	Structure	ULE	Retention Value	Regulation Status	TPZ [m]	SRZ [m]	Comments
52	Chinese Elm - *Ulmus parvifolia*	M	6	6	19	25	G	G	L	Medium	No	2.31	1.85	Edge of concrete footpath approx. 2m from base to N. Multi trunk.
53	Chinese Elm - *Ulmus parvifolia*	M	5	6	21	25	G	G	L	Medium	No	2.52	1.85	Edge of concrete footpath approx. 2m from base to N.
54	Chinese Elm - *Ulmus parvifolia*	M	5	6	19	22	G	G	L	Medium	No	2.28	1.75	Edge of concrete footpath approx. 2m from base to N.
55	Chinese Elm - *Ulmus parvifolia*	SM	5	6	16	17	G	G	L	Medium	No	2	1.57	Edge of concrete footpath approx. 2m from base to N. Multi trunk.
56	Chinese Elm - *Ulmus parvifolia*	SM	5	6	16	22	G	G	L	Medium	No	2	1.75	Edge of concrete footpath approx. 1.2m from base to N. Multi trunk.
57	Pin Oak - *Quercus palustris*	SM	6	5	19	26	G	G	L	Medium	No	2.28	1.88	
58	Callery Pear - *Pyrus calleryana*	M	5	6	25	24	G	F	M	Medium	No	3.05	1.82	Concrete path 1m to north, 2.4m to W. Multi trunk.
59	Chinese Elm - *Ulmus parvifolia*	SM	3	3	20	22	G	P	M	Low	No	2.4	1.75	Multi trunk from base
60	Callery Pear - *Pyrus calleryana*	M	4	2	13	14	G	F	M	Medium	No	2	1.45	
61	Callery Pear - *Pyrus calleryana*	M	3	5	17	21	G	P	M	Low	No	2.04	1.72	Poor form and structure
62	Callery Pear - *Pyrus calleryana*	M	4	5	19	23	G	F	M	Low	No	2.28	1.79	
63	Callery Pear - *Pyrus calleryana*	M	4	5	19	21	G	F	M	Low	No	2.28	1.72	
64	Callery Pear - *Pyrus calleryana*	M	5	6	23	25	G	F	M	Low	No	2.76	1.85	Multi trunk whorl. Concert path 2m to E.
65	Callery Pear - *Pyrus calleryana*	M	5	6	23	25	G	F	M	Low	No	2.76	1.85	Multi trunk whorl. Concert path 1.5m to E.
66	Callery Pear - *Pyrus calleryana*	M	6	6	19	23	G	F	M	Low	No	2.28	1.79	Concert path 1m to E.
67	Atlas Cedar - *Cedrus atlantica*	SM	7	4	24	29	G	G	L	Low	No	2.88	1.97	Concrete path and road 1m to E and W. Tree in inappropriate location to achieve mature potential.
68	Callery Pear - *Pyrus calleryana*	M	7	6	29	30	G	F	M	Medium	No	3.44	2	Bitumen road 2m to SW. Multi trunk.
69	Callery Pear - *Pyrus calleryana*	M	7	6	23	29	G	F	M	Medium	No	2.81	1.97	Bitumen road 1.5m to NE. Multi trunk.
70	Black Locust - *Robinia pseudoacacia*	M	8	7	32	45	G	P	S	Low	No	3.81	2.37	Cavity and included junction at base. Multi trunk. Poor quality tree.
71	Deodar - *Cedrus deodara*	M	15	14	106	122	G	G	L	Medium	Yes	12.72	3.6	Bitumen road 5.5m to E
72	Atlas Cedar - *Cedrus atlantica*	M	10	5	26	27	F	F	L	Low	Yes	3.12	1.91	Suppressed canopy, minor dieback. Narrow trunk to height ration.
73	Deodar - *Cedrus deodara*	M	16	15	98	109	G	G	L	Medium	Yes	11.76	3.43	
74	English Elm - *Ulmus procera*	M	11	8	57	68	G	F	L	Medium	Yes	6.82	2.81	1m heigh retaining wall 3.7m to N, unlikely to be substantial roots beyond. Multi trunk.
75	Kurrajong - *Brachychiton populneus*	SM	6	3	18	23	F	G	M	Low	No	2.16	1.79	Thin canopy, poor form.
76	Kurrajong - *Brachychiton populneus*	SM	7	4	22	29	F	F	M	Low	No	2.64	1.97	Thin canopy, dieback, poor form.
77	Yellow Box - *Eucalyptus melliodora*	SM	5	4	25	27	F	P	M	Low	No	3	1.91	Poor branch structure, stunted growth.
78	Black Sally - *Eucalyptus stellulata*	M	8	8	75	85	G	F	L	Medium	No	9	3.09	DBH a measured at 1m

Tree Id	Species	Age	Height [m]	Canopy [m]	DBH [cm]	D@Base [cm]	Health	Structure	ULE	Retention Value	Regulation Status	TPZ [m]	SRZ [m]	Comments
79	Chinese Elm - *Ulmus parvifolia*	M	6	6	21	25	G	F	L	Medium	No	2.52	1.85	Possible street tree, if so regulated.
80	Chinese Elm - *Ulmus parvifolia*	SM	5	5	21	21	G	F	L	Medium	No	2.52	1.72	Possible street tree, if so regulated.
81	Chinese Elm - *Ulmus parvifolia*	M	5	6	25	29	G	F	L	Medium	No	3	1.97	Possible street tree, if so regulated. Multi trunk whorl.
82	Chinese Elm - *Ulmus parvifolia*	M	6	6	25	32	G	G	L	Medium	No	3	2.05	Possible street tree, if so regulated.
83	Mugga Ironbark - *Eucalyptus sideroxylon*	M	7	7	40	46	G	G	L	Medium	No	4.8	2.39	
84	Red Box - *Eucalyptus polyanthemos*	M	7	6	34	40	G	G	L	Medium	No	4.08	2.25	
85	Red Box - *Eucalyptus polyanthemos*	M	8	7	39	44	G	G	L	Medium	No	4.68	2.34	
86	*Mixed species*	J	3	2	8	10	F	F	L	Low	No	2	1.26	Group of 4 juvenile trees. 3x Acer sp., 1 x Chinese Pistachio
87	Maple - *Acer sp.*	J	3	2	8	9	F	F	M	Low	No	2	1.2	
88	Maple - *Acer sp.*	J	4	3	10	12	F	F	M	Low	No	2	1.36	
89	Maple - *Acer sp.*	J	4	3	10	12	F	F	M	Low	No	2	1.36	
90	Maple - *Acer sp.*	J	6	4	12	17	F	F	M	Medium	No	2	1.57	
91	Maple - *Acer sp.*	SM	6	4	12	17	F	P	M	Low	No	2	1.57	Wound in trunk.
92	Maple - *Acer sp.*	SM	6	4	12	17	F	P	M	Medium	No	2	1.57	
93	Maple - *Acer sp.*	SM	5	4	10	12	P	P	S	Low	No	2	1.36	Included branch junction.
94	Maple - *Acer sp.*	SM	5	4	12	14	F	P	M	Medium	No	2	1.45	
95	Kurrajong - *Brachychiton populneus*	M	8	6	42	57	G	G	L	Medium	No	5.04	2.61	
96	Bhutan Cypress - *Cupressus torulosa*	M	8	6	37	41	G	G	L	Medium	No	4.44	2.28	
97	Deodar - *Cedrus deodara*	M	13	8	50	58	G	G	L	Medium	Yes	6	2.63	
98	Bhutan Cypress - *Cupressus torulosa*	M	8	5	37	40	G	G	M	Medium	No	4.44	2.25	
99	Black Locust - *Robinia pseudoacacia*	M	7	7	29	40	G	P	S	Low	No	3.49	2.25	Numerous weak included bark branch unions. Multi trunk.
100	Golden Ash - *Fraxinus excelsior 'Aurea'*	SM	4	5	19	23	F	F	M	Medium	No	2.28	1.79	
101	Unknown		11	6		60					Yes			Data collected by surveyor Usher & Company
102	Unknown		9	7		30					No			Data collected by surveyor Usher & Company
103	Unknown		8	8		40					No			Data collected by surveyor Usher & Company
109	Callery Pear - Pyrus calleryana	M	5	5	23	28	G	F	M	Medium	No	2.8	1.98	
110	Callery Pear - Pyrus calleryana	M	5	5	25	28	G	F	M	Medium	No	3	1.98	
114	Pin Oak - *Quercus palustris*	J	3	3	8	13	G	G	L	Low	No	2	1.4	

Tree Id	Species	Age	Height [m]	Canopy [m]	DBH [cm]	D@Base [cm]	Health	Structure	ULE	Retention Value	Regulation Status	TPZ [m]	SRZ [m]	Comments
164	Cedrus sp.	J	3	3	7	10	G	G	L	Low	No	2	1.26	
165	Cedrus sp.	J	3	3	10	13	G	G	L	Low	No	2	1.4	

Notes on Tree Schedule

Tree No.: Tree identification number used to identify each tree or tree group.

Species: Botanical name and common name of the tree species. Where the species is unknown, "sp." Is indicated after genus.

Age: J – **Juvenile** that is yet to establish. **S** – **Semi-mature** - established tree that has not reached its genetic potential of form and/or size. **M** – **Mature** –tree that has attained its genetic potential for form and size. **OM** – **Over-mature** – tree that shows symptoms of irreversible decline.

Height: Tree height in metres.

Canopy: Average estimated canopy spread in metres. Where the canopy is significantly asymmetrical all directions of canopy radius are estimated.

DBH: Diameter at Breast Height measured at 1.4m above ground unless otherwise noted. Multiple measurements indicate multiple trunks.

DAB: Diameter at Base measured above the root buttress.

Health: G - Good – In good health with no significant health issues noted. **F - Fair** – Some health issues that could be addressed by intervention. **P - Poor** – Significant health issues that could be addressed by intervention. **VP – Very Poor** – Significant health issues unlikely to be addressed by intervention.

Structure: G – Good – No defects noted within the tree. **F – Fair** – Minor defects noted within tree. **P – Poor** – Major defects noted within tree. **VP – Very Poor** – Significant defects have caused tree structure to fail.

ULE: Useful Life Expectancy – The estimated length of time the tree will live with an acceptable level of risk and provide a positive amenity value to the site. **L - Long** – 40 yrs. or more. **M – Medium** – 16 -39 yrs. **S – Short** – 5 -15 yrs. **R – Remove** – tree requires removal.

Retention Values: See STARS below.

Regulation Status: as outlined under *Bathurst LEP.*

TPZ: Tree Protection Zone – A defined radial area around a tree within which certain activities are prohibited or restricted to prevent or minimise the potential negative impact on the tree. Calculated as per *AS4790.*

SRZ: Structural Root Zone – A defined radial area around a tree that is required for structural stability within which activities are prohibited or restricted. Calculated as per *AS4970.*

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

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

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

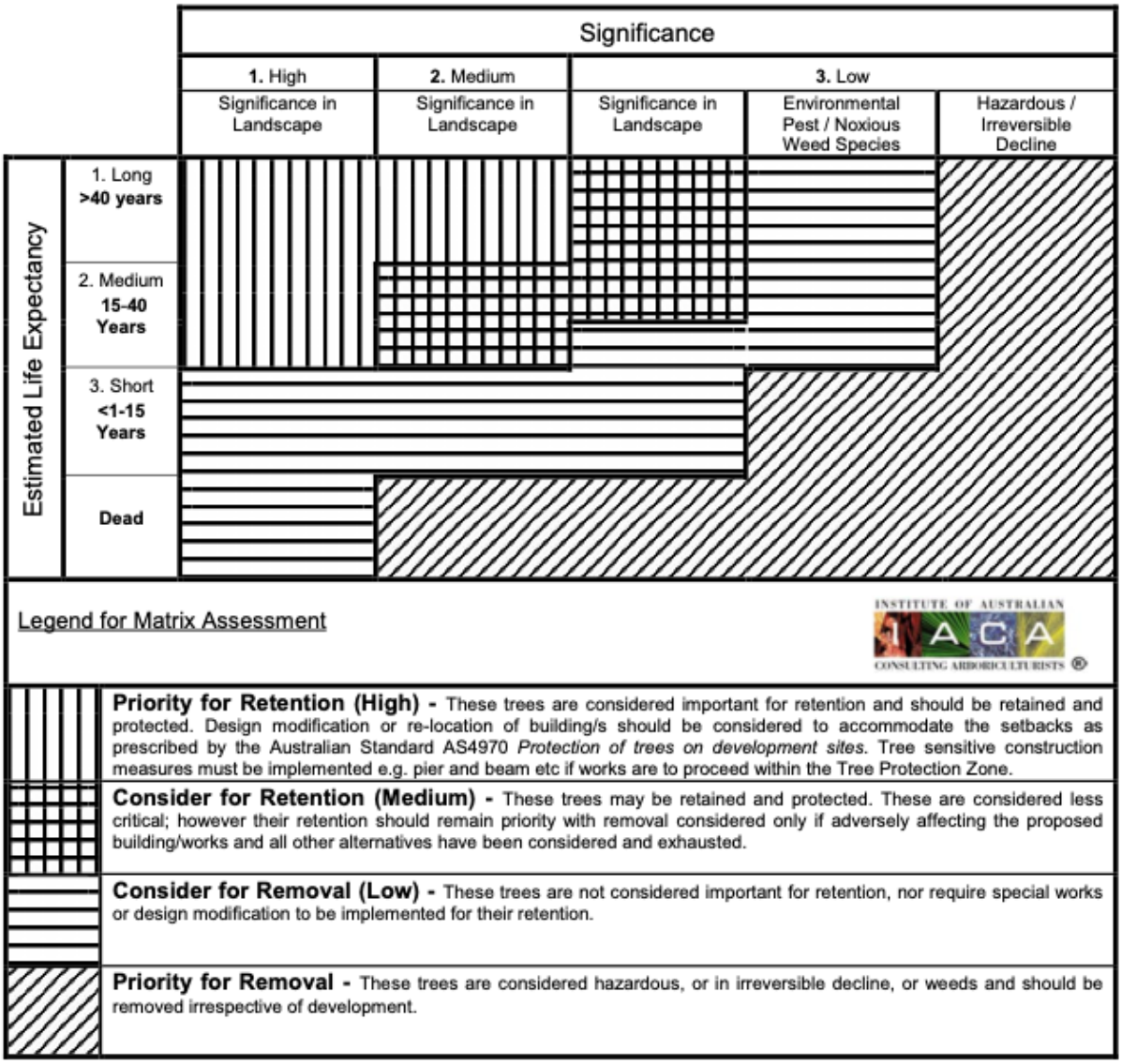
Hazardous/Irreversible Decline

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

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

Table 1.0 Tree Retention Value - Priority Matrix.



Legend for Matrix Assessment

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

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

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

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

USE OF THIS DOCUMENT AND REFERENCING

The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows:

IACA, 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

REFERENCES

Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au

IACA 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, www.iaca.org.au

APPENDIX 2 – TREE LOCATION PLAN

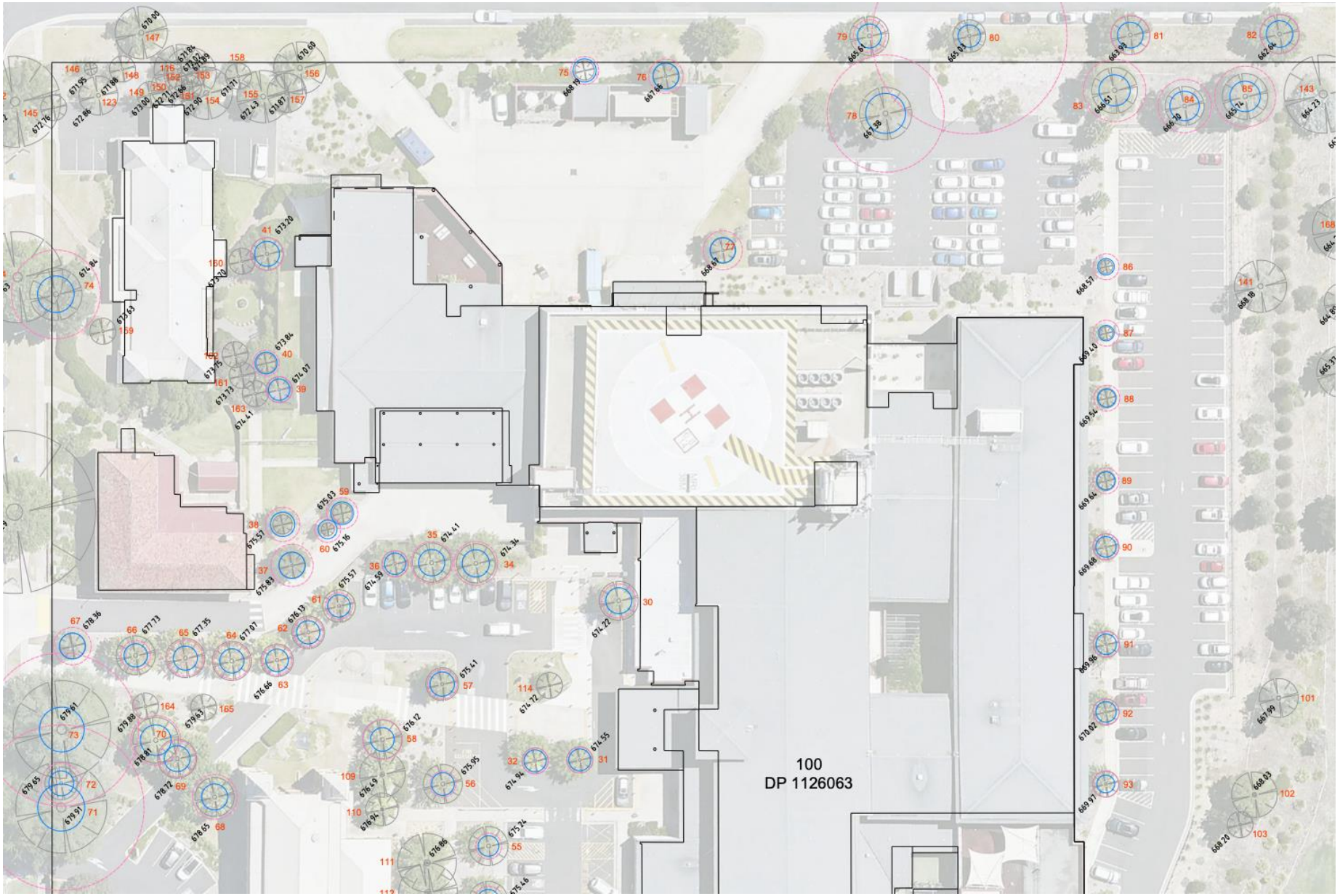
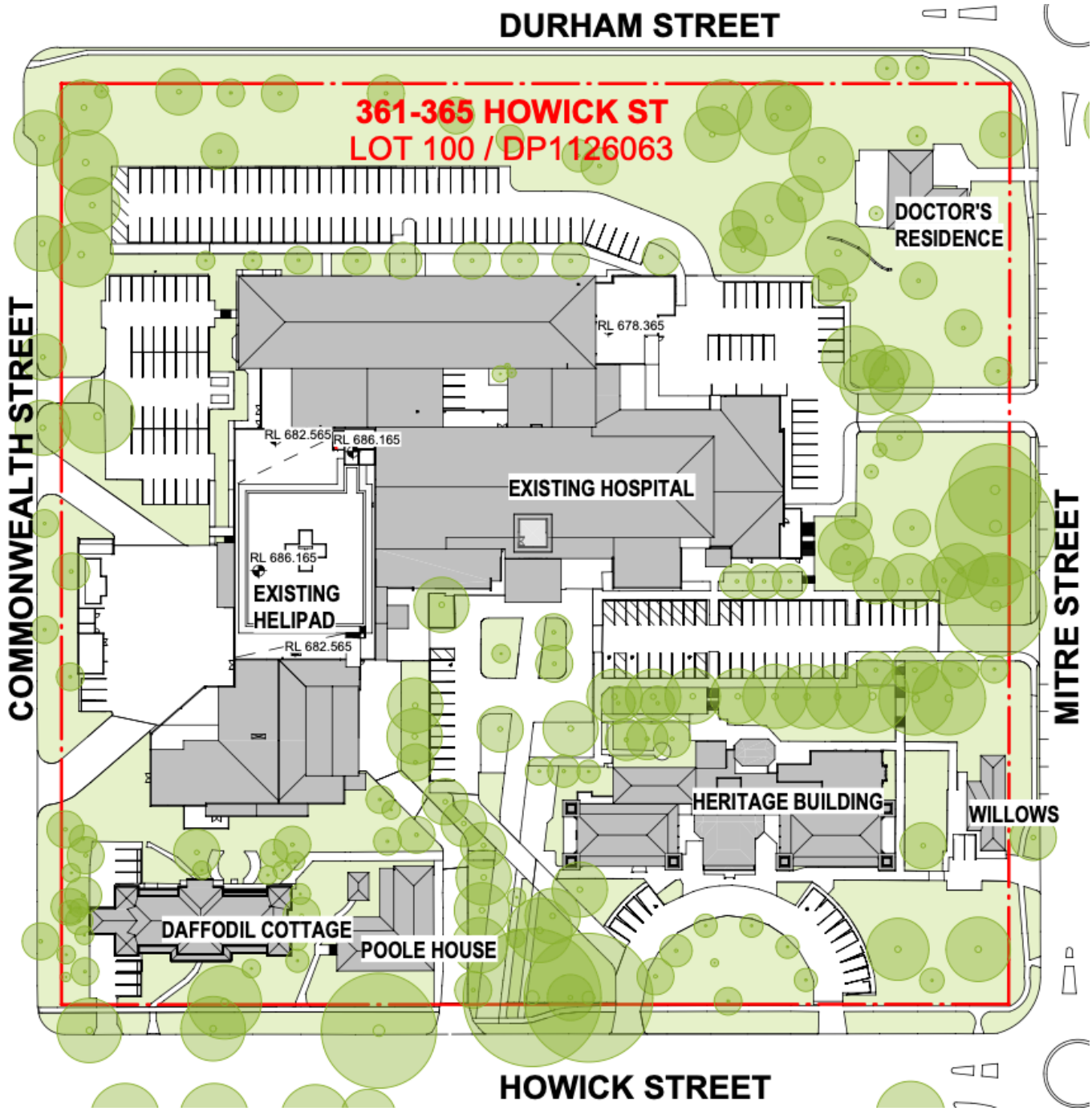


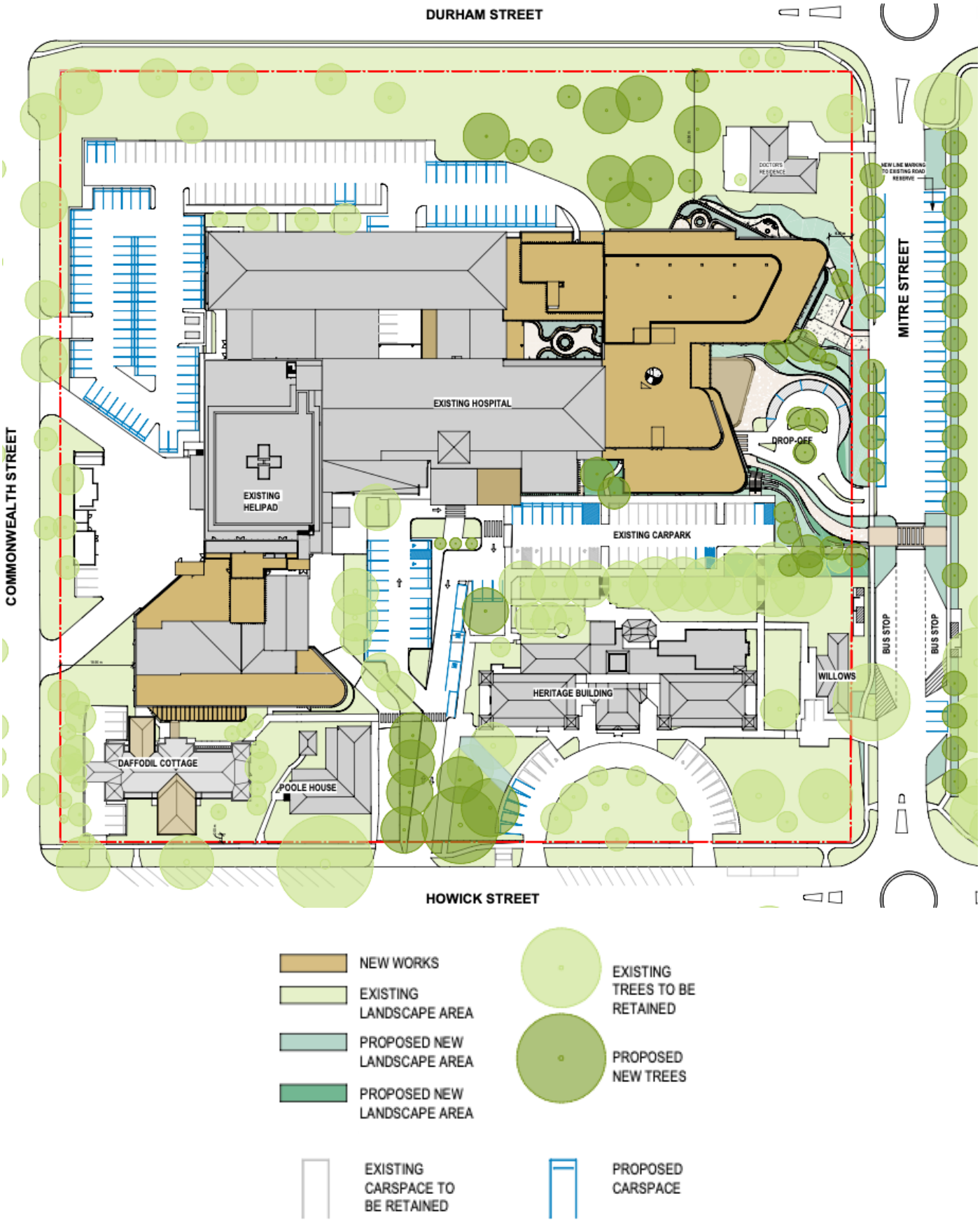
Figure 1 Pink circles indicate TPZ, Blue circle indicate SRZ

Figure 2 Pink circles indicate TPZ, Blue circle indicate SRZ

APPENDIX 3 – SITE CONTEXT PLAN - EXISTING



APPENDIX 4 - SITE CONTEXT PLAN - PROPOSED



APPENDIX 5 - SITE CONTEXT PLAN - DEMOLITION

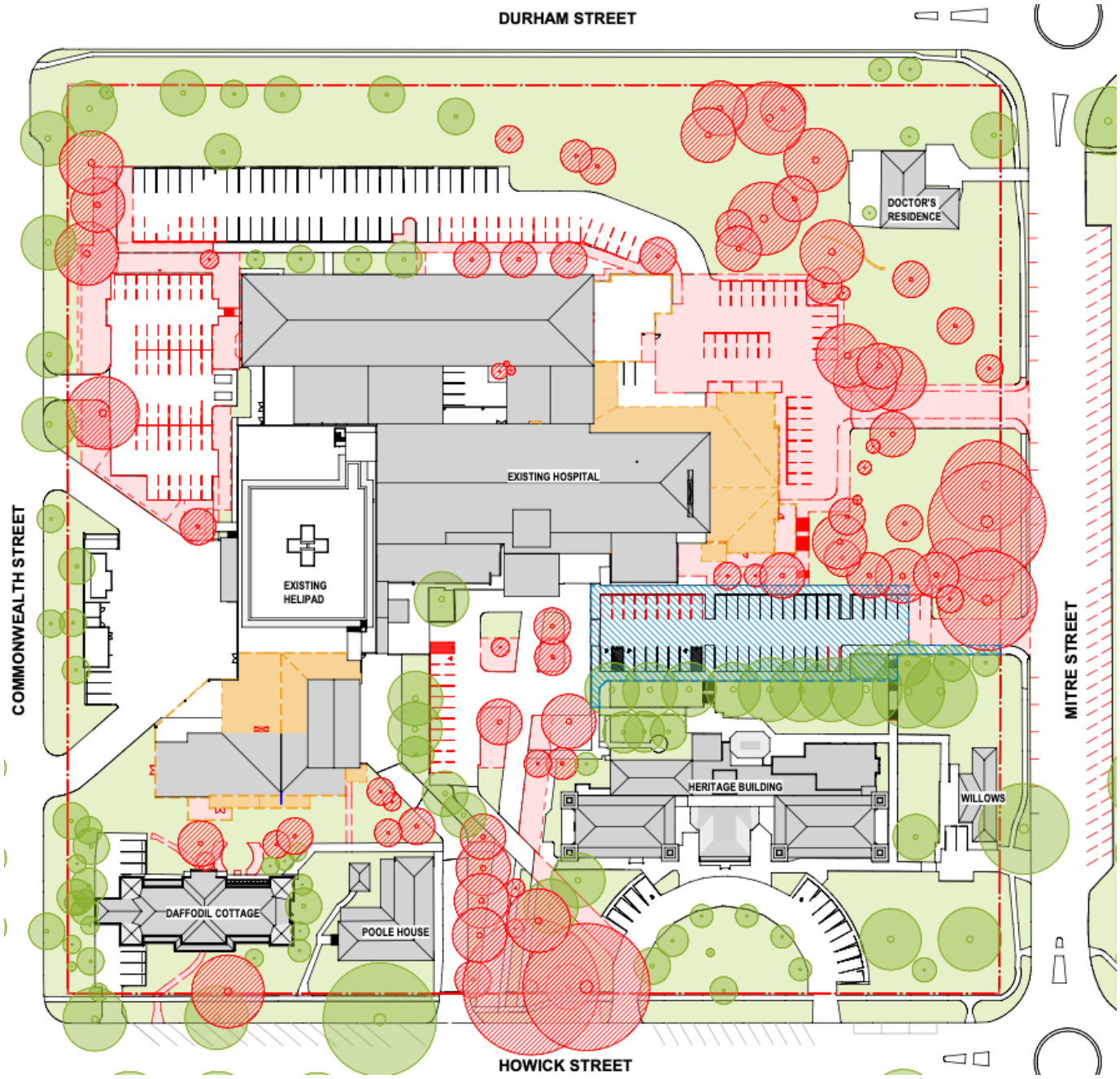


Figure 3 Trees to removed highlighted red.

EXISTING WALL/DOOR/LINE MARKING TO BE DEMOLISHED/REMOVED

EXISTING SLAB ON GROUND/KERB/ LANDSCAPE TO BE DEMOLISHED

EXISTING ROOF/AWNING TO BE DEMOLISHED

Extent of demolition for future Masterplan

APPENDIX 6 – TREE PROTECTION FENCING PLAN

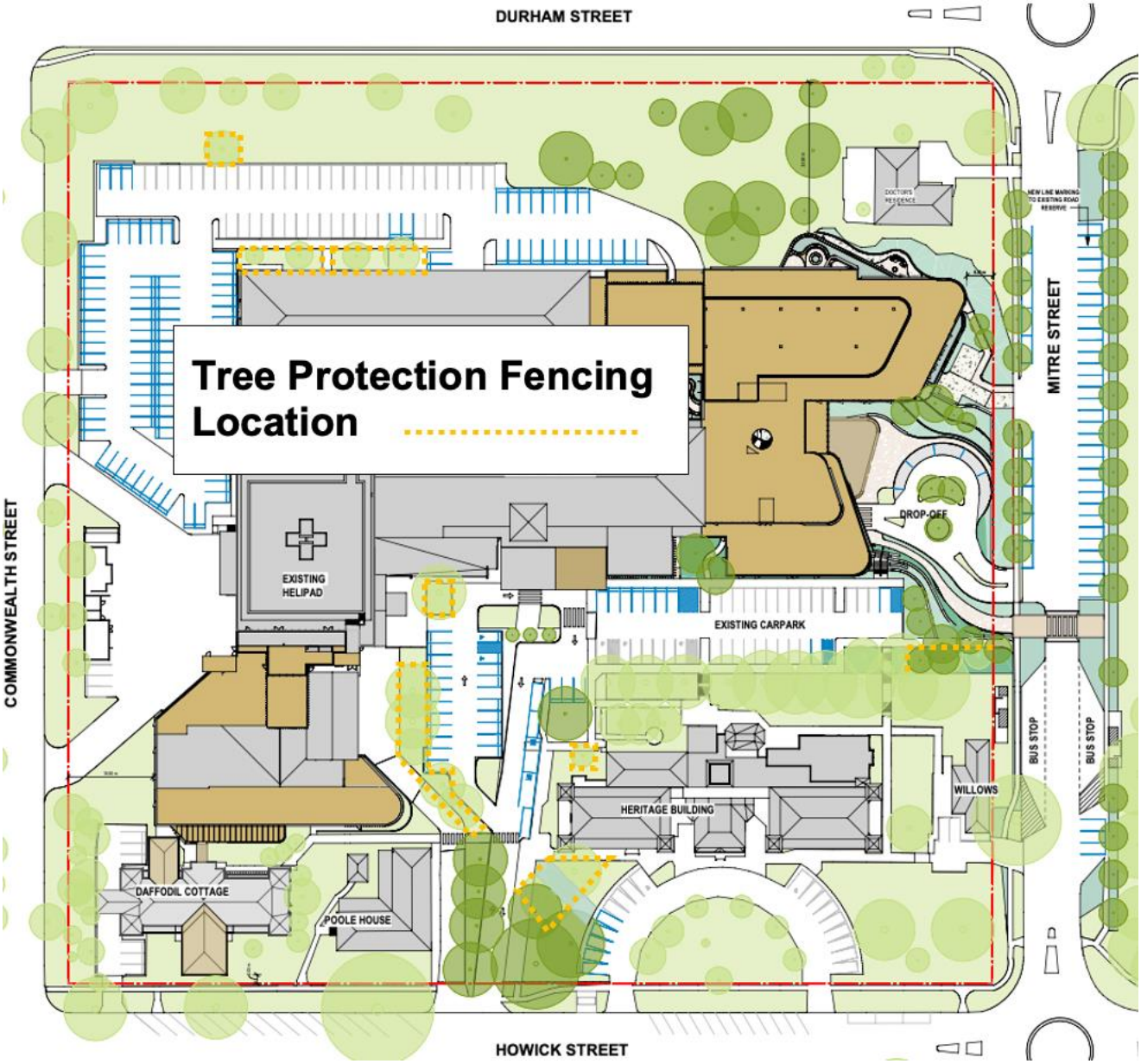


Figure 4 Not to scale.

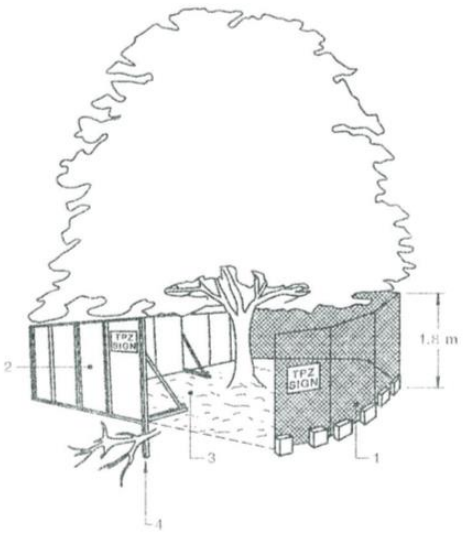
- Tree protection fencing is to installed and encompass the TPZ of each retained tree within the development area, unless specified. See Appendix 1 – Tree Schedule for TPZ data.
- Where new or existing paths, roads, car parks or public access areas exist within retained trees TPZ the fencing is to be located on the immediate edge of the area to encompass as much of the TPZ as possible.
- For the work required for the removal of the existing road accessway off the Howick St carpark and the construction of the footpath running through the TPZ of Trees 68, 69, minimal sections of the fencing are to be removed immediately before the work is started and are to be reinstated immediately after completion.

APPENDIX 7 – STANDARD TREE PROTECTION ZONE MEASURES

The following tree protection measures must be followed to ensure that the TPZ is isolated, the impact of the development on the tree's health is kept to a minimum, and that the site complies with AS4970-2009.

-The TPZ is a restricted area to be delineated by a protective fence installed prior to site establishment and must remain intact until completion of the works.
- The fence must not be altered or removed without the approval of the project arborist. If access is required or minor activities are to be undertaken within the TPZ, it must be approved by the project arborist.
- No routing of services, parking of vehicles, stacking of builder's materials/ equipment, or disposing of fuels, paints, chemicals or any other liquids is to occur within the TPZ.

- The protective fence should be constructed from ridged chain wire mess panels (or similar), 1.8m in height, and securely anchored without penetrating the ground. An example from AS4970-2009 is shown below.



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

FIGURE 3 PROTECTIVE FENCING

- Signs identifying the TPZ should be placed on the fencing and be visible from within the development site from all angles. An example from AS4970-2009 is shown below.

APPENDIX 8 – MITIGATION MEASURES

Project Stage *Design (D) Construction (C) Operation (O)*	Mitigation Measures	Relevant Section of Report
C	The following trees are to be retained with tree protection measures implemented to ensure they remain healthy and viable post construction: **Trees 30, 34, 35, 36, 41, 42 - 55, 61, 62, 68, 69, 75 - 76, 79 - 82, 87 - 90, 110.**	*Recommendations*
C	**Removal of the existing road accessway off the Howick Street carpark.** • To ensure minimal impact and the viability of Trees 68 and 69, the existing asphalt road and concrete edging must be removed in a tree sensitive manner that minimises root disturbance and under the supervision of the Project Arborist. • The asphalt roadway shall be removed by hand or using light machinery (tracked skid-steer loader or alternative approved method). The machinery should operate from beyond the TPZs if possible or be restricted to the road's footprint. Care shall be taken to avoid damage to significant woody roots and the tree canopy above. • The soil fill material should be a courser material (sandy loam) than the natural soil beneath.	*Recommendations*
C	**New Pedestrian access path leading to the hospital entrance from Howick Street.** • The footpath within the TPZs of the retained Tree 69 and should be installed above grade, with minimal topsoil removed by hand of <50mm, with no woody roots of >30mm diameter to be damaged. • A course sub-base material with minimal fines using low compaction methods is permitted to a depth of 100mm.	*Recommendations*
C	**Arboricultural Method Statement** • Prior to any work commencing at the site, a Project Arborist shall be appointed to supervise all tree protection procedures detailed in this report. The Project Arborist shall have a minimum Level 5 AQF qualification in Arboriculture. • A pre-commencement site meeting shall take place between the Project Arborist and Project Manager, the meeting is to take place before any development activity to determine specific arboricultural inspections and required tree protection measures. • The Project Arborist shall conduct site monitoring at intervals as agreed at the pre-commencement site meeting. These visits are to ensure that the protection measures are followed and that the works within the TPZ meet with this Arboricultural Method Statement, the recommendation outlined in this report, and *AS4970*. • The Project Manager is responsible for providing sufficient notice to the Project Arborist when attendance is required. • Should the proposed design change from that reviewed, additional arboricultural assessment will be required. • The following pre-determined stages are hold points and will require the attendance of the Project Arborist to document the works, provide certification and advice if needed and demonstrate an inspection has taken place.	*Arboricultural Method Statement*

Arboricultural Hold Points

Hold Points	Stage	Responsibility to organise visit.	Certification
A pre-commencement site meeting shall take place between the Project Arborist and Project Manager, the meeting is to take place before any development activity to determine specific arboricultural inspections and required tree protection measures.	Prior to work commencing	Project Manager	Project Arborist
Project Arborist to assess and certify that tree protection has been installed in accordance with this report and *AS4970* prior to works commencing at site.	Prior to development work commencing	Project Manager	Project Arborist
Project Arborist to supervise the removal of the existing roadway off Howick St carpark through the TPZ of Trees 68 and 69.	Removal of existing roadway of Howick St carpark.	Project Manager	Project Arborist
After all construction works are completed, the Project Arborist should assess that the retained trees are in the same condition and vigor and authorise the removal of the tree fencing. If changes to conditions are identified, the Project Arborist should provide recommendations for remediation.	At completion of construction	Project Manager	Project Arborist

Project Stage *Design (D) Construction (C) Operation (O)*	Mitigation Measures	Relevant Section of Report
C	**Tree Protection Measures** • Unless otherwise specified, all retained on-site trees must be protected from development impact by tree protection fencing installed at the extent of their TPZs in accordance with *AS4970*. Refer to Appendix 1 for TPZ measurements. • Tree protection fencing shall be installed at the beginning of the job before any groundwork or construction is started. • Where the design has an approved TPZ incursion (e.g. Trees 42 – 55, 68, 69), the tree protection fencing shall be located at the immediate edge of the construction excavation line. • Where new or existing paths, roads, car parks or public access areas exist within retained trees TPZ, the fencing is to be located on the immediate edge of the area to encompass as much of the TPZ as possible. • For the work required for the removal of the existing road accessway off the Howick St carpark and for the construction of the footpath running through the TPZs of Trees 68 and 69 minimal sections of the fencing are to be removed immediately before the work is started and are to be reinstated immediately after completion. No unapproved machinery access is permitted within the tree protection fencing. • Refer to Appendix 6 for the Tree Protection Fencing Plan, showing the approximate fencing location. • Refer to Appendix 7 for Standard Tree Protection Zone Measures. • No significant landscaping is to occur within the TPZs that will cause substantial root loss or impact the tree. Any landscaping plan within the TPZ shall be established with the consultation of the Project Arborist. • No underground services will be routed through the TPZs without consulting the Project Arborist.	*Arboricultural Method Statement*