ABNOBA ARBOR
Aboricultural Services

ARBORICULTURAL IMPACT ASSESSMENT| 26 MOOREFIELDS RD. KINGSGROVE

Prepared For Morfosis Architects C/o Jean Ligadu

8.06.21

Prepared By Liam Strachan

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1 EXECUTIVE SUMMARY

On the 3rd June 2021, Ms. Jean Ligadu of Morfosis Architects Pty Ltd. Commissioned Abnoba Arbor to provide an Arboricultural Impact Assessment pertaining to a proposed development at 26 Moorefields Rd. Kingsgrove.

The development includes the demolition of one single storey stand-alone dwelling and the installation of a row of townhouses with an underground carpark.

Site assessment was conducted by Liam Strachan AQF Level 5 Arborist on Monday 7th June 2021.

The purpose of this report is to provide information on any trees that may be affected by the proposed demolition and development at 26 Moorefields Rd. Kingsgrove.

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, structural condition including potential mitigation options, priority rating for all recommended works.
- Ascertain Tree Protection Zones and Structural Root Zones.
- Determine the impact of the development on all of the trees.
- The amenity of adjoining neighbours and members community is to be considered.
- That report contains all relevant information as outlined in Canterbury Council DCP 2012.

Conclusions and Recommendations include:

The following trees should be removed and replaced:

- T3 *Cupressus sp.*
- T4 *Dracaena marginata*
- T5 *Ficus benjamina*
- T6 *Cupressus sp.*

The following trees may be retained and subject to the following tree protection measures;

- T1 *Lagerstoemia indica* (exclusion zone)
- T2 *Callistemon viminallis* (trunk protection, exclusion zone)
- T7 *Cotoneaster* (sufficient exclusion zone afforded by property boundary fence)
- T8 *Jacaranda mimosifolia* (sufficient exclusion zone afforded by property boundary fence)

The following trees maybe retained following the subscribed works;

- T12-15 *camelia* (Reduction pruning of overhang to current building back to boundary)
- T8 *Jacaranda mimosifolia* (light reduction pruning back to boundary fence)

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3 INTRODUCTION

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3.1 SCOPE

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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.

4 METHOD

4.1 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	• Canterbury Council DCP 2012. • Canterbury Council LEP 2012.
Drawings Reviewed	• Morfosis Architects Dwg No. DA200 • Morfosis Architects Dwg No. DA201 • Morfosis Architects Dwg No. DA202 • Morfosis Architects Dwg No. DA300 • Morfosis Architects Dwg No. DA301 • Morfosis Architects Dwg No. DA302 • RGM Property Surveys Dwg No. 171190/002
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.

4.2 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.

4.3 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.

4.4 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.

4.5 REFERENCE DOCUMENTS

This report was written in coordination with:

- Australian Standard AS4970-2009 Protection of Trees on Development Sites
- Canterbury Council DCP 2012.
- Canterbury Council LEP 2012.
- Morfosis Architects Dwg No. DA200
- Morfosis Architects Dwg No. DA201
- Morfosis Architects Dwg No. DA202
- Morfosis Architects Dwg No. DA300
- Morfosis Architects Dwg No. DA301
- Morfosis Architects Dwg No. DA302
- RGM Property Surveys Dwg No. 171190/002

4.6 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.

4.7 SIGNIFICANCE IN THE ENVIRONMENT.

Trees are subject to the following legislation:

- Biodiversity Conservation Act NSW (BIO Act 2016): Provides provisions for conserving biodiversity.
- Threatened Species Conservation Act NSW (1995 TCS Act): Provides provisions for conserving threatened species, populations and ecological communities of animals and plants as well as managing key threatening processes.
- Environmental Protection and Biodiversity Conservation Act NSW (EPBC Act 1999): Provides provision to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places.
- Biosecurity Act NSW (BIO Act 2015): Refers to the protection of native plant communities, reducing the risk to human's health and the risk to agricultural production from invasive weeds.
- NSW Bushfire Brigade 10/50 Legislation is not enforced for this site.

4.8 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.

4.9 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.

5 FINDINGS

5.1 THE SITE

The site contains one single storey stand-alone dwelling.

Site topography is level and pre-development soil is classified as 9130bt Blacktown residual soil.

5.2 SUMMARY OF SITE INSPECTION DATA

Generally, the sites vegetation was observed to have a mixture of exotic and endemic tree canopy. The existing surveyed trees are shown in Appendix 1.

Other vegetation on site does not meet the dimensions for Canterbury Bankstown Council to consider them as trees, prescribed trees defined as all trees that are 5 metres or more in height as per Canterbury Bankstown Tree Management Order 2015.

5.3 SUMMARY OF PROPOSED DEVELOPMENT

The development includes the demolition of one single storey stand-alone dwelling and the installation of a row of townhouses with an underground carpark.

5.4 CURRENT TREE POPULATION

A total of eight trees were assessed in total.

The tree population comprised of:

Table 2

Species	Origin	No. Of Trees
Lagerstroemia indica **(Crepe Myrtle)**	Exotic	T1
Callistemon viminallis ***(*****Bottlebrush)**	Australian native	T2
Cupressus sp. **(Conifer)**	Exotic	T3, T6
Dracaena marginata **(Dragon tree)**	Exotic	T4
Ficus benjamina **(weeping fig)**	Australian native	T5
Cotoneaster sp.	Exotic	T7
Jacaranda mimosifolia **(jacaranda)**	Exotic	T8

T1 and T2 are located at the front of the property on the council owned nature strip.

T7 and T8 are located in the adjoining property of 24 Moorefields Rd. Kingsgrove.

5.5 TREE SIGNIFICANCE

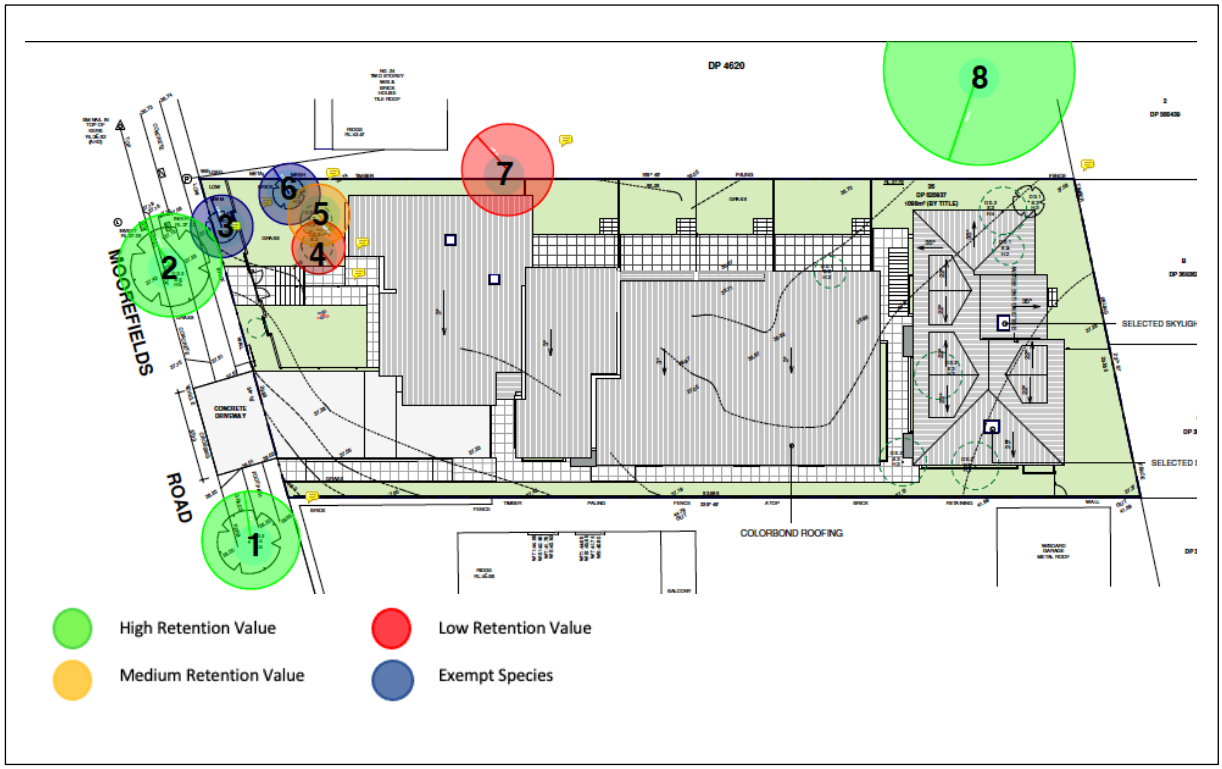
Retention values were recorded using IACA Significance of a Tree, Assessment Rating System (STARS). Results are published in the table below.

Table 3

Retention Value	Low	Med	High
Tree No.	T4, T7	T3, T5, T6	T1, T2, T8

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

5.6 RETENTION VALUE MAP



6 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 plans located at the rear of this document. At this time no exploratory root investigation has been undertaken, it may be recommended based on the findings within this report.

6.1 EXEMPT TREES

The following trees do not meet the dimensions required of a prescribed tree as per Canterbury Council DCP 2012 part B3 Tree Management order.

Table 4

Tree No	Genus Species (Common Name)	Height (m)	Canopy Spread (m)				Diameter (m)		SRZ	TPZ	Age Class	Health	Structure	E.L.E	Landscape Significance	Arborist Notes
			N	E	S	W	@1.4m	Base								
3	Cupressus species (Conifer)	3.5	1	1	1	1	0.2	0.2	1.7	**2.4**	SEMI MATURE	GOOD	GOOD	>40	MEDIUM	Under 5m exempt tree
4	Dracaena marginata (dragon tree)	4	1	1	1	1	0.27	0.29	2.0	**3.2**	SEMI MATURE	POOR	POOR	<1-15	LOW	Under 5m exempt tree
6	Cupressus species (Conifer)	3	1	1	1	1	0.21	0.22	1.8	**2.5**	SEMI MATURE	GOOD	GOOD	>40	MEDIUM	Under 5m exempt tree

6.2 TREES WITHIN DEVELOPMENT FOOTPRINT

Table 5

Tree No	Genus Species (Common Name)	Height (m)	Canopy Spread (m)				Diameter (m)		SRZ	TPZ	Age Class	Health	Structure	E.L.E	Landscape Significance	Arborist Notes
			N	E	S	W	@1.4m	Base								
5	Ficus benjimina (Weeping Fig)	6	4	3	3	1	0.23	0.24	1.8	**2.8**	YOUNG	FAIR	FAIR	>40	MEDIUM	Growing in bed at front of current building growing over roof, will not survive demolition.

6.3 TREES WITH MAJOR INCURSIONS

Table 6

Tree No	Genus Species (Common Name)	Height (m)	Canopy Spread (m)				Diameter (m)		SRZ	TPZ	Age Class	Health	Structure	E.L.E	Landscape Significance	Arborist Notes		
			N	E	S	W	@1.4m	Base									Inc. %	Retainable
2	Callistemon viminalis (Weeping Bottlebrush)	8	3	3	3	3	0.46	0.52	2.5	**5.5**	MATURE	GOOD	FAIR	>40	HIGH	Street tree	15%	The current property boundary is separated by a boundary wall. It is extremely unlikely that any major roots will have passed under the footing at that distance from the tree.
7	Cotoneaster sp.	5	3	3	3	3	0.22	0.3	2.0	**2.6**	MATURE	GOOD	GOOD	15>40	LOW	Weed species	20%	Undesirable weed species should be pruned back to the boundary fence.

6.3.1 DISCUSSION

6.3.1.1 T2 CALLISTEMON VIMINALLIS

The current property boundary is separated by a boundary wall. It is extremely unlikely that any major roots will have passed under the footing at that distance from the tree. Although considered an unallowable incursion as per AS4970, trees can survive 15% incursions. The tree will also be subject to tree protection measures including trunk protection and TPZ fencing.

6.3.1.2 T7 OLEANDER SP.

T7 is an undesirable weed species located in the adjoining property of 24 Moorefields Rd. The tree should be pruned back to the boundary.

6.4 TREES WITH MINOR INCURSIONS

Table 7

Tree No	Genus Species (Common Name)	Height (m)	Canopy Spread (m)				Diameter (m)		SRZ	TPZ	Age Class	Health	Structure	E.L.E	Landscape Significance	Arborist Notes		
			N	E	S	W	@1.4m	Base									Inc. %	Retainable
8	Jacaranda mimosifolia (Jacaranda)	12	8	8	8	8	0.6	8	7.9	**7.2**	MATURE	GOOD	GOOD	>40	HIGH	Neighbours tree	0%	No excavation within rootzone. Tree canopy exceeds TPZ and will require minor pruning works to prevent damage being sustained throughout build.

6.4.1 DISCUSSION

No excavation is taking place within the TPZ of T8, The TPZ has been expanded to include the canopy of the tree. Some minor reduction pruning should be undertaken to prune the tree back to the boundary in order to prevent branches being torn and damaged. Please see Appendix 6 Pruning Specification.

6.5 TREES UNNAFFECTED BY PROPOSED DEVELOPMENT

Table 8

Tree No	Genus Species (Common Name)	Height (m)	Canopy Spread (m)				Diameter (m)		SRZ	TPZ	Age Class	Health	Structure	E.L.E	Landscape Significance	Arborist Notes
			N	E	S	W	@1.4m	Base								
1	Lagerstroemia indica (Crepe Myrtle)	7	2	2	2	2	0.24	0.24	1.8	**2.9**	MATURE	GOOD	FAIR	>40	HIGH	Street tree

6.5.1 DISCUSSION

No excavation within TPZ. The tree will be subject to tree protection fencing as per AS4970 Protection of Trees on Development Sites

7 CONCLUSIONS AND RECOMMENDATIONS

The following trees should be removed and replaced:

- T3 *Cupressus sp.*
- T4 *Dracaena marginata*
- T5 *Ficus benjamina*
- T6 *Cupressus sp.*

The following trees may be retained and subject to the following tree protection measures;

- T1 *Lagerstoemia indica* (exclusion zone)
- T2 *Callistemon viminallis* (trunk protection, exclusion zone)
- T7 *Cotoneaster* (sufficient exclusion zone afforded by property boundary fence)
- T8 *Jacaranda mimosifolia* (sufficient exclusion zone afforded by property boundary fence)

The following trees maybe retained following the subscribed works;

- T12-15 *camelia* (Reduction pruning of overhang to current building back to boundary)
- T8 *Jacaranda mimosifolia* (light reduction pruning back to boundary fence)

7.1 TREE PROTECTION MEASURES

7.1.1 FENCING

It will not be practical or possible to erect a TPZ fence encompassing the entire TPZ as access will be required to perform the works, however, an exclusion zone should be erected around the tree to limit activities that take place within the TPZ. *AS4970-2009 Protection of Trees on Development sites* states that the following activities are prohibited within the TPZs;

- Storage.
- Preparation of chemicals, including preparation of cement products.
- Refueling.
- Dumping of waste.
- Washing down and cleaning of equipment.

AS 4687 specifies applicable fencing requirements, 1.8M Mesh fence. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area.

Fencing must

- be 1.8m high fully supported chainmesh protective fencing. The fencing shall be secure and fastened to prevent movement. The fencing shall have a lockable opening for access. Roots greater than 40mm in diameter shall not be pruned, damaged or destroyed during the installation or maintenance of the fencing. The fencing shall not be moved, altered or removed without the approval of the Project Arborist;
- have a minimum of two signs that include the words “Tree Protection Zone – Keep Out”. Each sign shall be a minimum size of 600mm x 500mm and the name and contact details of the Project Arborist. Signs shall be attached facing outwards in prominent positions at 10 metre intervals or closer where the fence changes direction. The signs shall be visible within the site;

- be kept free of weeds and, except where the existing surface is grass, grass. Weeds shall be removed by hand; and
- unless the existing surface is grass, have mulch installed and maintained to a depth of 75mm.

Fencing should be installed before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. Fencing must be clearly signed and adhere to the standard as outlined in *AS4970-2009 Protection of Trees on Development Sites*.

7.1.2 TRUNK PROTECTION

Trunk protection as outlined in *Australian Standard AS4970-2009 Protection of Trees on Development Sites* should be installed on T1. This should be installed by or signed off by an AQF Level 5 arborist.

Trunk protection is achieved when the vertical trunk of exposed trees is protected by the placement of 1.8m lengths of 50 x 100mm hardwood timbers, spaced vertically, at 150mm centres and secured by 2mm wire at 300mm wide spacing over suitable protective padding material e.g. Jute Matting. The trunk protection shall be maintained intact until the completion of all work on site. Additionally, smaller fences can be erected around the trunks to avoid damage.

Trunk protection should be installed before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, trunk protection should be certified by the project arborist and adhere to the standard as outlined in *AS4970-2009 Protection of Trees on Development Sites*.

7.1.2.1 PRUNING RETAINED TREES

T12-T15 will require pruning in order to facilitate the new build, such works should be directed by an AQF Level 5 project arborist and undertaken by a minimum AQF Level 3 arborist adhering to *AS4373-2007* and NSW Workcover Code of Practice *Amenity Tree Industry 1998* and Safe Work *Guide to Managing Risks of Tree Trimming and Removal Work 2016*.

7.2 HOLD POINTS, INSPECTION AND CERTIFICATION

To ensure all plans are implemented hold points have been specified in a schedule of works (below). Once each stage is reached the work will be inspected and certified by the project arborist and the next stage may commence.

7.2.1 SCHEDULE OF WORKS AND RESPONSIBILITIES

Table 9

Hold Point	Task	Responsibility	Certification	Timing of Inspection
1	Install TPZ Fencing, trunk and branch protection.	Principle Contractor	Project Arborist	Prior to site establishment.
2	Final inspection of Trees by Project Arborist	Principle Contractor	Project Arborist	Prior to issue of occupancy certificate.

8 WORKS CITED

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QTRA. (2018). *QTRA*. Retrieved January 30, 2019, from https://www.qtra.co.uk/cms/index.php?section=4

Shigo, A. L. (1991). *Modern Arboriculture.* Snohomish: Shigo and Trees, Associates LLC.

9 GLOSSARY OF TERMS

Borers: larvae beetles, moths or wasps that cause damage within the phloem/cambium, sapwood and heartwood of the tree. Borers generally attack weakened trees or stressed trees.

Cambium: The layer of cells between the exterior bark and the inner wood which control cell division, hence stem, branch and shoot expansion.

Cavity: A void, initiated by a wound within the trunk, branches or roots. These voids are referred to as hollows.

Co-dominant: Stems or branches equal in size and relative importance.

Crown: The width of the foliage in the upper canopy of the assessed tree to the four cardinal points.

Crown lifting: The removal of the lower branches of the tree.

Crown thinning: The portion of the tree consisting of branches and leaves and any part of the stem from which branches arise.

Drip line: Where the canopy releases water shed from the foliage during precipitation.

DBH/Diameter: Diameter of trunk at 14meters in height of assessed tree.

Dead wooding: The removal dead branches from a tree.

Dieback: Tree deterioration where the branches and leaves die.

Flush cut: A cut that damages or removes the branch collar or removes the branch and stem tissue and is inconsistent with the branch attachment as indicated by the bark branch ridge.

Genus/ Species: Identified using its scientific name. Where the species name is not known, species is used. The common name for trees may vary considerably in each area of geographical differences and so will not be used in the field survey.

Height: Height has been estimated to + / - 2 meters.

Maturity: Tree age, Assessed as over mature (last 1/3 of life expectancy), mature (1/3 to 2/3 life expectancy) and semi mature (less than 1/3 life expectancy).

Remedial (restorative) pruning: includes: Removing damaged, deadwood; trimming diseased or infested branches. Trimming branches back to undamaged tissue in order to induce the production of shoots from latent or adventitious buds, from which a new crown will be established.

SRZ- Structural Root Zone: An area within the trees root zone in which roots stabilize the tree. Roots cut in this zone can cause instability and lead to anchorage loss.

Structural Integrity: Describes the internal supporting timber. (Substantial to frail)

Target: risk targets are people, property or activities that could injure, damage or disrupted.

Tree Numbering: All trees listed in the tree survey have been numbered and plotted.

TULE- Tree Useful Life

Expectancy: An estimation of the trees useful life expectancy using appropriate industry methods with an inspection regime.

Vigour: This is an indication of the tree health. Trees have either been assessed as Good Vigour, Normal Vigour or Low Vigour.

10 TREE SCHEDULE

Tree No	Genus Species (Common Name)	Height (m)	Canopy Spread (m)				Diameter (m)		SRZ	TPZ	Age Class	Health	Condition	E.L.E	Landscape Significance	Arborist Notes
			N	E	S	W	@1.4m	Base								
1	Lagerstroemia indica (Crepe Myrtle)	7	2	2	2	2	0.24	0.24	1.8	**2.9**	MATURE	GOOD	FAIR	>40	HIGH	Street tree
2	Callistemon viminalis (Weeping Bottlebrush)	8	3	3	3	3	0.46	0.52	2.5	**5.5**	MATURE	GOOD	FAIR	>40	HIGH	Street tree
3	Cupressus species (Conifer)	3.5	1	1	1	1	0.2	0.2	1.7	**2.4**	SEMI MATURE	GOOD	GOOD	>40	MEDIUM	Under 5m exempt tree
4	Dracaena marginata (dragon tree)	4	1	1	1	1	0.27	0.29	2.0	**3.2**	SEMI MATURE	POOR	POOR	<1-15	LOW	Under 5m exempt tree
5	Ficus benjimina (Weeping Fig)	6	4	3	3	1	0.23	0.24	1.8	**2.8**	YOUNG	FAIR	FAIR	>40	MEDIUM	
6	Cupressus species (Conifer)	3	1	1	1	1	0.21	0.22	1.8	**2.5**	SEMI MATURE	GOOD	GOOD	>40	MEDIUM	Under 5m exempt tree
7	Cotoneaster sp.	5	3	3	3	3	0.22	0.3	2.0	**2.6**	MATURE	GOOD	GOOD	15>40	LOW	Weed species
8	Jacaranda mimosifolia (Jacaranda)	12	8	8	8	8	0.6	8	7.9	**7.2**	MATURE	GOOD	GOOD	>40	HIGH	

11 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.

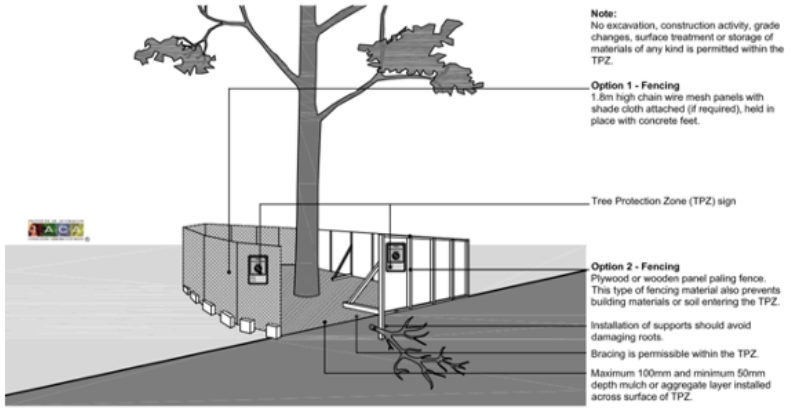
IACA 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, www.iaca.org.au

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

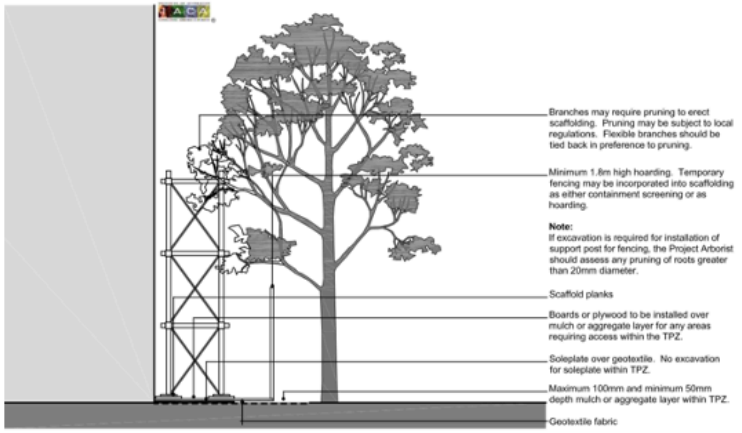
Legend for Matrix Assessment	
	Priority for Retention (High) – These trees are considered important for retention and should be retained and protected. Design modification and re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard 4970 *Protection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

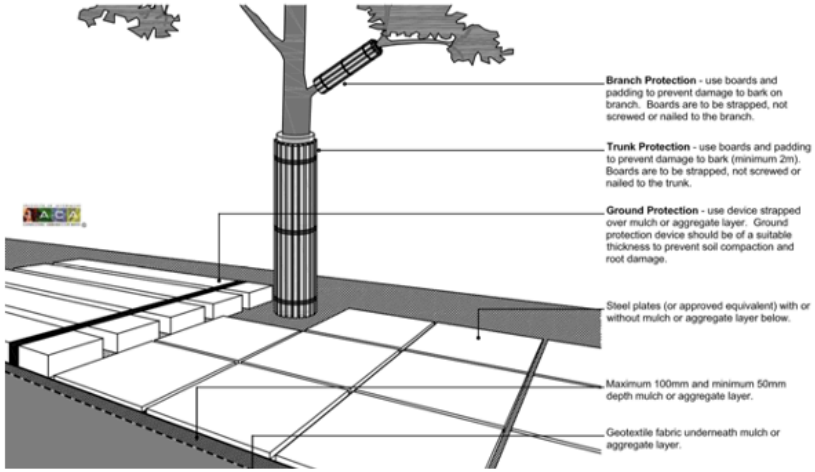
12 APPENDIX 3: TREE PROTECTION (GENERIC)



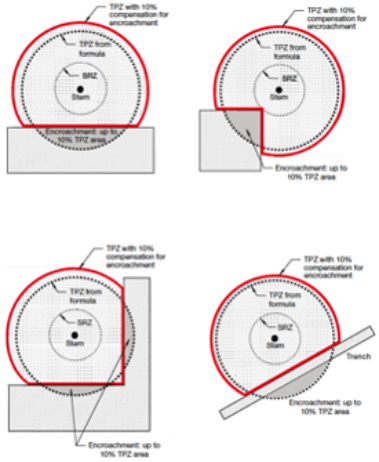
1. Tree Protection Fencing



2. Scaffolding Within TPZ

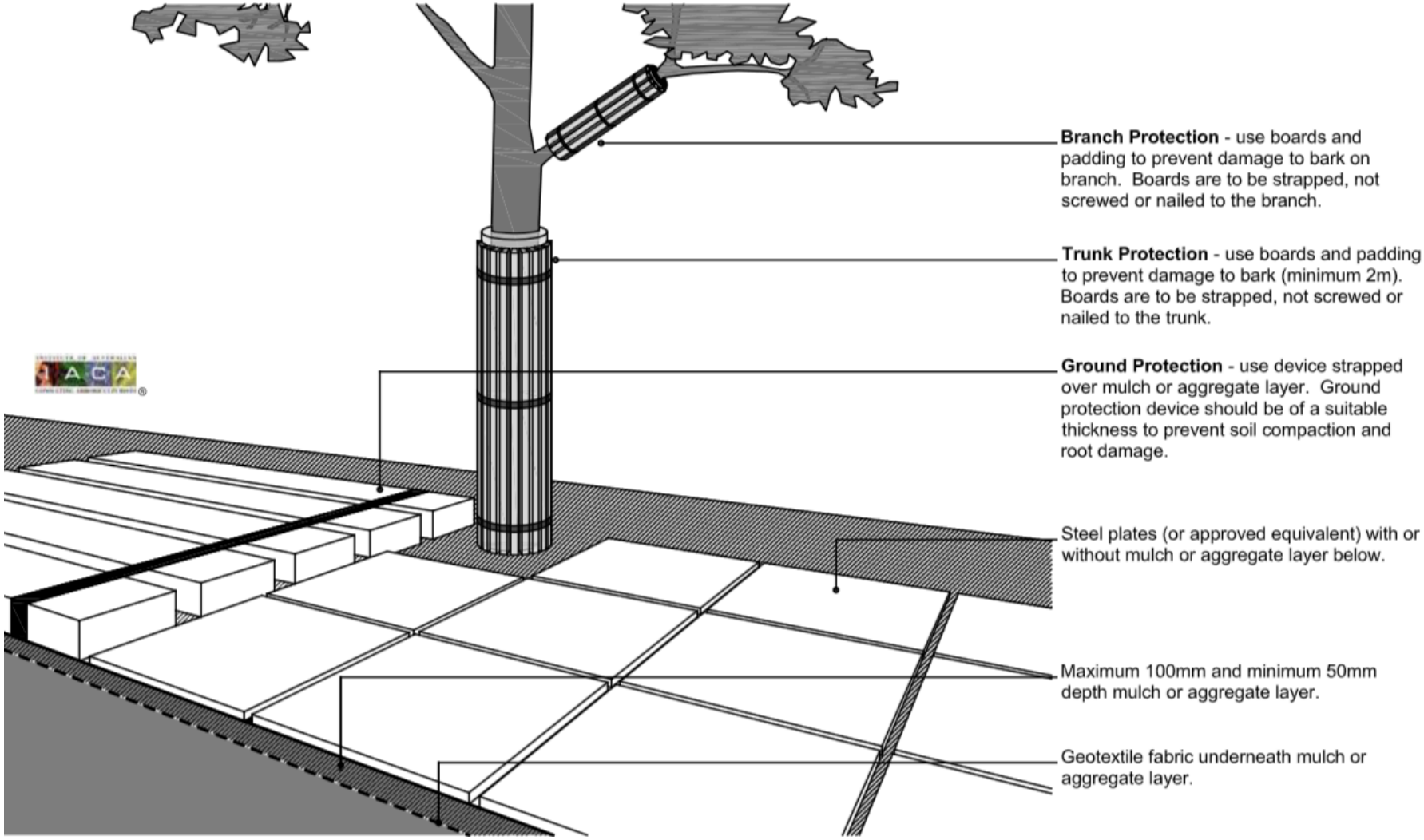


3. Examples Of Trunk, Branch and Ground Protection

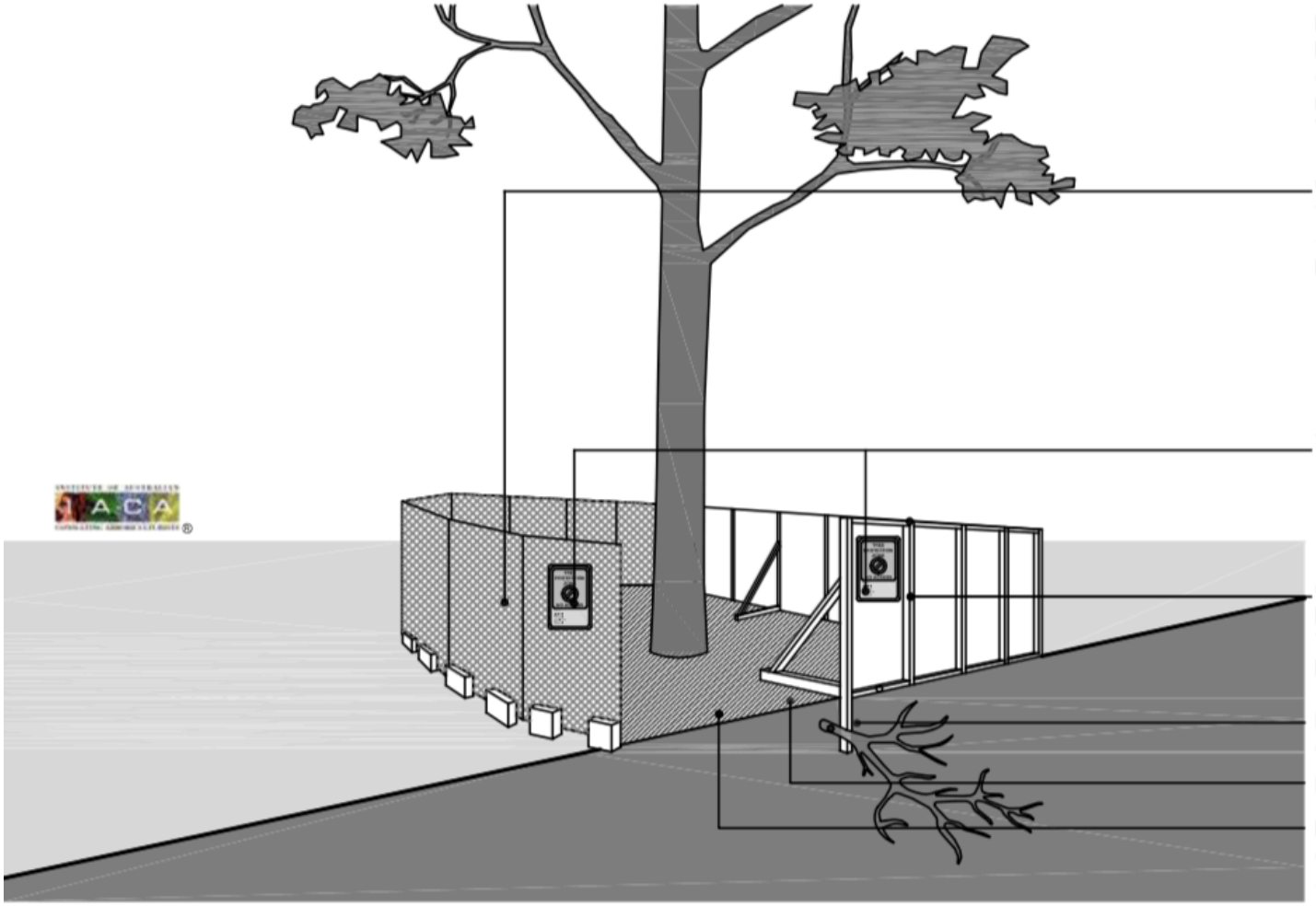


4. TPZ Encroachment Compensation

13 APPENDIX 4: TRUNK PROTECTION



14 APPENDIX 5: TPZ FENCING



15 APPENDIX 6: PRUNING SPECIFICATION

16 SITE DRAWINGS

16.1 TPZ DIAGRAM

16.2 TREE PROTECTION PLAN

16.2.1 SITE DRAWING LEGEND

Energy Rating Certificate Number ZERBHVC1CF

- ☐ single-dwelling rating — 5.5av stars
- ☑ multi-unit development (attach listing of ratings) — heating 31.3av MJ/m²; cooling 24.7av MJ/m²

If selected, data specified is the average across the entire development

Recessed downlights confirmation: ☐ Rated with ☑ Rated without

Assessor Name/Number: Sowmya Sastry VIC/BDAV/10/1014

Assessor Signature: _____ Date: 21/12/17

MORFOSIS ARCHITECTS
PTY LTD
Suite 8 695 The Horsley Drive, Smithfield NSW 2164
ABN 44 609 593 473
P (02) 8712 5606 / F (02) 8712 5606 / M 0423777623

GENERAL NOTES

1. ALL DIMENSIONS AND FLOOR AREAS TO BE VERIFIED BUILDIER PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORK.
2. ANY DESCREPANCIESW ARE TO BE CONFIRMEND BY THE DESIGNER.
3. LEVELS SHOWN ARE APPROXIMATE UNLESS ACCOMPANIED BY REDUCED LEVELS BY A REGISTERED SURVEYOR.
4. FIGURED DIMENSIONS ARE TO BE TAKEN IN PREFERENCE TO SCALING.
5. ALL BOUNDARY CLEARANCE MUST BE VERIFIED BY THE SURVEYOR PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORK.
6. WHERE ENGINEERING OR HYDRAULIC DRAWINGS ARE REQUIRED , SUCH MUST TAKE PREFERENCE TO THIS DRAWING.
7. STORMWATER TO BE CONNECTED AND DISCHARGED TO COUNCIL'S REQUIREMENTS AND TO AS 3500.3
8. ALL SERVICES TO BE LOCATED AND VERIFIED BY THE BUILDER WITH THE RELEVANT AUTHORITIES PRIOR TO THE COMMENCEMNET OF ANY BUILDING.

ISSUE	AMENDMENTS	DATE
I	AMENDMENTS	10/03/2021
H	AMENDMENTS	01/03/2021
G	AMENDMENTS	14/09/2020
F	AMENDMENTS	26/08/2020
E	DA LODGEMENT	19/12/2017
D	FACADES	17/11/2017
C	FACADES	15/11/2017
B	AMENDMENTS	1/11/2017
A	INITIAL DESIGN	12/10/2017

ISSUE: I

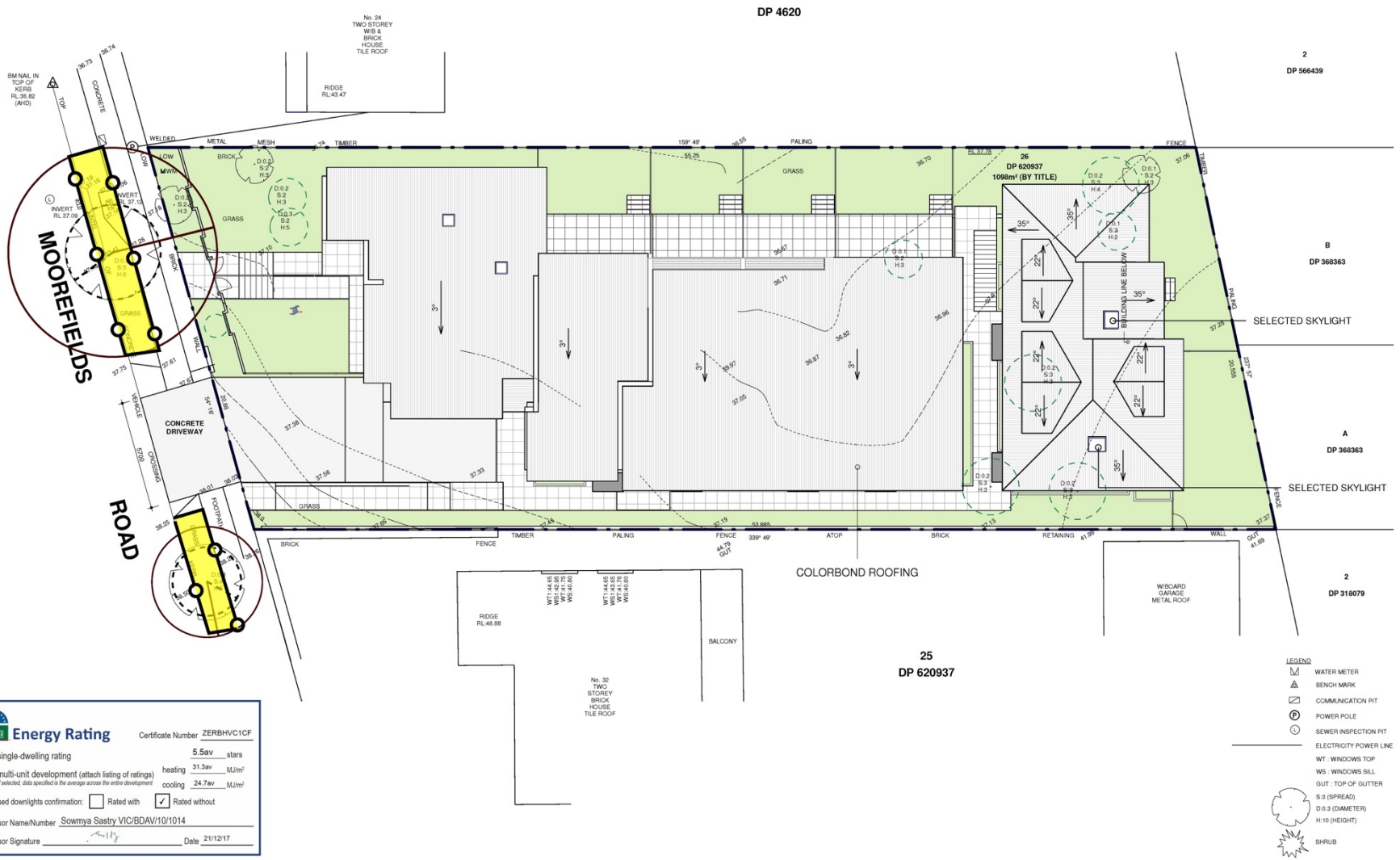
CLIENT

DRAWING NUMBER: DA200

DRAWING TITLE: SITE/ROOF PLAN

SCALE: As indicated

PROJECT: 26 MOORFIELDS STREET KINGSGROVE



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Assessor Name/Number: Sowmya Sastry VIC/BDAV/10/1014

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