Arboricultural Impact Assessment

Christ Church Bexley

Prepared by Alex Austin
For
Sustainable Development Group Ltd
June 2022
V5

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1 Summary

Alex Austin, an AQF level 8 Arborist, was commissioned by Sustainable Development Group Ltd,to complete an Arboricultural Assessment (AIA) of the trees that could be impacted by the proposed development works at Christ Church Bexley.

The site inspection was completed on the 21st of September 2021, where 26 trees were inspected and are now subject to this report. This report has been prepared in accordance with Australian Standard 4970: 2009 *Protection of trees on development sites*. Complete tree data can found be in the table located in the Appendix.

The 26 assessed trees are comprised of;

- Three (3) A Retention Value Trees
- Four (4) B Retention Value Trees
- 19 C Retention Value Trees

The Christ Church Bexley site is located at 1a-1c Dunmore Street and 38 Albyn Street, Bexley NSW 2207. The site is approximately 3428m2. The redevelopment of the Site includes the proposed demolition of a single residential dwelling (1A Dunmore Street), classroom, partial demolition of the heritage hall, and removal of the site trees on the site. It is proposed to construct a new church building with a hall and associated ministry areas, café and open-air on-grade car park, underground car park landscaping and significant tree planting.

If the proposed construction layout is to proceed, then 22 (All) site trees within the works area require removal to facilitate the project. Trees 5, 6 & 7 have a Tree Removal approval awarded prior to the DA submission through a previously completed Tree Permit Application.

Three (3) A Retention Value trees numbered 24, 25 & 26 were identified adjacent to the site on the council verge and will be retained if the tree protection measures in the report are adhered to. Tree 8 is a group of small trees outside the works area that are not impacted by this DA.

Trees numbered 24 & 25 have major encroachments into the TPZs for the driveway widening. These trees require sensitive demolition, excavation and construction methods combined with tree protection measures and Project Arborist Supervision.

In order to ensure the Three (3) A Retention Value trees numbered 24, 25 & 26 trees nominated for retention remain viable during and post construction, tree protection measures including, the engagement of a project arborist, tree protection fencing, trunk protection, tree protection signage, a restriction of activities within Tree Protection Zones (TPZ's), Mulching, Arborist supervision of works' within the TPZ's and compliance reporting, must be incorporated into the project. A Tree Protection plan has been prepared and can be located in the Appendix.

26 trees are proposed for replanting within the landscape plan. The proposed landscape plan shows the planting of these trees through the proposed layout. The proposed tree planting is expected to achieve an estimated 25% canopy cover one the trees are established.

This document must be used in its entirety.

Further questions are to be directed to:

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2 Document Details

Version Number	Date	Description
001	29/4/2022	Draft preparation
002	01/06/2022	Draft for Comment
003	16/6/2022	Revision for Updated Plans
004	26/6/2022	Revision for Updated Landscape
005	28/06/2022	Revision for Updated landscape #G

3 Background

Alex Austin, an AQF level 8 Arborist, was commissioned by Sustainable Development Group Ltd,to complete an Arboricultural Assessment (AIA) of the trees that could be impacted by the proposed alterations and additions at Christ Church Bexley.

The site inspection was completed on the 21st of September 2021, where 26 trees were inspected and are now subject to this report. This report has been prepared in accordance with Australian Standard 4970: 2009 *Protection of trees on development sites.* Complete tree data can found be in the table located in the Appendix.

The 26 assessed trees are comprised of;

- Three (3) A Retention Value Tree
- Four (4) B Retention Value Trees
- 19 C Retention Value Trees

3.1 Reviewed Documents

In the preparation of this report, the following documents relevant to the site and the proposed development have been reviewed;

- Project Brief for Redevelopment of Christ Church Bexley, by Sustainable Development Group Ltd dated July 2021
- Site Survey, by Geodesy Survey Group, dated 09/092021
- Proposed Plans, by PLUS Architecture, dated 25/05/22
- Landscape Plan by Umbaco Landscape Architects dated June 2022
- Bayside Council, Tree Removal Permit TP-2022/126, dated 18th May 2022.
- Exploratory Root Excavation, by ABNOBA Arboricultural Services on the 26/05/2022
- Proposed Plans, by PLUS Architecture, dated 15/06/22

4 Aims and Objectives

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

- Provide information on restricted activities within the area nominated for tree protection, as well as suitable construction methods to be adopted during construction.
- The trees to be retained must be protected from all other demolition, excavation and construction activities.

5 Methodology

5.1 Tree Health and Condition

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

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

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

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

5.2 Tree Protection Zone and Structural Root Zone

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

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

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

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

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

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

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

5.3 Root Loss

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

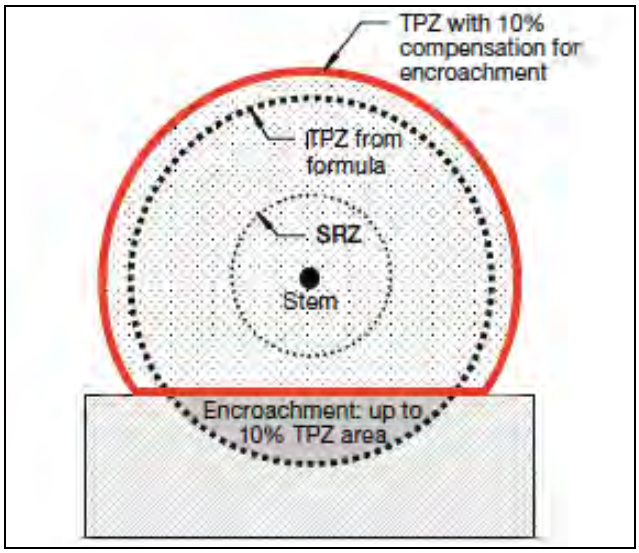


Figure 1: An example acceptable 10% minor encroachment. (Source: AS 4970:2007)

5.4 Retention Value

A simplified rating system consisting of 4 categories as a summary of the survey's cascading process. The retention value considers the trees health and structure, age class, defects, life expectancy and significance in the landscape. The retention value method has been derived from the British Standard 5837:2012.

- A– Retention Value (Green) Trees of high quality suggesting considerable efforts should be made to retain these trees.
- B – Retention Value (Blue) Trees of moderate quality suggesting reasonable efforts should be made to retain these trees.
- C – Retention Value (Grey) Trees of low quality and significance, These trees may be removed or retained without significant impact to the longevity of the landscape.
- R – Remove (Red). Trees that are not worthy of preservation and should be removed due to defects, weed species and high hazard values.

6 Findings

6.1 Map of Suburb

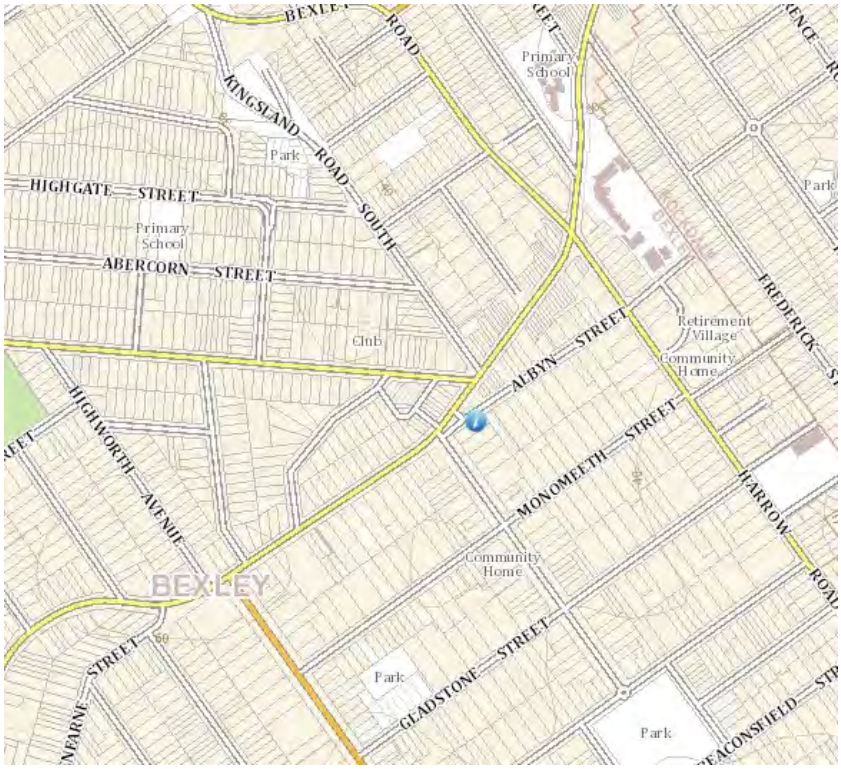


Figure 2: Map of Suburb with the red box indicating the position of the site. (Source: SixMaps 2021)

6.2 Aerial Image

Figure 3: Aerial Image of the site with the red lines indicating the property boundaries. (Source: Project Brief for Redevelopment of Christ Church Bexley, by Sustainable Development Group Ltd dated July 2021)

7 Site Information

7.1 Legislation

The provisions contained within the Bayside Local Environmental Plan 2021 apply to the site.

7.1.1 Zoning

- The site is zoned R4 High Density Residential.

7.1.2 Local Heritage Listing

One (1) Local heritage item listed under the Bayside Local Environmental Plan 2021 exists on the site and include;

- Christ Church Anglican Church and hall

7.1.3 Biodiversity and Conservation SEPP

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

7.2 Site Details

The Christ Church Bexley site is located at 1a-1c Dunmore Street and 38 Albyn Street, Bexley NSW 2207.

The site is approximately 2773m2.

The existing features include; church (Heritage listed) , car park that accommodates approximately 18-20 cars, rectory, hall in poor condition (heritage listed) sheds and a classroom.

Existing small to medium sized trees are located along the south-west boundary with larger trees on the nature strip.

The surroundings include; Retail/commercial buildings to the north. Medium density residential on the north-east and south-east. Low density residential across the street to the south-west

8 Tree Survey

26 trees were inspected and are now subject to this report. Complete tree data can found be in the table located in the Appendix.

The 26 assessed trees are comprised of;

- Three (3) A Retention Value Tree
- Four (4) B Retention Value Trees
- 19 C Retention Value Trees

8.1 Aerial Image with Tree Numbers

Figure 4: Aerial Image of the site showing tree numbers. (Source: Sixmaps 2021 modified by Austin)

8.2 Three (3) A Retention Value Trees

Three (3) A Retention Value tree numbered 24, 25 & 26 were identified adjacent to the site. All three are located on the council verge. Trees in this category have high landscape significance and considerable efforts should be made to incorporate these trees within the proposed development.

8.2.1 Council Trees 24, 25 & 26

Trees 24, 25 & 26 are all considered to be A retention value trees with High landscape significance. The trees are located on the Dunmore Street verge. The trees are in good condition and have a life expectancy of 25+ years. Considerable efforts should be made to incorporate these trees within the project.

Figure 5: Tree 24, 25 & 26 (Left to Right) (Source: Austin 21/09/2021)

Figures 6 & 7: Trees 24 & 25 (Left) and Tree 26 can be observed in the wide verge (Right). (Source: Austin 21/09/2021)

8.3 Four (4) B Retention Value Trees

Four (4) Trees numbered 4, 7, 15 & 16 were considered to be B Retention Value Trees. Reasonable attempts should be made to retain the trees through the project as they have the ability to be a continuing component of the landscape for at least the medium term (15-25 years). If these trees are nominated to be retained, they must be protected as per the guidance in this report. Tree 7 is has an approved Tree Removal Application and removal permit.

8.3.1 Tree 4 *Melaleuca salicina* (Willow bottlebrush)

Tree 4 *Melaleuca salicina* (Willow bottlebrush) is located in the rear of 1A Dunmore Street. The tree has medium landscape significance. Observations included; Co dominant stems, included bark, pruned south side for building clearance. Reasonable attempts should be made to retain this tree through the project.

Figure 8: Tree 4 in the landscape. (Source: Austin 21/09/2021)

8.3.2 Trees 15 & 16 *Cupressocyparis leylandii* (Leyland Cypress)

Trees 15 & 16 *Cupressocyparis leylandii* (Leyland Cypress) are located on the south side(entrance side) of the church and carry medium landscape significance. The dense foliage of the trees is blocking the façade of the church. As these trees continue to grow, the dense foliage will block the façade of the church and trimming will be required to maintain access around the church entrance. Consideration for the removal of these trees and the replacement with an appropriate and species that complements the heritage building is suggested to occur as part of the project.

Figure 9: Trees 15 & 16 in the landscape. (Source: Austin 21/09/2021)

8.4 19 C Retention Value Trees

19 Trees form the C retention value category. These trees should not be treated as a constraint on development as they are of reduced quality or are exempt species. Common features within these trees includes, low landscape significance, poor health or structural condition, short life expectancies, a small size that is easily replaceable in the short term, or may be an undesirable species or be growing in a inappropriate location. If any of these trees are nominated to be retained, they must be protected as per the guidance in this report.

8.4.1 Tree 1 *Olea europaea ssp. Cuspidata* (African olive)

Tree 1 *Olea europaea ssp. Cuspidata* (African olive) is a small tree at the front of 1A Dunmore Street. The tree has Low landscape significance.

Figure 10: Tree 1 in the landscape. (Source: Austin 21/09/2021)

8.4.2 Trees 9, 10 & 11

Trees 9, 10 & 11 are small trees/shrubs in the centre of the site with low landscape significance.

Figure 11: Trees 9, 10 & 11 in the landscape. (Source: Austin 21/09/2021)

8.4.3 Tree 6 *Calistemon citrinus* (Crimson Bottlebrush)

Tree 6 *Calistemon citrinus* (Crimson Bottlebrush) is located in the rear of 1A Dunmore Street. The tree has low landscape significance and a stem split which reduces its life expectancy.

Figures 12 & 13: Tree 7 can be observed in the landscape (Left) and the stem split (Right). (Source: Austin 21/09/2021)

8.4.4 Trees 17 -23 *Callistemon viminalis* (Weeping Bottle Brush)

Trees 17 -23 *Callistemon viminalis* (Weeping Bottle Brush) are located around the Dunmore Street frontage of the existing car park. As a group the trees provide amenity benefits as well as screening. Individually , the trees are small and easily replaceable. Tree 21 has poor form from previous branch failure and could be replaced.

Figure 14 (Left): Trees 17 -23 in the landscape. (Source: Austin 21/09/2021)
Figure 15 (Right): The poor form of Tree 19 can be observed. (Source: Austin 21/09/2021)

9 Proposed Development

The redevelopment of the site includes the proposed demolition of a single residential dwelling(1A), classroom, partial demolition of the heritage hall, and removal of several trees on the site. It is proposed to construct a new church building with a hall and associated ministry areas, café and car park.

9.1 Existing layout

The existing layout includes a church, on grade carpark and hall buildings with open space in between.

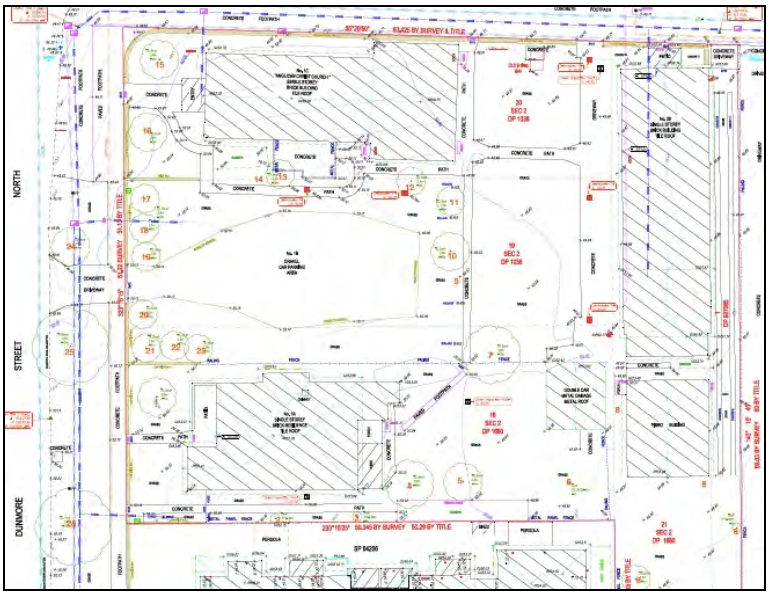


Figure 16: The existing layout showing tree locations. (Source: Site Survey, by Geodesy Survey Group, dated 09/092021)

9.2 Demolition Plan

All trees on the site are proposed for removal.

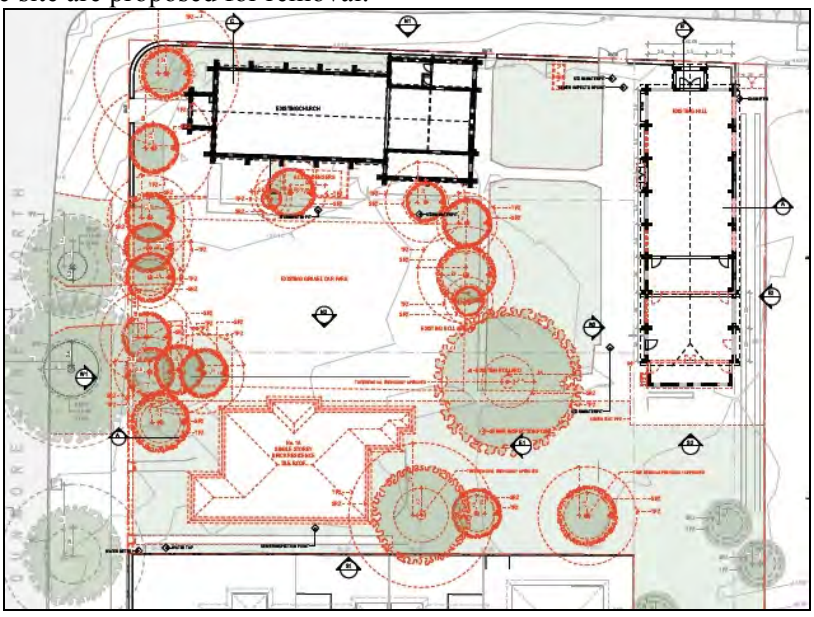


Figure 17: The existing layout showing tree locations proposed for removal in this proposal. (Source: Proposed Plans, by PLUS Architecture, dated 01/06/2022)

9.3 Proposed Layout

The proposed development works tree removal, demolition and excavation of the south eastern corner of the site, expansion of the existing foot print, underground parking, tree planting and landscaping works.

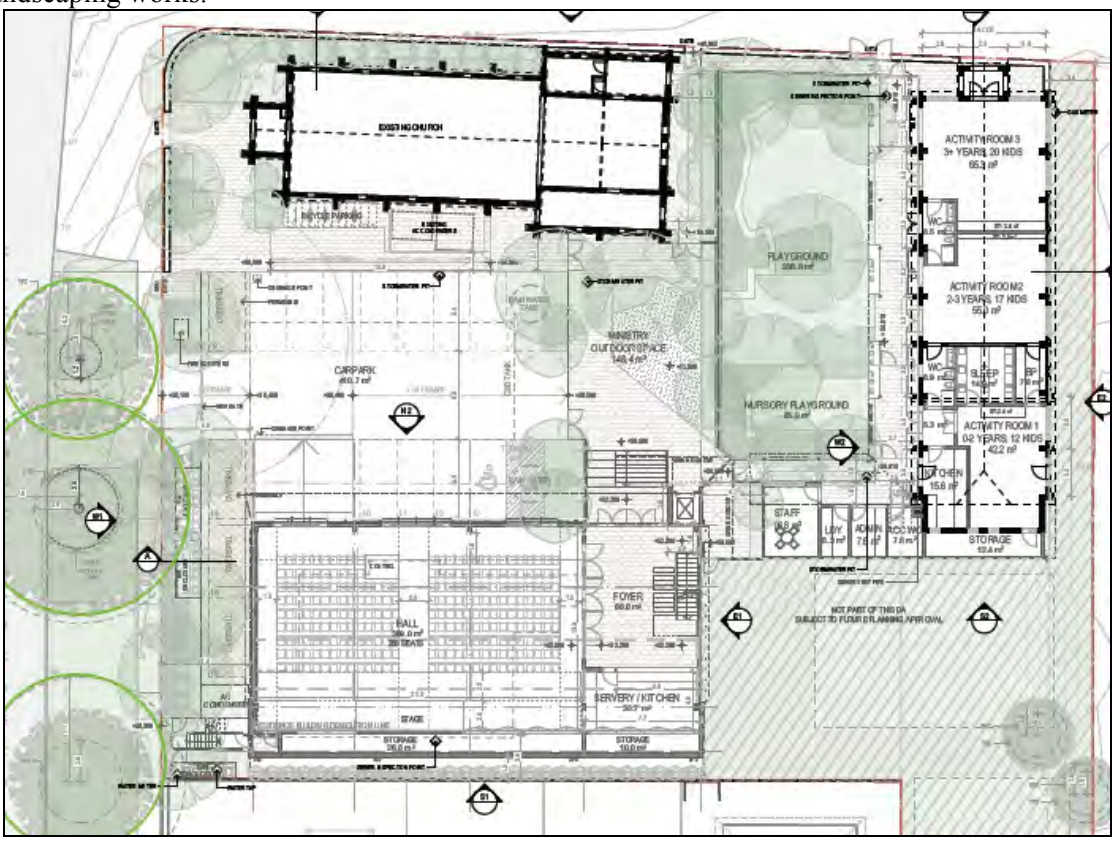


Figure 18: The proposed layout showing trees for retention and proposed buildings and tree planting. (Source: Proposed Plans, by PLUS Architecture, dated 15/06/2022)

9.4 22 Tree Removals

22 trees are required to be removed from the site to facilitate to the project.

- Trees 5, 6 & 7 have been approved for removal under a Tree Permit Application prior to this report.
- Trees 6, 22, 19, 21, 23 & 24 are also C Retention Value Trees can be removed due to exempt species or proximity to building.
- Trees 1(*Olea europaea ssp. Cuspidata* (African olive) & 14 (*Eriobotrya japonica* (Loquat tree) are exempt species.

9.5 Four (4) trees to be Retained.

Three (3) Council Trees numbered 24, 25 & 26 are proposed to be retained and protected as part of this project.
Tree 8 is a group of small trees outside the works area that are not impacted by this DA.

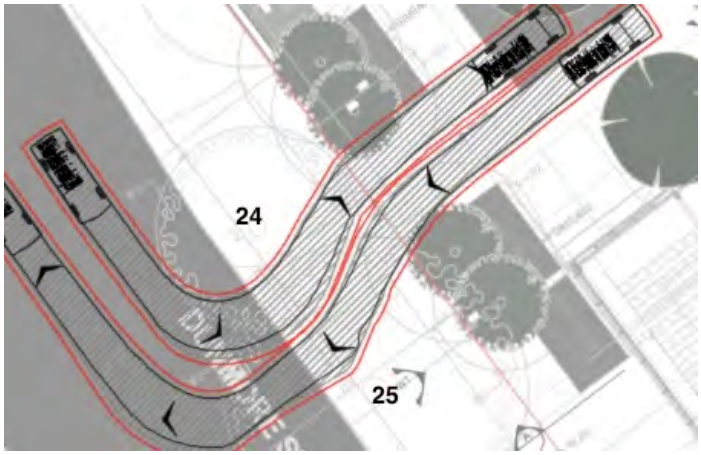
9.6 Proposed Driveway Widening

9.6.1 Extent

The existing driveway has a 4m width and is already using >10% of the TPZ of Trees 24 & 25.

The proposed driveway is of a 6m width and encroaches further in to the TPZ's of both trees.

Exploratory excavation and root mapping was completed by ABNOBA Arboricultural Services on the 26/05/2022 to ascertain the impact of this proposal. Trenches were hand dug at the location of the proposed driveway expansion. See the appendix for the complete root mapping report.



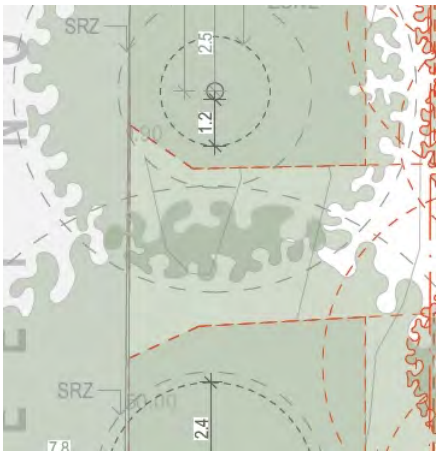


Figure 19 (Left): The proposed driveway widening (Source: JMT Consulting, dated 30/05/22)

Figure 20 (Right): The existing layout showing tree locations proposed for removal in this proposal. (Source: Proposed Plans, by PLUS Architecture, dated 01/06/2022)

9.6.2 Tree 24 *Lophostemon confertus* (Brushbox)- Major TPZ encroachment

A major >10% encroachment is expected with the proposed driveway width expansion.

The proposed works are 1.2 m from the outside of the trunk. The SRZ is 2.5m..

Exploratory root investigation for T24 revealed;

- One (1) x 40mm root located at 150mm depth that would require to be pruned to accommodate to the proposed concrete driveway that requires 200mm depth of excavation.

The remainder of the TPZ is not impacted and additional area on the northern side of the tree outside the TPZ is not impacted by the proposal. No noticeable impact to the health of Trees 24 is expected and the tree will remain viable during and post construction.

9.6.3 Tree 25 *Eucalyptus saligna* (Sydney BlueGum)- Major TPZ encroachment

A major >10% encroachment is expected with the proposed driveway width expansion.

The proposed works are 2.4m from the outside of the trunk. The SRZ is 3m.

Exploratory root investigation for T25 revealed;

- One (1) 70mm root at 300mm depth to be retained,
- One (1) major structural root to be retained outside southern edge of driveway.
- One (1)x 85mm root at 200mm that would require to be pruned to accommodate to the proposed concrete driveway that requires 200mm depth of excavation. This root is considered to be of medium size (>40mm – <100mm). The severing of the one (1) root is expected to be tolerated by the tree due to good tree health, moderate size of the root and remainder of the TPZ being untouched.

The remainder of the TPZ is not impacted by the proposal additional area on the southern side of

the tree outside the TPZ allows for a greater growing environment. Mulching of the TPZ will improve the growing conditions during the construction period. No noticeable impact to the health of Trees 25 is expected and the tree will remain viable during and post construction.

Figure 21: The existing layout showing tree locations proposed for removal in this proposal. (Source: Exploratory Root Excavation, by ABNOBA Arboricultural Services on the 26/05/2022

9.6.4 Driveway Works Recommendations

1. The existing driveway must remain in situ during construction to protect the roots and prevent compaction.
2. The TPZ areas should be mulched to a depth of 75mm.
3. Sediment snakes must be used on the edge of the existing driveway to prevent spillage and wash entering the TPZ's.
4. The proposed driveway should be a porous concrete surface to ensure air and water transfer into the root zone.
5. Project Arborist supervision of the existing driveway demolition, the required 200mm excavation and installation of the proposed driveway must occur to ensure the trees remain viable during and post works.

10 Measures to minimise impacts to retained trees.

In order to minimise the impact of the proposal, the following measures must be incorporated into the works;

10.1 Project Arborist

An official "Project Arborist" should be commissioned to oversee the tree protection, any works within the TPZ's and complete certification.

The Project Arborist should have minimum five (5) years industry experience in the field of arboriculture, horticulture with relevant demonstrated experience in tree management on construction sites, and Diploma level qualifications in arboriculture - AQF Level 5.

10.2 Tree Works

10.2.1 Tree Removals

Trees proposed for removal should be removed at the beginning of the project (STCA). Trees nominated for retention must not be damaged during the works.

10.2.2 Quality of Works

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

10.3 Tree Protection Signage

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

Figure 21: TPZ signage specification. (Source: Austin 2022).

10.4 Tree protection fencing

All trees nominated for retention are to be fenced off and protected from construction activities as per the Tree Protection plan located in the appendices. Once in place, the TPZ cannot be moved with out Project Arborist approval.
Sediment snakes must be placed around the edge of the TPZ to prevent wash or spills entering the TPZ.

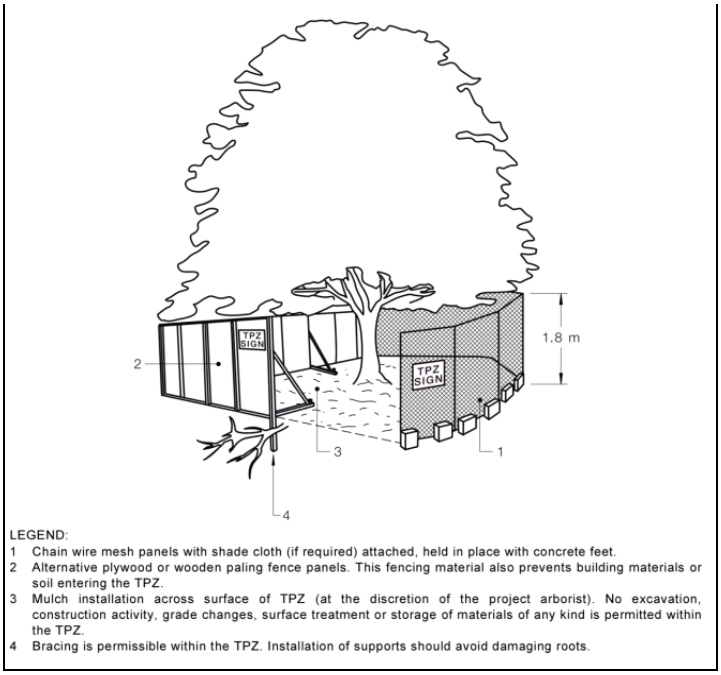


Figure 22: TPZ fencing specification. (Source: AS 4970:2007).

10.5 Trunk wrapping

Trees 24 & 25 require trunk wrapping to a height of 2m, in line with AS 4970:2007.

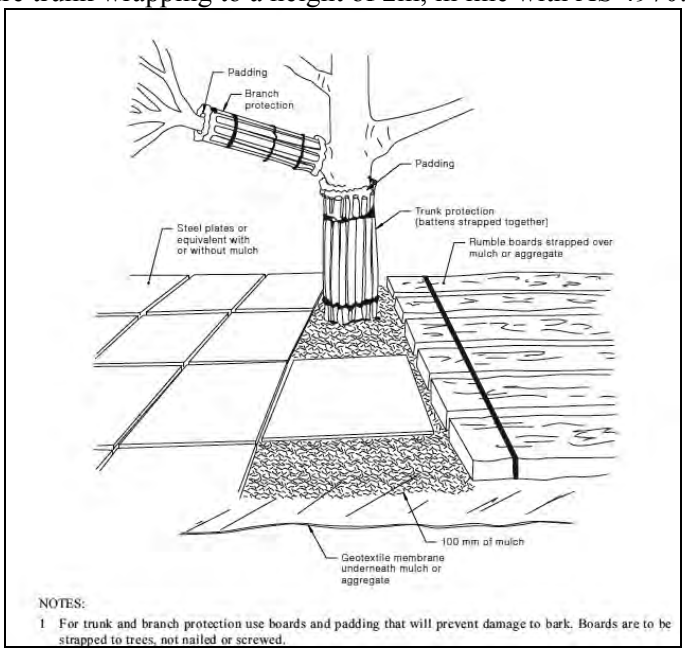


Figure 23: Trunk wrapping guidance. (Source: AS 4970:2007)

10.6 Mulching

The TPZ for each tree to be retained should be mulched. The mulch must be maintained to a depth of 75mm mm using material that complies with AS 4454.

10.7 Works within TPZ's

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

- Excavation by hand.
- Excavation using a high pressure water jet and vacuum truck.
- Excavation using an Air Spade with vacuum truck.

Machine excavation is prohibited within the remaining TPZ areas of retained trees unless undertaken under direct supervision from the project arborist.

10.8 Activities Restricted within the TPZ

- Machine excavation
- Excavation for silt fencing
- Storage
- Preparation of chemicals, including preparation of cement products
- Dumping of waste
- Wash down and cleaning of equipment
- Placement of fill
- Soil level changes
- Temporary or permanent installation of utilities and signs
- Physical damage to the tree
- Parking

10.9 Compliance Inspections & Reports

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

Tree inspections and compliance reporting by the project arborist is required:

1. Following the tree removal and the installation of the tree protection fencing & Trunk Protection.
2. The Demolition existing driveway demolition, the required excavation and installation of the proposed driveway
3. Every 2 months during the works to ensure compliance.
4. At the practical completion of the project.

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

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

11 Re Planting

11.1 Landscape Plan

The proposed landscape plan shows significant tree planting through the proposed layout.

26 trees are proposed for replanting within the development area.

10 large trees and 16 small trees will be replanted on-site to offset the loss of canopy form the proposed tree removals.

See the landscape plan for planting locations and specific detail.

Two (2) *Platanus orientalis 'digitata'* (Oriental Plane) are proposed to replace the Two (2) *Cupressocyparis leylandii* (Leyland Cypress) (Trees # 15 & 16 at the southern end of the Church building. These tree replacements are expected to provide an improved aesthetic appeal and increased canopy compared to the existing Leyland Cypress.

The proposed tree planting is expected to achieve an estimated 25% canopy cover one the trees are established

Figure 24: The proposed landscape plan showing proposed tree locations and projected canopy cover. (Source: Landscape Plan by Umbaco Landscape Architects dated June 2022)

12 Conclusion

This Arboricultural Impact Assessment has provided a detailed analysis of the trees that could be affected by development on the subject site. The requirements for Tree Preservation Zones are in line with AS 4970:2009 *Protection of tree on development sites*.

13 References

Australian Standard *4373-2007 Pruning of Amenity Trees*

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

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

ISA (2017) *Tree Risk Assessment Manual.* 2nd Edition. International Society of Arboriculture, Illinois, USA.

14 Industry Qualifications

- AQF Level 5 & 8 Consulting Arborist.
- ISA Certified Arborist # AU-0348A
- Tree Risk Assessment Qualification (TRAQ) (Exp Oct 2023)
- Advanced Quantified Tree Risk Assessment Registered User # 3692
- Masters of Environmental Law

15 Appendices

The Following documents are attached to this report;

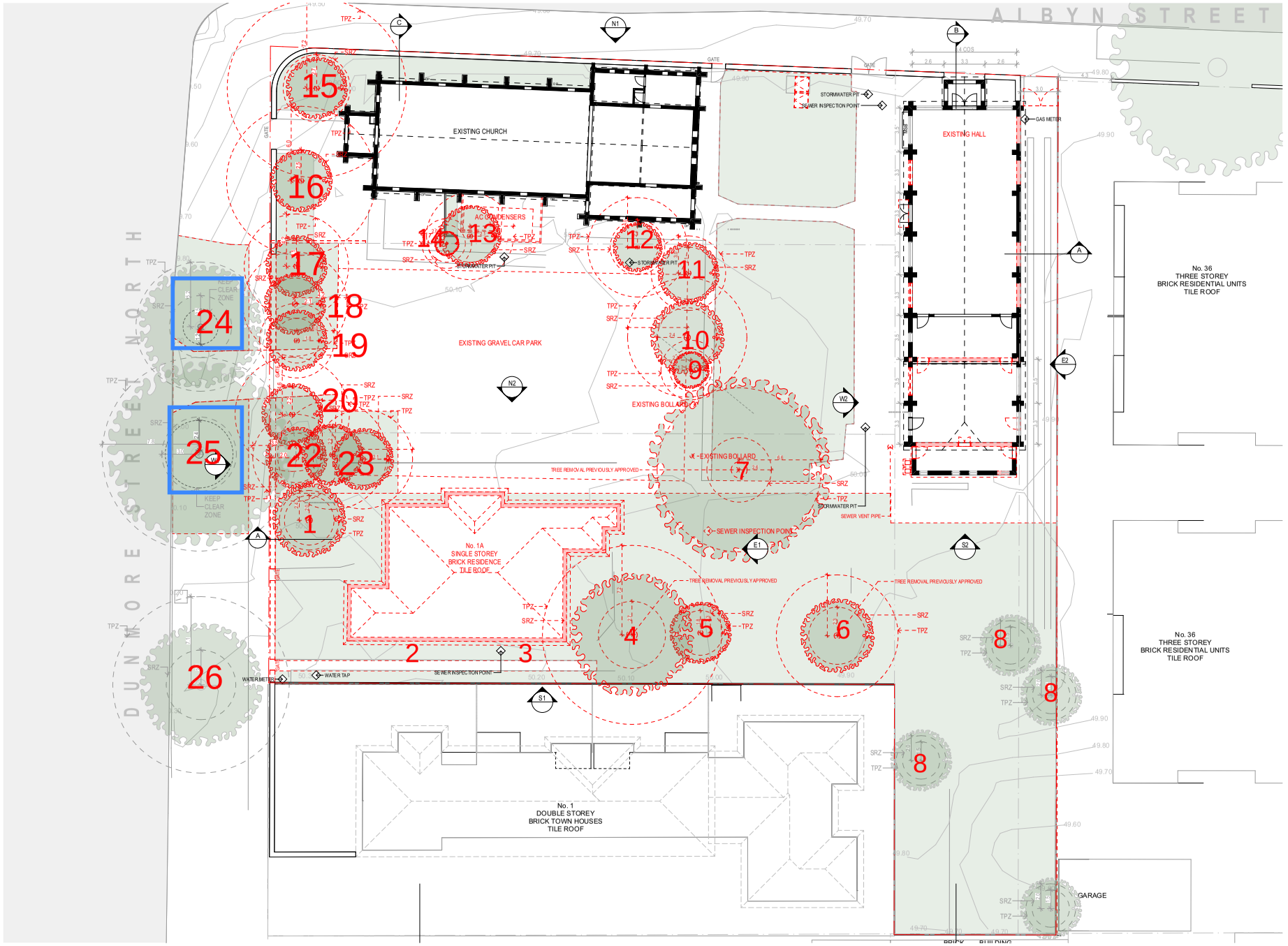
15.1 Tree Data

15.2 Tree Protection Plan

15.2.1 Tree Root Mapping Report

Tree no.	Botanical Name	Ownership	Trees in group	DBH Total (cm)	DRB (cm)	Radial TPZ (m)	TPZ area (m2)	Radial SRZ (m)	Tree Height (m)	Canopy (m)	Health	Structure	Age	TLE (Yrs.)	Lanscape Significance	Observations	TRAQ Risk	Recommended Remedial Works	Retention Value	Impact of Proposal	Proposaed Action
	Bexley																				
1	*Olea europaea ssp. Cuspidata* (African olive)	Site	1	20	30	2.4	17.73	2.0	4	6	Good	Fair	Semi-mature	10-15	Low	Multistem	Low		C	Within Hall footprint	Remove
2	*Howea belmoreana* (Curly Palm)	Site	1	20	20	1.5	7.07	1.5	5	2	Fair	Good	Mature	10-15	Low		Low		C	Within Hall footprint	Remove
3	*Howea belmoreana* (Curly Palm)	Site	1	20	20	1.5	7.07	1.5	5	2	Fair	Good	Mature	10-15	Low		Low		C	Within Hall footprint	Remove
4	*Melaleuca salicina* (Willow bottlebrush)	Site	1	60	60	7.2	162.86	2.7	10	10	Good	Fair	Mature	15-25	Medium	Co dominant, included bark, pruned south side for building clearance.	Low		B	Within Hall footprint	Remove
5	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	19	24	2.3	16.33	1.8	6	5	Good	Fair	Mature	10-15	Low	Torn branches, weak unions	Low	Remove torn branches	C	Removal Consent attained prior to DA.	Remove
6	*Calistemon citrinus* (Crimson Bottlebrush)	Site	1	41	44	4.9	76.05	2.3	6	6	Good	Good	Mature	10-15	Low	Stem split with good response growth	Low		C	Removal Consent attained prior to DA.	Remove
7	*Jacaranda mimosifolia* (Jacaranda)	Site	1	55	58	6.6	136.85	2.6	9	15	Good	Fair	Mature	15-25	Medium	Canopy spread 9m west, basal damage from fire east side, wound, cracking in wound, numerous surface roots with mover damage within 4m of trunk.	Moderate	Monitor basal wound, mulch	B	Removal Consent attained prior to DA.	Remove
8	Self sown group of pittosporum, Tristaniopsis, Calistemon, privet	Site	1	10	12	2.0	12.57	1.5	<5	<5	Good	Good	Young	15-25	Low	Self sown in vacant yard	Low	Consider removal	C	No Impact	Retain and Protect
9	*Feijoa sellowiana* (Feijoa)	Site	1	20	20	2.4	18.10	1.7	3	3	Good	Poor	Semi-mature	15-25	Low	Suppressed	Low		C	Within proposed paved area	Remove
10	*Viburnum sp* (Viburnum)	Site	1	40	45	4.8	72.38	2.4	4	6	Good	Good	Semi-mature	15-25	Low	Multi stem	Low		C	Within proposed paved area	Remove
11	*Syzygium luehmannii* (Lilly Pilly)	Site	1	25	33	3.0	27.91	2.1	8	5	Good	Fair	Semi-mature	15-25	Low	Co dominant stems, included bark	Low		C	Within proposed paved area	Remove
12	*Calistemon citrinus* (Crimson Bottlebrush)	Site	1	33	36	4.0	49.27	2.2	6	4	Good	Poor	Semi-mature	5-10	Low	Previous branch failures, wounds, cracked braches, co dominant	Low	Remove cracked branches, consider removal due to poor form	C	Within proposed car park	Remove
13	*Quercus robur* (English Oak)	Site	1	29	34	3.5	38.05	2.1	<5	<5	Poor	Fair	Semi-mature	5-10	Low	Dieback , deadwood	Low		C	Within proposed car park	Remove
14	*Eriobotrya japonica* (Loquat tree)	Site	1	12	15	2.0	12.57	1.5	3	2	Good	Good	Mature	15-25	Medium		Low		C	Within proposed car park	Remove
15	*Cupressocyparis leylandii* (Leyland Cypress)	Site	1	60	60	7.2	162.86	2.7	10	5	Good	Good	Mature	15-25	Medium	Undesirable species	Low		B	Proposed Replacement planting	Remove
16	*Cupressocyparis leylandii* (Leyland Cypress)	Site	1	50	50	6.0	113.10	2.5	10	5	Good	Good	Mature	15-25	Medium	Undesirable species	Low		B	Proposed Replacement planting	Remove
17	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	35	35	4.2	55.42	2.1	5	5	Good	Good	Mature	15-25	Low	Multistem from base	Low		C	Proposed Replacement planting	Remove
18	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	35	35	4.2	55.42	2.1	5	5	Good	Good	Mature	15-25	Low	Multistem from base	Low		C	Proposed Replacement planting	Remove
19	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	25	25	3.0	28.27	1.8	5	5	Good	Good	Mature	15-25	Low	Multistem from base	Low		C	Proposed Replacement planting	Remove
20	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	38	38	4.6	65.33	2.2	5	5	Good	Good	Mature	15-25	Low	Multistem from base	Low		C	Major encroachment from driveway	Remove
21	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	29	29	3.5	38.05	2.0	5	5	Good	Poor	Mature	5-10	Low	Multistem from base, poor pruning, poor form	Low		C	Proposed Replacement planting	Remove

Tree no.	*Botanical Name*	Ownership	Trees in group	DBH Total (cm)	DRB (cm)	Radial TPZ (m)	TPZ area (m2)	Radial SRZ (m)	Tree Height (m)	Canopy (m)	Health	Structure	Age	TLE (Yrs.)	Lanscape Significance	Observations	TRAQ Risk	Recommended Remedial Works	Retention Value	Impact of Proposal	Proposaed Action
22	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	37	37	**4.4**	61.93	**2.2**	5	5	Good	Good	Mature	15-25	Low	Multistem from base	Low		C	Major encroachment from driveway	Remove
23	*Callistemon viminalis* (Weeping Bottle Brush)	Site	1	33	33	**4.0**	49.27	**2.1**	5	5	Good	Good	Mature	10-15	Low	Basal wound	Low		C	Major encroachment from driveway	Remove
24	*Lophostemon confertus* (Brushbox)	Council	1	43	52	**5.2**	83.65	**2.5**	10	10	Good	Good	Mature	>50	Medium		Low		A	Major encroachment from driveway	Retain and Protect
25	*Eucalyptus saligna* (Sydney BlueGum)	Council	1	65	77	**7.8**	191.13	**3.0**	20	15	Good	Good	Mature	>50	High	Trunk wound with good response growth	Low		A	Major encroachment from driveway	Retain and Protect
26	*Lophostemon confertus* (Brushbox)	Council	1	59	69	**7.1**	157.48	**2.8**	10	10	Good	Fair	Mature	25-50	Medium	previous lopping, wounds, pruned for service line	Low		A	No Impact	Retain and Protect



DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT LEGEND, SCHEDULES AND PROJECT SPECIFICATION.

REFER TO LANDSCAPE PACKAGE FOR DETAILED LANDSCAPE DESIGNS.

REFER TO ARBORIST PACKAGE FOR INFORMATION ON TREES INCL. TREE RETENTION / REMOVALS, ETC.

REFER TO TRAFFIC PACKAGE FOR INFORMATION ON CARPARKS AND ROADS, INCL. SWEPT PATHS, ETC.

REFER TO STORMWATER PACKAGE FOR INFORMATION ON STORMWATER STRATEGY, INCL. RAIN WATER TANKS, OSD TANKS, ETC.

REFER TO BCA / ACCESS / ACOUSTIC REPORTS FOR RELATED INFORMATION

ABBREVIATION LIST

DP	DOWNPIPE
RL	RELATIVE LEVEL
ACC	ACCESSIBLE
WC	WATER CLOSET
TPZ	TREE PROTECTION ZONE (REFER TO ARBORIST PACKAGE)
SRZ	STRUCTURAL ROOT ZONE (REFER TO ARBORIST PACKAGE)

LEGEND

- PROPOSED DRAINAGE POINTS
- PROPOSED STRUCTURES / WALLS
- DEMOLISHED STRUCTURES / WALLS
- EXISTING STRUCTURES / WALLS
- TREES PROPOSED
- TREES TO BE DEMOLISHED
- TREES EXISTING
- Tree Protection Fence

DRAFT

PRELIMINARY

DATE	REVISION	BY	CHK	NO.

DATE	REVISION	BY	CHK	NO.

CONSULTANTS			
CONSULTANT 1 TYPE	#CONSULTANT 1 COMPANY NAME	T CONS. 1 PHONE	
CONSULTANT 2 TYPE	#CONSULTANT 2 COMPANY NAME	T CONS. 2 PHONE	
CONSULTANT 3 TYPE	#CONSULTANT 3 COMPANY NAME	T CONS. 3 PHONE	
CONSULTANT 4 TYPE	#CONSULTANT 4 COMPANY NAME	T CONS. 4 PHONE	
CONSULTANT 5 TYPE	#CONSULTANT 5 COMPANY NAME	T CONS. 5 PHONE	

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PROJECT	DRAWING TITLE
1A-C DUNMORE ST N, 38 ALBYN ST BEXLEY NSW 2207 AUSTRALIA	DEMOLITION PLAN - GROUND

SCALE	1:150 @A1		
DATE	27/01/2021	PLOT DATE	1/06/2022
DRAWN	JW	CHECKED	AS
JOB NO.	20480	DRAWING NO.	DA012
			REVISION

ABNOBA ARBOR
Arboricultural Services

EXPLORATORY ROOT INVESTIGATION REPORT|CHRIST CHURCH. DUNMORE ST. NORTH, BEXLEY

Prepared for Sustainable Development Group Ltd.

26.05.22

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1 TABLE OF CONTENTS

2 INTRODUCTION

On the 18th May 2022 Sustainable Development Group Ltd. commissioned Abnoba Arbor to provide exploratory root investigation and a report pertaining to a development at the Christ Church, Dunmore Street North, Bexley. The development includes the widening of an existing driveway within the Tree Protection Zones of two council owned street trees.

The site is located within the Bayside Council LGA. Site inspection was undertaken by Liam Strachan AQF Level 5 Arborist on the 25th May 2022.

2.1 SCOPE

The purpose of this report is to provide information on one *Lophostemon confertus* (Brushbox Tree) and one *Melaleuca quinquenervia* (broad leafed paperbark) and the impact that the proposed driveway installation will have on the tree. Assessment of other trees on site did not form part of the scope of this report.

The recommendations and comments in this report are based on the following:

- Conduct a basic ground based visual tree assessment
- Provide information regarding tree species, dimensions, Landscape amenity value, health and vigour assessment.
- Ascertain Tree Protection Zones and Structural Root Zones.
- Conduct exploratory root investigation using non-destructive measures.
- That report contains all relevant information as outlined in Waverley Council DCP 2012.

Australian Standard AS4970-2009 Protection of Trees on Development Sites has been used as a benchmark in the preparation of this report.

The report will also assess the on-going viability of the tree and if deemed appropriate, provide recommendations for pruning or the removal of the subject trees. The following report will focus on the trees sustainability within the landscape and will provide recommendations on the most appropriate course of action. The determination will be reached through the assessment of the tree's health, vigour, and structural condition at the time of inspection. The assessment did not include any internal diagnostics such as picus, resistograph, woody tissue examination, nor has any soil testing been conducted.

3 METHOD

3.1 METHODOLOGY SUMMARY

Table 1

Characteristic	Method
Photos	Digital camera
Tree measurements • **Height** • **DBH(Diameter at breast height)** • **SRZ (Structural root zone)** • **TPZ (Tree protection zone)**	• Clinometer, Tape measure • Diameter tape • SRZ = $(DAB \times 50)^{0.42} \times 0.64$ • DBH x 12 (AS4970-2009)
Documents Reviewed	• Bayside Council DCP 2013 • Bayside Council LEP 2021
Drawings Reviewed	• Plus Architecture Job No. 20480 Dwg Ground Car Park Entry • Geodesy Survey Group Plan J11400_DL 01
Tree retention assessment	ULE (Useful life expectancy) STARS METHOD (IACA, 2010)
Tree health assessment	Visual Tree Assessment, (VTA) as per (Mattheck, et al., 2015) Inspection limited to ground based visual examination of the tree.

3.2 LIMITATIONS

Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible. However, Liam Strachan - Consulting Arborist can neither guarantee nor be responsible for the accuracy of information provided by others. Unless stated otherwise:

- Information contained in this report covers only the trees examined and reflects the health and structure of the tree at the time of inspection. The documented, observations, results, recommendations and conclusions given may vary after the site visit due to environmental conditions. Liability will not be accepted for damage to person or property as a result of natural processes, unforeseeable actions or occurrences.
- Observations recorded for trees located within adjacent properties have been made without entering that property. Deciduous trees inspected during winter and all trees obscured by other vegetation are not able to be properly assessed. As a result, measurements for these trees are estimated. Similarly, these trees were not subject to a complete visual inspection and defects or abnormalities may be present but not recorded.

- The inspection was limited to visual examination from the base of the subject tree without dissection, excavation, probing or coring (unless specifically noted otherwise).
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree may not arise in the future.

3.3 SITE INSPECTION

A visual inspection of the tree/s was performed from ground level, data collected includes:

- Genus, Species, Common Name;
- Height, Width, DBH (Diameter at Breast Height), DRB (Diameter above Root Buttress);
- Age, Health & Vigour;
- Significance, Amenity and Ecological Value;
- Form and Structural Condition;
- Visible Defects or Evidence of Wounding.

3.4 MEASUREMENTS

- Tree locations are supplied by client on the survey plan or triangulated using a measuring tape.
- Diameter at breast height (DBH) and Diameter above Root Buttress (DRB) are measured using a diameter tape.
- Height is measured using a clinometer.
- Canopy width is measuerd using a laser measure or tape measure.
- Structural Root Zone (SRZ) and Tree Protection Zone (TPZ) radii are calculated (in accordance with *AS 4970-2009*).
- TPZ or SRZ incursions are measured from the nearest face of the trunk to the face of the structure.

Tree schedule data is recorded in Appendix1.

3.5 REFERENCE DOCUMENTS

This report was written in coordination with:

- Bayside Council DCP 2013
- Bayside Council LEP 2021
- Australian Standard AS4970-2009 Protection of Trees on Development Sites
- Plus Architecture Job No. 20480 Dwg Ground Car Park Entry
- Geodesy Survey Group Plan J11400_DL 01

3.6 DETERMINING A TREES SIGNIFICANCE

Tree health assessments were carried out using VTA as per Mattheck and significance and retention determinations were carried out using the STAR's method which combines ULE (useful life expectancy of subject tree) and significance rating based on characteristics such as health, form, vigour, cultural, heritage and amenity value. The 2 results are placed within a matrix which determines the retention value.

1. Is the tree a locally native remnant; an endangered species; a part of an endangered ecological community; or does the tree provide critical habitat for an endangered species?

2. Is the tree of botanical interest; Is it included in a significant tree register or listed as a heritage item under the Federal State or Local Regulations?
3. Is the tree visually prominent in the locality?
4. Is the tree well structured?
5. Is the tree in good health and/or does it display signs of good vigour?
6. Is the tree typically formed for the species?
7. Is the tree currently located in a position that will accommodate future growth?

Please see Appendix 2: Stars.

3.7 VTA

The VTA system is based on the theory of tree biology, physiology and tree architecture and structure. This method is used by Arborists to identify visible signs on trees that indicate good health or potential problems. Symptoms of decay, growth patterns and defects are identified and assessed as to their potential to cause whole tree, part tree or branch failure, this system is based around methods discussed by Claus Mattheck in `The Body Language of Trees' (1994). For the purpose of this report, parts of the VTA system will be used along with other industry standard literature and other relevant studies that provide an insight into potential hazards in trees. This assessment is a snapshot of what could be reasonably seen or determined from a basic visual inspection. The VTA system is generally used as a means to identify hazardous trees, it is important to realize that for a tree to be hazardous there must be a target.

3.8 EXPLORATORY ROOT INVESTIGATION

Exploratory root investigation was undertaken using hand tools in order to preserve any large roots that were encountered. Where tree roots were encountered they were photographed, measured and plotted on the Ground Floor Plan.

3.9 AUSTRALIAN STANDARD AS4970-2009

- The Australian Standard AS4970–2009 Protection of trees on development sites has been used as a benchmark in the preparation of this report and the terminology and impact assessment methodology have been adopted from this document. This AIA complies with 2.3.5 Arboricultural Impact Assessment of AS4970-2009.

- Recommendations have been based on tree Retention Value, Vigour, Condition and ULE. Trees with a high Retention Value should be given greater priority for retention than trees with Medium Retention Value. Trees with Long (40 years +) ULE should be given greater priority for retention than trees with Short (5-15 years) ULE

- Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) are as per Section 3 of AS4970-2009 and are defined in the rear of this report. It should be noted that the TPZs and SRZs indicated on the site drawings are notional areas only and do not reflect actual root locations.

- "Construction" for the purpose of this AIA means excavation (greater than 100mm), compacted fill or machine trenching. "Excavation" includes cut batters, boxing–out for the various pavement types, trenching for utilities and footings for retaining walls.

- Trees within proposed construction footprints are recommended for removal (Rm).

- 3.4.6 Where construction is proposed within Structural Root Zone (SRZ) offsets, those trees have been similarly recommended for removal (Rm). Fully elevated, pier and beam type construction or hand dug services trenches (or horizontal boring) is recommended and an accepted form of construction methodology for this type of structure.

- Trees with greater than 25% of the Tree Protection Zone (TPZ) impacted by construction are generally recommended for removal (Rm). There are however different types of construction incursions proposed (e.g. fill, cut, services, pavement type, retaining walls) with varying tree impacts likely. Existing constraints to root development also vary the notional TPZ. Compacted fill can be equally as damaging to tree longevity: root development is restricted within heavily compacted soils.

- Trees to be retained with construction impacting less than 25% of the TPZ area were rated as. Specific construction monitoring will be required for these trees (refer to Recommendations).

- TPZ encroachments of >10% are defined (3.3.3 of AS4970) as ‘major’. This does not mean that the tree will be fatally injured, but that ‘the project arborist must demonstrate that the tree(s) would remain viable’.

- Where construction is proposed beyond the TPZ, those trees are rated as Retain (R) with no specific tree protection design or tree protection monitoring required.

4 FINDINGS

4.1 THE SITE

Figure 1

The site contains a carpark and a Church. The root mapping was undertaken at the western entrance to the highlighted car park.

4.2 SUMMARY OF SITE INSPECTION DATA

One medium sized early mature, native *Lophostemon confertus* (brushbox) and one early-mature *Eucalyptus saligna* (Sydney Blue Gum) were assessed, the purpose of this report is to provide information regarding the installation and widening of the driveway only.

4.3 CURRENT TREE POPULATION

A total of two trees were assessed in total.

The tree population comprised of:

Table 2

Species	Origin	No. Of Trees
Lophostemon confertus **(Brushbox)**	Australian Native	T24
Eucalyptus saligna **(Sydney Blue Gum)**	Australian native	T25

4.4 TREE SIGNIFICANCE

Retention values were recorded using IACA Significance of a Tree, Assessment Rating System (STARS). Results are published in the table below.

Table 3

Retention Value	Low	Med	High
Tree No.		T24	T25

IACA 2010, *IACA Significance of a Tree, Assessment Rating System (STARS*), Institute of Australian Consulting Arborculturists, Australia, www.iaca.org.au Appendix 2.

The benefits of trees are well understood. They provide visual amenity, shade, cooling and habitat for wildlife. They also store carbon, reduce runoff, filter pollutants and control erosion.

The shade and cooling benefits of trees are becoming increasingly important as temperatures rise, and this is also well understood.The cultural requirements of trees for general health and structural stability however, are not well understood.

One of the greatest benefits of trees to open space is the cooling and natural shade they provide. Using natural tree shade is council's stated preference to installing shade structures. Without the use of tree sensitive design treatments however, the ongoing provision of shade by the subject tree/s may be compromised.

Due to the size of the tree and its significance in the streetscape, it is advised that council will not allow the removal of the tree in order to repair the driveway. The council will require that tree sensitive design options are explored prior to granting permission to remove the tree

4.5 PROPOSED DEVELOPMENT IMPACT

Tree Protection Zones (TPZ's) and Structural Root Zones (SRZ's) are defined as per Section 3 of Australian Standard AS4970-2009 Protection of Trees on Development Sites. It should be noted that TPZ's and SRZ's are notional areas only and do not reflect actual root locations. All TPZ's and SRZ's are marked on the plan underneath.

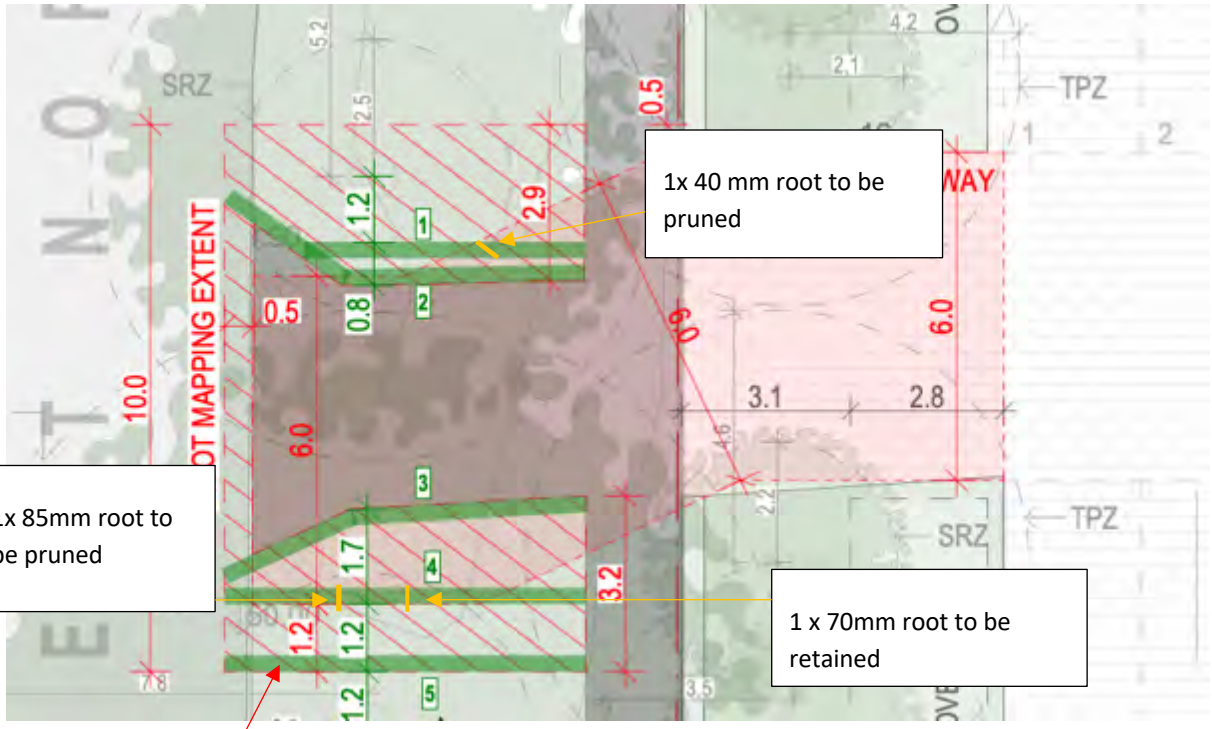
4.6 EXPLORATORY ROOT INVESTIGATION

Exploratory root investigation for T2 was undertaken using hand tools only, the soil was excavated to 300mm, in order to allow enough space for sub-base and concrete.

Soil conditions were 50mm of o horizon (organic), followed by heavily compacted yellow clay.

Exploratory root investigation for T24 revealed one 40mm root located at 150mm that would require to be pruned.

Exploratory root investigation for T25 revealed one 70mm root at 300mm depth to be retained and on 85mm root at 200mm that would require to be pruned.



4.6.1 PHOTOGRAPHS T24

Image of root to be pruned

Image depicting root depth

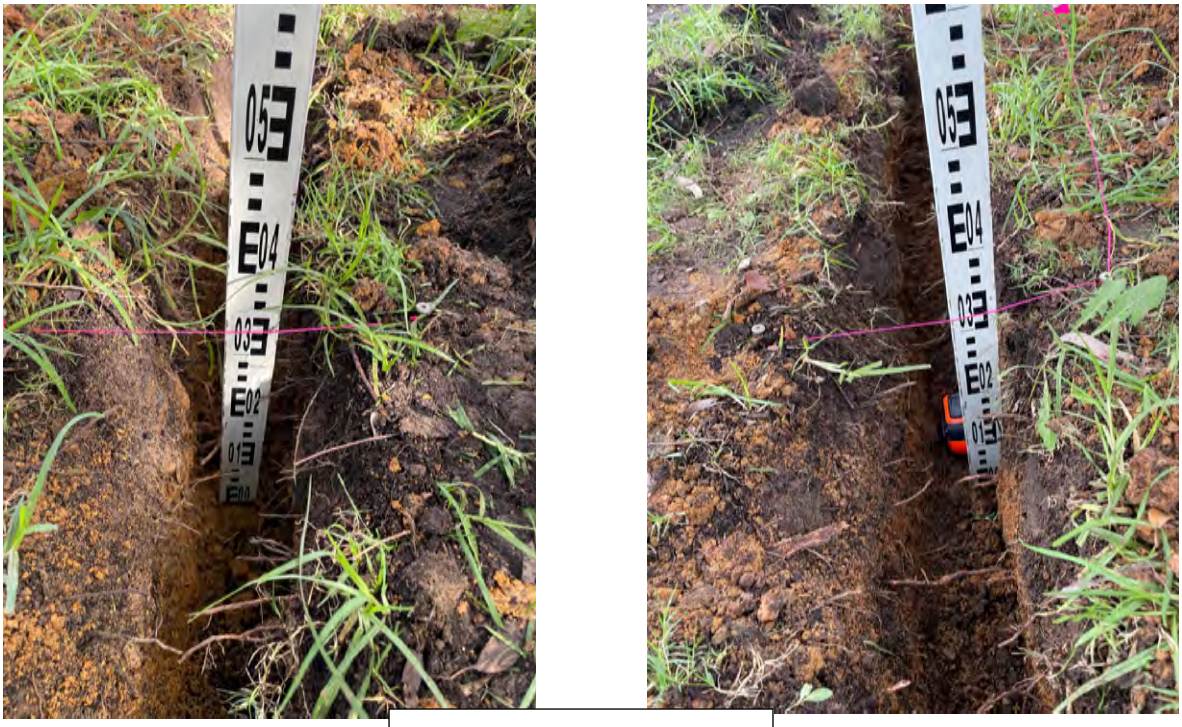
4.6.2 PHOTOGRAPHS T25

Images showing trench and trench depth.

Images showing trench and trench depth.

Images showing 1 x 85mm root to be pruned at 200mm.

Images showing one 70mm root at 300mm depth to be retained.



Images indicating trench depth

Image indicating trench depth

5 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the tree would survive the extent of the root pruning. However, a project arborist should supervise the excavation and prune the roots to be pruned with sharp hand tools to ensure that the roots are not torn.

The nature strip is significant in size and there is sufficient space to perform remediation to compensate the root loss such as soil inoculation to promote new root growth.

6 GLOSSARY OF TERMS

- **COMMON NAME/GENUS SPECIES CULTIVAR** – Common names can vary with selected texts. Where species is unknown, "sp." indicated after genus. Where cultivar is unknown "cv" indicated after species.

- **DBH – Diameter at Breast Height**. Tree trunk diameter measured at breast height (1.4 metres above ground level). Fabric diameter tape is used which assumes a circular cross section. Multiple measurements indicate multiple trunks. Where DBH measurement cannot be taken at 1.4m the height at which it has been taken is indicated.

- **CANOPY SPREAD RADIUS** – Average canopy radius, Circular canopy depictions on Tree Plan/Survey are indicative only. Where canopy spread was significantly skewed, all four cardinal point measurements were recorded.

- **AGE CLASS –** Immature (IM), Semi-mature (SM), Mature (M). Assessment of the tree's current Age. A Mature (M) tree has reached a near stable size above and below ground. Trees can have a Mature age class for >90% of life span.

- **VIGOUR –** Good (G), Average (A), Below Average (BA) or Poor (P). The general appearance of the canopy/foliage of the tree at the time of inspection. Vigour can vary with the season and rainfall frequency. A tree can have Good vigour but be hazardous due to Poor condition. A tree in Good vigour has the ability to sustain its life processes. Vigour is synonymous with health.

- **CONDITION –** Good (G), Average (A), Below Average (BA) or Poor (P). The general form and structure of the trunk/s and branching. Trunk lean, trunk/branch structural defects, canopy skewness or other hazard features are considered.

- **SRZ RADIUS –** Structural Root Zone. The area around a tree required for tree stability. Earthworks should be prohibited within the SRZ. The area is calculated from the formula outlined in AS4970-2009.

- **TPZ RADIUS –** Tree Protection Zone. Radial offset (m) of twelve times (12x) trunk DBH measured from centre of trunk (for trees less than 0.3 metre DBH minimum TPZ is 2.0 metres). To satisfactorily retain the tree, construction activity (both soil cut and fill) must be restricted within this offset. TPZ offsets are rounded to the nearest 0.1 metre. Existing constraints to root spread can vary. Generally an area equivalent to the TPZ should be available to the tree post development. Encroachment occupying up to 10% of the TPZ area is acceptable without detailed rootzone assessment. Encroachments greater than 10% require specific arboricultural assessment.

- **ULE –** Useful Life Expectancy. The length of time from the date of inspection that the Arborist estimates the tree will live and provide a useful positive contribution to the landscape amenity of the site. ULE ratings are Long (retainable for 40 years or more), Medium (retainable for 16-39 years), Short (retainable for 5-15 years) and Removal (tree requiring immediate removal due to imminent risk or absolute unsuitability).

- **RECOMMENDATIONS** – Retain (R) No TPZ encroachments; Remove (R)

7 APPENDIX 2: STARS

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.

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

Tree Life Expectancy	Tree Significance				
	High	Medium	Low		
Long >40 years					
Medium 15-40 years					
Short <1-15 years					
Remove / Dead					

Legend for Matrix Assessment	
	Priority for Retention (High) – These trees are considered important for retention and should be retained and protected. Design modification and re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard 4970 *Protection of tree on development sites*. Tree sensitive construction measures must be implemented 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.

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