



Project No: LENN/VILL/20 Report No: LENN/VILL/AIA/C

ARBORICULTURAL IMPACT ASSESSMENT TREE PROTECTION SPECIFICATION

**Lennox Village Shopping Centre
Great Western Highway & Pyramid Street
Emu Plains**

Prepared for: CHALLENGER INVESTMENT PARTNERS

3rd July 2020

Revision C

Authors:

Anna Hopwood

Grad. Cert (Arboriculture)
Dip. Horticulture (Arboriculture)
Dip. Horticulture (Landscape Design)

Martin Peacock

BSc (hons.) Arboriculture
Dip. Horticulture (Landscape Design)
N Dip. Horticulture

p. 0404 424 264 | f. 02 9012 0924
po box 146 summer hill 2130
info@treeiQ.com.au
abn 62 139 088 832

treeiQ.com.au



Contents

1.0	INTRODUCTION	3
1.1	Background	3
1.2	The Proposal	3
2.0	RESULTS	4
2.1	The Site	4
2.2	The Trees	4
3.0	ARBORICULTURAL IMPACT ASSESSMENT	5
3.1	Tree 10	5
3.2	Tree 10A	6
3.3	Trees 54 & 58	6
3.4	Tree 55	6
3.5	Trees 56 & 57	7
3.6	Trees 59 & 60	7
3.7	Tree 61	7
3.8	Other Works within TPZ Areas	8
3.9	Replacement Planting	8
4.0	CONCLUSION	8
5.0	LIMITATIONS & DISCLAIMER	10
6.0	BIBLIOGRAPHY & REFERENCES	10
7.0	APPENDICES	11
	Appendix 1: Methodology	12
	Appendix 2: Plans	14
	Appendix 3: Tree Assessment Schedule	15
	Appendix 4: Plates	17
	Appendix 5: Tree Protection Specification	18
	Appendix 6: Typical Tree Protection Details	21

1.0 INTRODUCTION

1.1 Background

1.1.1 This Arboricultural Impact Assessment and Tree Protection Specification Report was prepared Challenger Investment Partners in relation to the proposed development works at Lennox Village Shopping Centre. The purpose of this Report is to undertake a Visual Tree Assessment¹ (VTA), determine the impact of the proposed works on the trees, and where appropriate, recommend the use of sensitive construction methods to minimise adverse impacts. The tree identification numbers within this report utilise those allocated in a previous Arboricultural Risk Assessment Report (prepared by Sydney Arbor Trees, dated April 2020).

1.1.2 In preparing this Report, the author has considered the objectives of the following:

- *State Environmental Planning Policy Vegetation in Non-Rural Areas (2017)*
- *Penrith Local Environmental Plan (2010)*
- *Penrith City Council Tree & Vegetation Removal Fact Sheet (not dated)*
- *Australian Standard 4970 Protection of Trees on Development Sites (2009)*
- *Australian Standard 4373 Pruning of Amenity Trees (2007)*
- *Australian Standard 2303 Tree Stock for Landscape Use (2015)*
- *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)*

Refer to Methodology (**Appendix 1**)

1.1.3 This impact assessment is based on an assessment of the following supplied documentation/plans only:

- Proposed Ground Floor Plan - Courtyard (issue P1) – prepared by i2C Markup, dated 17.06.2020
- Landscape Tree Protection & Site Location – prepared by Lindy Lean Landscape Architect, dated 02.07.2020
- Landscape Concept Plan – prepared by Lindy Lean Landscape Architect, dated 02.07.2020
- Landscape Planting – prepared by Lindy Lean Landscape Architect, dated 02.07.2020

Refer to Plans (**Appendix 2**)

1.2 The Proposal

1.2.1 The supplied plans show the proposed works include:

- Demolition of a section of carparking and landscaping
- Partial demolition of the existing supermarket building
- Construction of an extension to the existing supermarket
- Construction of a new service truck access lane
- Construction of a new condenser enclosure
- Relocation of the existing plant and compactor enclosure

Refer to Plans (**Appendix 2**)

¹ Mattheck & Breloer (2003)

2.0 RESULTS

2.1 The Site

- 2.1.1 Lennox Village Shopping Centre is located on the corner of the Great Western Highway and Pyramid Street, Emu Plains. For the purpose of this report, the site comprises the Aldi supermarket, northern section of the carpark and adjacent landscape area.
- 2.1.2 The site is generally level with ground levels within the landscape area bordering the carpark being slightly mounded towards the northern corner of the site.
- 2.1.3 An additional landscaped courtyard area is located on the southern side of the existing shopping centre.

2.2 The Trees

- 2.2.1 Eleven (11) trees were assessed using the Visual Tree Assessment² (VTA) criteria and notes. The trees comprise of a mix of locally indigenous, Australian-native and exotic species. None of the trees are listed within Schedule 5 (Environmental Heritage) of the *Penrith Local Environmental Plan (2010)*.³ Penrith City Council has confirmed that no Significant Tree Register is currently available for the Local Government Area.⁴
- 2.2.2 Trees 54 and 58 *Corymbia maculata* (Spotted Gum) are a locally indigenous and representative tree species of the Cumberland Plain Woodland. Cumberland Plain Woodland is listed as a *Critically Endangered* ecological community under the NSW *Biodiversity Conservation Act (2016)* and the Commonwealth *Environment Protection and Biodiversity Conservation Act (1999)*. However, these trees are not sufficiently large to be remnant specimens and it is assumed they were planted as part of the development of the shopping centre site.
- 2.2.3 Trees 56 and 57 *Eucalyptus nicholii* (Narrow Leaf Peppermint) are located within the landscape area to the north of the carpark. This species is an Australian-native which naturally occurs in the New England Tableland on the NSW-Queensland border.⁵ *Eucalyptus nicholii* (Narrow Leaf Peppermint) is listed as *Vulnerable* under the NSW *Biodiversity Conservation Act (2016)* and the Commonwealth *Environment Protection & Biodiversity Conservation Act (1999)*. However, these trees are planted specimens and are not a component of a locally indigenous vegetation community.
- 2.2.4 Trees 59 and 60 are listed as exempt species in the *Penrith City Council Tree & Vegetation Removal – Protected & Exempt Vegetation Factsheet*.⁶ *Ailanthus altissima* (Tree of Heaven) is also listed as a controlled weed under the NSW *Biosecurity Act (2015)* and identified in the *Greater Sydney Regional Strategic Weed Management Plan (2017– 2022)* as it is considered a risk to the environment and human health.
- 2.2.5 As required by Clause 2.3.2 of *Australian Standard 4970 Protection of Trees on Development Sites (2009)*, each tree (and tree group) has been allocated a Retention Value. TreeIQ allocates one of four Retention Value categories based on a combination of Landscape Significance and Useful Life Expectancy (ULE). The assessment of Landscape Significance and ULE involves a degree of subjectivity and there will be a range of tree quality and value within each of the Retention Value categories. The Retention Values do not consider any proposed development works and are not a schedule for tree retention or removal. The trees have been allocated one of the following Retention Values:

² Mattheck & Breloer (2003)

³ Penrith City Council (2010)

⁴ Penrith City Council (2019)

⁵ NSW Office of Environment and Heritage (2011)

⁶ Penrith City Council (2019)

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

Refer to Tree Assessment Schedule (**Appendix 3**)

3.0 ARBORICULTURAL IMPACT ASSESSMENT

3.1 Tree 10

- 3.1.1 Tree 10 was identified as *Corymbia citriodora* (Lemon Scented Gum) and is located in the courtyard area on the southern side of the shopping centre complex. The tree is of high Landscape Significance and has been allocated a Retention Value of *Consider for Retention*.
- 3.1.2 The supplied plans show Tree 10 is proposed for retention with a deck, play equipment and privacy screen proposed within its TPZ. The extent of work represents a *Major Encroachment* as defined by *Australian Standard 4970-2009 Protection of Trees on Development Sites (AS-4970)*.
- 3.1.3 Tree sensitive design and construction methods can be used to minimise impacts of development on tree health and reduce conflict between trees and built structures. Much of the information published in this field has been incorporated into best practice guidelines and standards (i.e. *British Standard 5837 Trees in Relation to Design, Demolition and Construction 2012* & *Australian Standard 4970-2009 Protection of Trees on Development Sites (AS-4970)*). Specifically, Clause 3.3.4 of AS-4970 notes that design factors and tree sensitive methods can be used to minimize the impact of the encroachment.
- 3.1.4 The following tree sensitive design and construction methods should be used to minimise adverse impacts:
- Existing ground levels within the TPZ should be maintained.
 - The deck and subframe, play equipment and privacy screen (and other landscape fixtures as required) should be supported on isolated piered footings (with all other parts of the structures positioned above existing ground levels). Excavation for footings within the TPZ should be undertaken using tree sensitive methods (hand/hydrovac/airspace etc) and footing locations should be flexible and/or the footing design modified to enable the retention of roots (>25mmØ) as required by the Project Arborist.
 - A minimum clearance of 200mm should be provided between the tree, deck and sub-frame and the deck and structures should be cut away as required to accommodate the root crown or any mounding at the base of the tree. To ensure accuracy, clearance should be determined on site during construction rather from survey drawings. Provision should be made in the design for future cutting back of the structure to accommodate tree growth.
- 3.1.5 It should be noted that Tree 10 is of a significant age and may be less tolerant of construction impacts than younger, more vigorous trees and will need to be carefully protected during the construction period. In addition, the tree is likely to develop increasing volumes of deadwood as the it ages which will need to be periodically removed.
- 3.1.6 Given the tree's fair health, age class and siting within a future playground area, it would be prudent to undertake an aerial inspection of tree's crown prior the commencement of the building works. The inspection should be undertaken by an AQF Level 5 Arborist and provide a detailed assessment of all defects within the tree's crown.

3.2 Tree 10A

- 3.2.1 Tree 10A was identified as *Phoenix canariensis* (Canary Island Date Palm) and is located in the courtyard area on the southern side of the shopping centre complex. This tree has been prefixed A as it was not included in the previous Arboricultural Risk Assessment Report (prepared by Sydney Arbor Trees, dated April 2020). The tree appears to be a self-sown specimen with low Landscape Significance and has been allocated a Retention Value of *Consider for Removal*.
- 3.2.2 The supplied plans show Trees 10A is to be removed as part of the landscape treatment for the courtyard. A new tree planting could replace the loss of the loss of canopy cover and amenity resultant from tree removal within a short timeframe. Tree 10A will need to be carefully removed using hand tools without damaging the adjacent Tree 10.

3.3 Trees 54 & 58

- 3.3.1 Trees 54 and 58 were identified as *Corymbia maculata* (Spotted Gum) and are located within the landscape area to the north of the carpark. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.
- 3.3.2 The supplied plans show Trees 54 and 58 are proposed for removal to accommodate the new condenser enclosure and service truck access lane. The stump of Tree 54 should be cut at ground level and left in-situ to protect the root system of the adjacent Tree 55.

3.4 Tree 55

- 3.4.1 Tree 55 was identified as *Melia azedarach* (White Cedar) and is located within the landscape area to the north of the carpark. The tree is of low Landscape Significance and has been allocated a Retention Value of *Consider for Removal*.
- 3.4.2 The supplied plans show Tree 55 is proposed for retention with the supermarket extension, condenser enclosure, relocated compactor and service truck access lane proposed within its TPZ. The extent of work represents a *Major Encroachment* as defined AS-4970. However, as an individual component of the works, the supermarket extension and service truck access lane represent a *Minor Encroachment* only and can be installed without the need for tree sensitive design and construction methods.
- 3.4.3 The following tree sensitive design and construction methods should be used to minimise adverse impacts:
- Existing ground levels within the TPZ should be maintained with the exception of the supermarket extension footprint and service truck access lane.
 - No over-excavation beyond the proposed footprint of the supermarket extension and service truck access lane should be undertaken.
 - Existing pavement and kerbs within the TPZ should be left in situ (where possible).
 - The condenser enclosure deck, subframe and acoustic screen should be constructed above existing grade supported on isolated piered footings as detailed in Section 3.1.4.
 - A minimum clearance of 200mm should be provided between the tree, deck, sub-frame and acoustic screen. To ensure accuracy, clearance should be determined on site during construction rather from survey drawings. Provision should be made in the design for future cutting back of the structures to accommodate tree growth.

- 3.4.4 Tree 55 will need to be pruned to provide clearance for the condenser enclosure and acoustic screen which will require the removal of the south-western 1st order stem. This stem arises from ground level and grows through the adjacent wire mesh fencing which has become completely occluded by the stem tissues. The south-western first order stem represents approximately 30-40% of the tree's total crown volume. However, as the tree is a healthy specimen, the pruning works should not significantly impact its health or Useful Life Expectancy.

Refer to Plates (Appendix 4).

- 3.4.5 Pruning works should be carried out by a Practicing Arborist. The Practicing Arborist should hold a minimum qualification equivalent (using the Australian Qualifications Framework) of Level 3 or above, in Arboriculture or its recognised equivalent. The Practicing Arborist should have a minimum of 3 years' experience in practical Arboriculture. Pruning work should be undertaken in accordance with *Australian Standard 4373: Pruning of Amenity Trees (2007)*, *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)* and other applicable legislation and codes.

3.5 Trees 56 & 57

- 3.5.1 Trees 56 and 57 were identified as *Eucalyptus nicholii* (Small Leaf Peppermint) and are located within the landscape area to the north of the carpark. The trees are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention*.
- 3.5.2 The trees are in fair health as evidenced by a reduction in crown density and the presence of moderate volumes of deadwood. Although these trees meet the criteria to be allocated a Retention Value of *Consider for Retention*, they have a short (5-15 years) Useful Life Expectancy (ULE) due to their late-mature age class and reduced health.
- 3.5.3 The supplied plans show Trees 56 and 57 are proposed for removal to accommodate the new service truck access lane.

3.6 Trees 59 & 60

- 3.6.1 Trees 59 and 60 were identified as *Ailanthus altissima* (Tree of Heaven) and are located in the landscape area to the north of the carpark on the Pyramid Street boundary. The trees are of low Landscape Significance and have been allocated a Retention Value of *Priority for Removal*.
- 3.6.2 The supplied plans show Trees 59 and 60 are proposed for removal to accommodate the new service truck access lane. New tree planting could replace the loss of the loss of canopy cover and amenity resultant from tree removal within a short timeframe.

3.7 Tree 61

- 3.7.1 Trees 61 was identified as *Eucalyptus saligna* (Sydney Blue Gum) and is located in the landscape area to the north of the carpark on the Pyramid Street boundary. The tree is of low Landscape Significance and has been allocated a Retention Value of *Consider for Removal*.
- 3.7.2 The supplied plans show Tree 61 is proposed for removal to accommodate the new service truck access lane. A new tree planting could replace the loss of the loss of canopy cover and amenity resultant from tree removal within a short timeframe.

3.8 Other Works within TPZ Areas

3.8.1 Demolition Works

Demolition works within TPZ areas should be supervised by the Project Arborist and utilise tree sensitive methods, ensuring demolition machinery/equipment does not contact the trees. Structures within a Structural Root Zone (SRZ) can contribute to tree stability by providing ballast to the rootplate or acting as a stop to the overturning of the rootplate. If possible, existing underground structures and sub-base layers should be left in situ and reused.

3.8.2 Underground Services

Underground services should be located outside of the TPZ areas. Where this is not possible, services should be installed using tree sensitive excavation (hand/hydrovac etc) methods with the services located around/below roots (>25mmØ) as required by the Project Arborist. Excavation using compact machinery (<2T) fitted with a flat bladed bucket is permissible where approved by the Project Arborist. Excavation using compact machinery should be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmØ).

3.8.3 Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1200mm below existing grade. Excavations for starting and receiving pits for boring equipment should be located outside of the TPZ areas or located to avoid roots (>25mmØ) as required by the Project Arborist. OSD tanks (where required) should be located outside of the TPZ areas.

3.8.4 Landscaping

The installation of plants/turf within the TPZ areas should be undertaken using hand tools and roots (>25mmØ) should be protected. No mechanical cultivation/ripping of soils should be undertaken within the TPZ areas. Excavation and installation of imported soil mixes should be excluded from the TPZ areas other than the installation of soil conditioners to a maximum depth of 50mm above the existing soil profile.

3.9 Replacement Planting

3.9.1 The supplied landscape plan shows that seven (7) *Melaleuca linariifolia* (Snow in Summer) are proposed to be planted to help off-set the loss of canopy cover and amenity resultant from the tree removal.

3.9.2 Replacement planting should be supplied in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use*.

4.0 CONCLUSION

4.1.1 Eleven (11) trees were addressed within this report and comprise of a mix of locally indigenous, Australian-native and exotic species.

4.1.2 The supplied plans show the proposed works include demolition of carparking and a section of the existing supermarket building, construction of a supermarket extension, service truck access lane, condenser enclosure and courtyard, and relocation of the existing plant and compactor enclosure.

4.1.3 The supplied plans show that nine (9) trees are proposed for removal as part of the works. These are Trees 10A, 54 and 56-61.

- 4.1.4 The supplied plans show that Trees 10 and 55 are to be retained as part of the proposed works and tree sensitive design and construction methods (as outlined within Section 3) should be used within their TPZ to minimize adverse impacts. Tree 55 will also need to be pruned to provide clearance to the condenser enclosure and acoustic screen. The trees should be protected in accordance with the Tree Protection Specification (**Appendix 5**).
- 4.1.5 The supplied landscape plan shows that seven (7) *Melaleuca linarifolia* (Snow in Summer) are proposed to help off-set the loss of canopy cover and amenity resultant from the tree removal. Replacement planting should be supplied in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use*.

5.0 LIMITATIONS & DISCLAIMER

TreeiQ takes care to obtain information from reliable sources. However, TreeiQ can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Report are visual aids only and are not necessarily to scale. This Report provides recommendations relating to tree management only. Advice should be sought from appropriately qualified consultants regarding design/construction/ecological/heritage etc issues.

This Report has been prepared for exclusive use by the client. This Report shall not be viewed by others or for any other reason outside its intended target or without the prior written consent of TreeiQ. Unauthorised alteration or separate use of any section of the Report invalidates the Report.

Many factors may contribute to tree failure and cannot always be predicted. TreeiQ takes care to accurately assess tree health and structural condition. However, a tree's internal structural condition may not always correlate to visible external indicators. There is no warranty or guarantee, expressed or implied that problems or deficiencies regarding the trees or site may not arise in the future. Information contained in this report covers only the trees assessed and reflects the condition of the trees at the time of inspection. Additional information regarding the methodology used in the preparation of this Report is attached as Appendix 1. A comprehensive tree risk assessment and management plan for the trees is beyond the scope of this Report.

Reference should be made to any relevant legislation including Tree Management Controls. All recommendations contained within this Report are subject to approval from the relevant Consent Authority.

This Report is based on Standards Australia Ltd copyrighted material that is distributed by SAI Global Ltd on Standards Australia Ltd's behalf. It may be reproduced and modified in accordance with the terms of SAI Global Ltd's Licence 1110-c049 to TreeiQ ('the Licensee'). All amended, marked-up and licensed copies of this document must be obtained from the Licensee. Standards Australia Ltd's copyright material is not for resale, reproduction or distribution in whole or in part without written permission from SAI Global Ltd: tel +61 2 8206 6355 or copyright@saiglobal.com.

6.0 BIBLIOGRAPHY & REFERENCES

Barrell (1995), 'Pre-development Tree Assessments', in *Trees & Building Sites, Proceedings of an International Conference Held in the Interest of Developing a Scientific Basis for Managing Trees in Proximity to Buildings*, International Society of Arboriculture, Illinois, USA, pp. 132-142

Dunster J, Smiley T, Matheny N, Lilly S (2013), *Tree Risk Assessment Manual*, Champaign, Illinois, International Society of Arboriculture, USA

Mattheck & Breloer (1994), *The Body Language of Trees: A Handbook for Failure Analysis*, The Stationary Office, London

NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), *BioNet Atlas of NSW Wildlife*

Simon, Dormer & Hartshorne (1973), *Lowson's Botany*, Bell & Hyman, London

Standards Australia (2009), *Protection of Trees on Development Sites AS-4970*

Standards Australia (2007) *Pruning of Amenity Trees AS-4373*

Standards Australia (2015) *Tree Stock for Landscape Use (AS-2303)*

Appendix 1: Methodology

- 1.1 Site Inspection:** This report was determined as a result of a comprehensive site inspection during May 2020.
- 1.2 Visual Tree Assessment (VTA):** The subject tree(s) was assessed using the Visual Tree Assessment criteria and notes as described in *The Body Language of Trees – A Handbook for Failure Analysis*.⁷ The inspection was limited to a visual examination of the subject tree(s) from ground level only. No internal diagnostic or tissue testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.
- 1.3 Tree Dimensions:** The dimensions of the subject tree(s) are approximate only.
- 1.4 Tree Locations:** The location of the subject tree(s) was determined from the supplied plans. Trees not shown on the supplied plans have been plotted in their **approximate location only**.
- 1.5 Trees & Development:** Tree Protection Zones, Tree Protection Measures and Sensitive Construction Methods for the subject tree were based on methods outlined in *Australian Standard 4970-2009 Protection of Trees on Development Sites*.

The *Tree Protection Zone* (TPZ) is described in AS-4970 as a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The *Structural Root Zone* (SRZ) is described in AS-4970 as the area around the base of a tree required for the tree's stability in the ground. Severance of structural roots within the SRZ is not recommended as it may lead to the destabilisation and/or demise of the tree.

In some cases it may be possible to encroach into or make variations to the theoretical TPZ. A *Minor Encroachment* is less than 10% of the area of the TPZ and is outside the SRZ. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. A *Major Encroachment* is greater than 10% of the TPZ or inside the SRZ. In this situation the Project Arborist must demonstrate that the tree would remain viable. This may require root investigation by non-destructive methods or the use of sensitive construction methods.

- 1.6 Tree Health:** The health of the subject tree(s) was rated as *Good, Fair or Poor* based on an assessment of the following factors:
- I. Foliage size and colour
 - II. Pest and disease infestation
 - III. Extension growth
 - IV. Crown density
 - V. Deadwood size and volume
 - VI. Presence of epicormic growth
- 1.7 Tree Structural Condition:** The structural condition of the subject tree(s) was rated as *Good, Fair or Poor* based on an assessment of the following factors:
- I. Assessment of branching structure
(i.e. co-dominant/bark inclusions, crossing branches, branch taper, terminal loading, previous branch failures)
 - II. Visible evidence of structural defects or instability
(i.e. root plate movement, wounds, decay, cavities, fungal brackets, adaptive growth)
 - III. Evidence of previous pruning or physical damage
(root severance/damage, lopping, flush-cutting, lions tailing, mechanical damage)
- 1.8 Useful Life Expectancy (ULE):** The ULE is an estimate of the longevity of the subject tree(s) in its growing environment. The ULE is modified where necessary to take in consideration tree(s) health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (Modified from Barrell, 2001):
- I. 40 years +
 - II. 15-40 years
 - III. 5-15 years
 - IV. Less than 5 years

⁷ Mattheck & Breloer (2003)

- 1.9 Landscape Significance:** Landscape Significance was determined by assessing the combination of the cultural, environmental and aesthetic values of the subject tree(s). Whilst these values are subjective, a rating of high, moderate, low or insignificant has been allocated to the tree(s). This provides a relative value of the tree's Landscape Significance which may aid in determining its Retention Value. If the tree(s) can be categorized into more than one value, the higher value has been allocated.

Landscape Significance	Description
Very High	The subject tree is listed as a Heritage Item under the <i>Local Environmental Plan</i> with a local or state level of significance.
	The subject tree is listed on Council's Significant Tree Register or meets the criteria for significance assessment of trees and/or landscapes by a suitably qualified professional. The criteria are based on general principles outlined in the Burra Charter and on criteria from the Register of the National Estate.
High	The subject tree creates a 'sense of place' or is considered 'landmark' tree.
	The subject tree is of cultural or historical importance or is widely known.
	The subject tree is a prominent specimen which forms part of the curtilage of a heritage item with a known or documented association with that item.
	The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species for the site defined under the provisions of the NSW <i>Biodiversity Conservation Act (2016)</i> or the Commonwealth <i>Environmental Protection and Biodiversity Conservation Act (1999)</i> .
	The subject tree is known to contain nesting hollows to a species scheduled as a Threatened or Vulnerable Species for the site as defined under the provisions of the NSW <i>Biodiversity Conservation Act (2016)</i> or the Commonwealth <i>Environmental Protection and Biodiversity Conservation Act (1999)</i> .
	The subject tree is an excellent representative of the species in terms of aesthetic value.
	The subject tree is of significant size, scale or makes a significant contribution to the canopy cover of the locality.
Moderate	The subject tree makes a positive contribution to the visual character or amenity of the area.
	The subject tree provides a specific function such as screening or minimising the scale of a building.
	The subject tree is a good representative of the species in terms of aesthetic value.
Low	The subject tree is a known environmental weed species or is exempt under the provisions of the local Council's Tree Management Controls
	The subject tree makes little or no contribution to the amenity of the locality.
	The subject tree is a poor representative of the species in terms of aesthetic value.

- 1.10 Retention Value:** Retention Value was based on the subject tree's Useful Life Expectancy and Landscape Significance. The Retention Value was modified where necessary to take in consideration the subject tree's health, structural condition and site suitability. The subject tree(s) has been allocated one of the following Retention Values:

- I. Priority for Retention
- II. Consider for Retention
- III. Consider for Removal
- IV. Priority for Removal

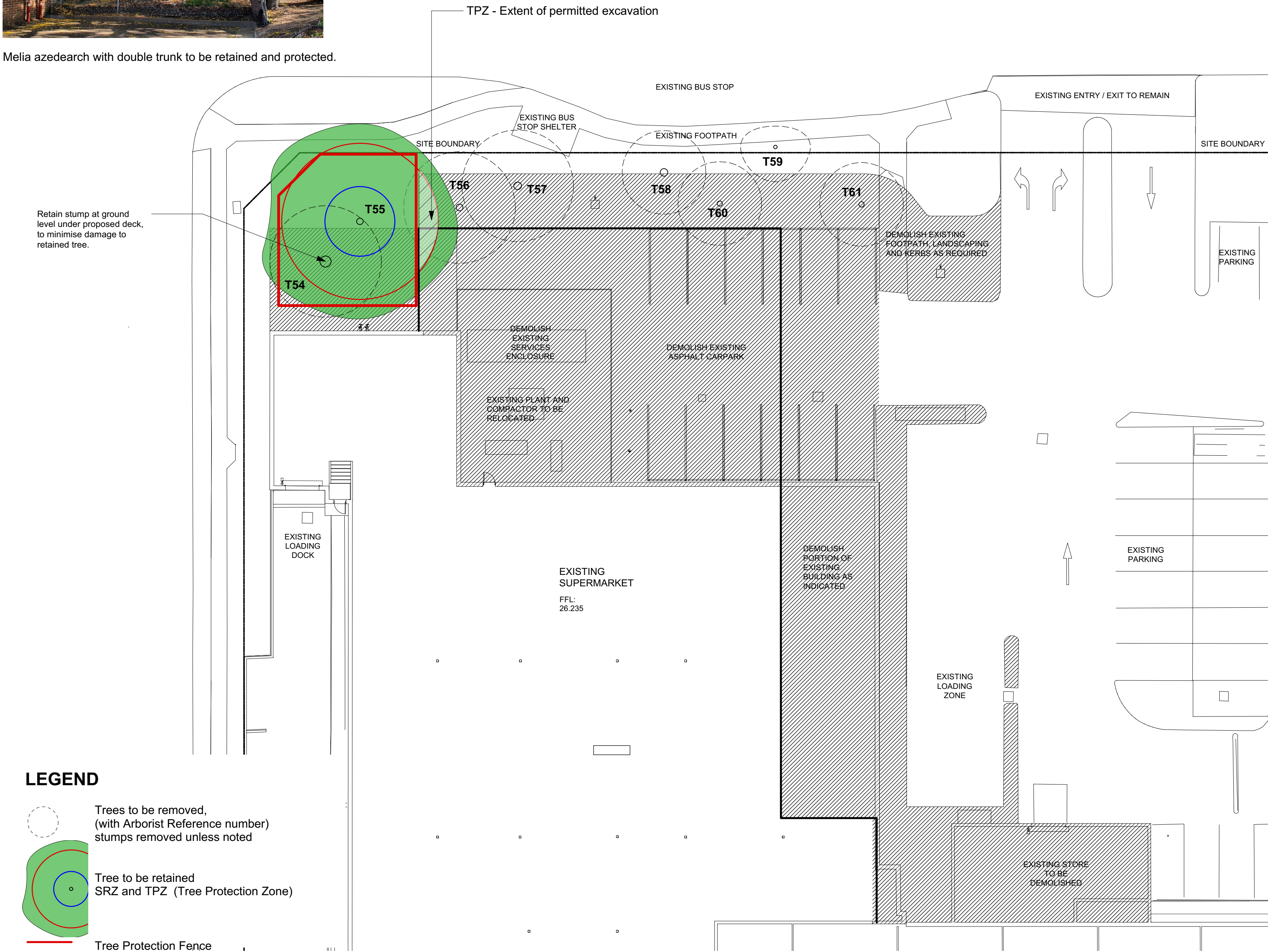
ULE		Landscape Significance			
	Very High	High	Moderate	Low	Insignificant
40 years +	Priority for Retention	Priority for Retention		Consider for Removal	Priority for Removal
15-40 years		Priority for Retention	Consider for Retention		
5-15 years		Consider for Retention			
Less than 5 years	Consider for Removal	Priority for Removal			

The above table has been modified from the Footprint Green Tree Significance and Retention Value Matrix.

Appendix 2: Plans



Melia azedearch with double trunk to be retained and protected.



Existing Tree Report								
ID	Botanical Name	Common Name	Average Spread	Height	DBH	Action	Notes	
T54	Corymbia maculata	Spotted Gum	8000	21000	800	Remove		
T55	Melia azedearch	White Cedar	14000	8000	465	Retain		
T56	Eucalyptus nicholii	Narrow leaved Peppermint	8000	18000	500	Remove		
T57	Eucalyptus nicholii	Narrow leaved peppermint	8000	20000	550	Remove		
T58	Corymbia maculata	Spotted Gum	6000	21000	550	Remove		
T59	Alanthus altissima	Tree of Heaven	4500	8000	250	Remove	Environmental weed	
T60	Alanthus altissima	Tree of heaven	6000	9000	380	Remove	Environmental weed	
T61	Eucalyptus saligna	Sydney Blue Gum	6000	9000	380	Remove		

TREE PROTECTION MEASURES
(Refer to Arborist report prepared by treeIQ dated June 2020.)

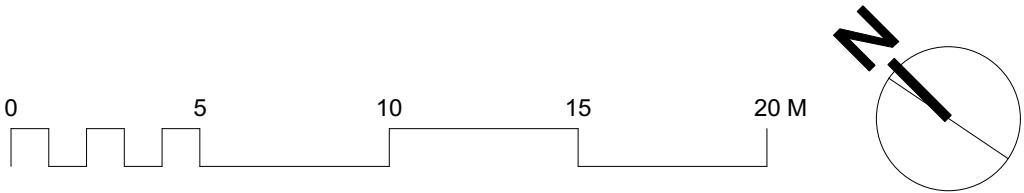
Existing ground levels within the TPZ should be maintained with the exception of the Supermarket footprint. No over excavation beyond the proposed footprint of the Supermarket extension and service truck access lane should be undertaken.

Existing pavement and kerbs within the TPZ should be left insitu where possible.

The condensor enclosure should be constructed above existing grade supported on isolated piered footings. Footings should be hand excavated to a minimum depth of 600mm and where roots >25mm diameter are present the footing should be relocated to enable the retention of significant roots (as determined by Project Arborist).

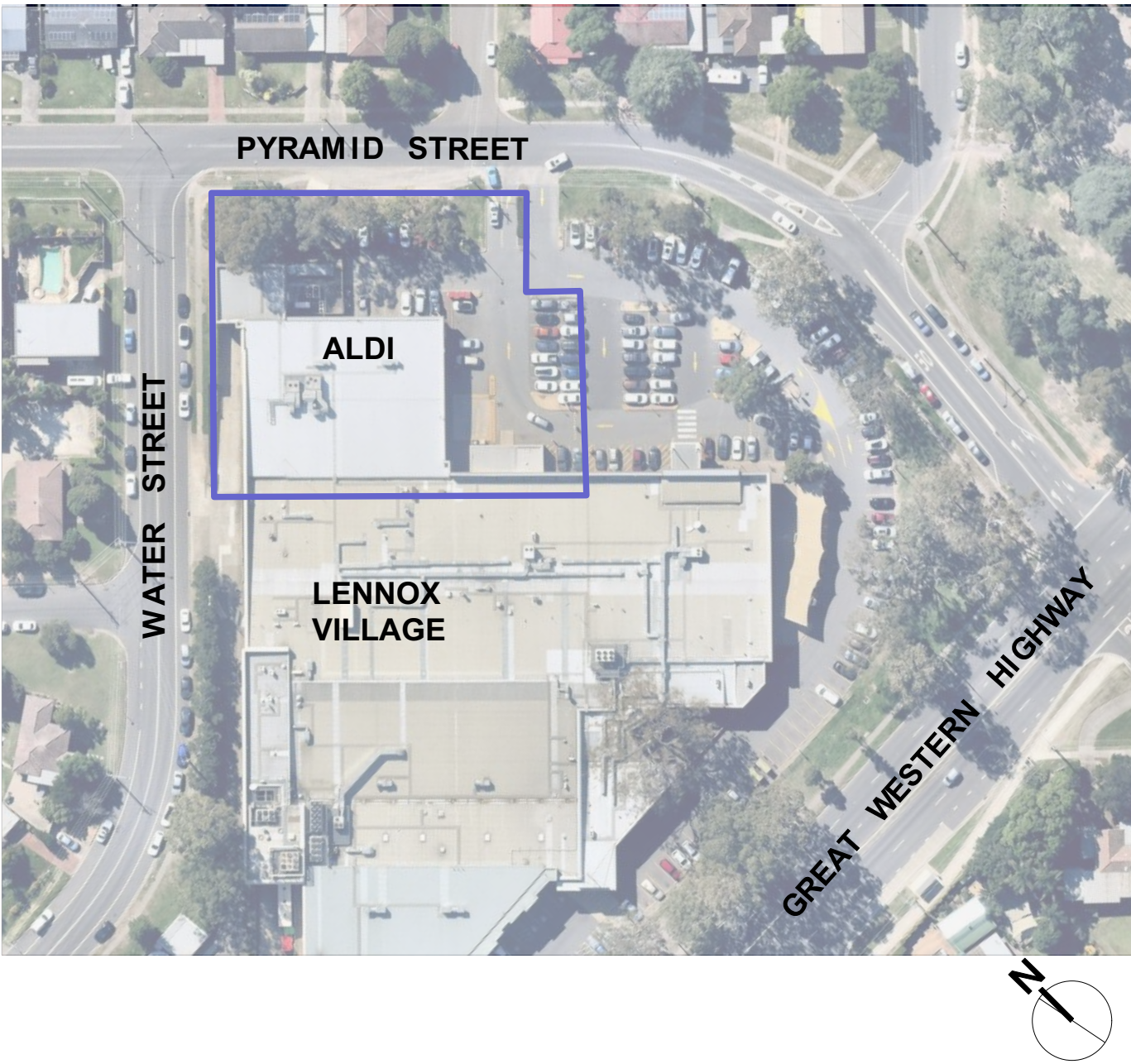
Any pruning to tree is to be supervised by Project Arborist.

Tree Protection Plan



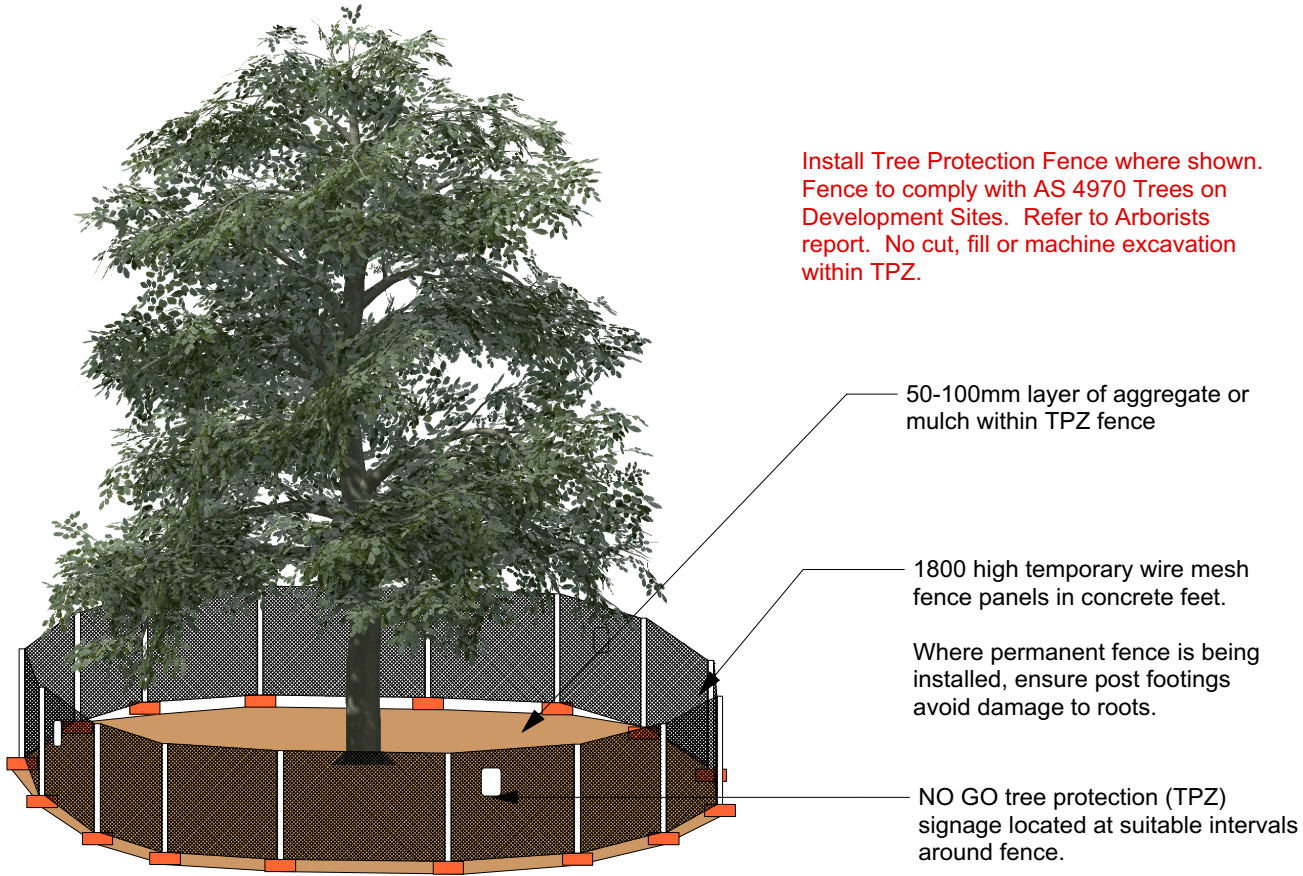
LENNOX VILLAGE - ALDI EXPANSION
LANDSCAPE DA PACKAGE

Pyramid Street Emu Plains NSW



LANDSCAPE Drawing Register

Drawing No.	Drawing Title	Scale	Issue
L01	Site Location, Tree protection	1:200	B
L02	Landscape Site Plan	1:200	B
L03	Landscape Planting Plan	1:200	B



TREE PROTECTION FENCE DETAIL

ISSUE

A 18 June 2020 Client review

B 2 July 2020 For DA

GROUP N

Architecture, Interior, Landscape.

L6111-117 Devonshire Street

Sunny Hills NSW 2010

T +61 2 93963546

Lindy Lean

LANDSCAPE ARCHITECT

AAILA Registered Landscape Architect #0423

HLS Pty Ltd PO Box 313 Ashfield NSW

phone 02 9797 9366

Lennox Village Shopping complex - Aldi Expansion

Pyramid Street Emu Plains

Client: Challenger Investment Partners

Landscape tree protection and Site location

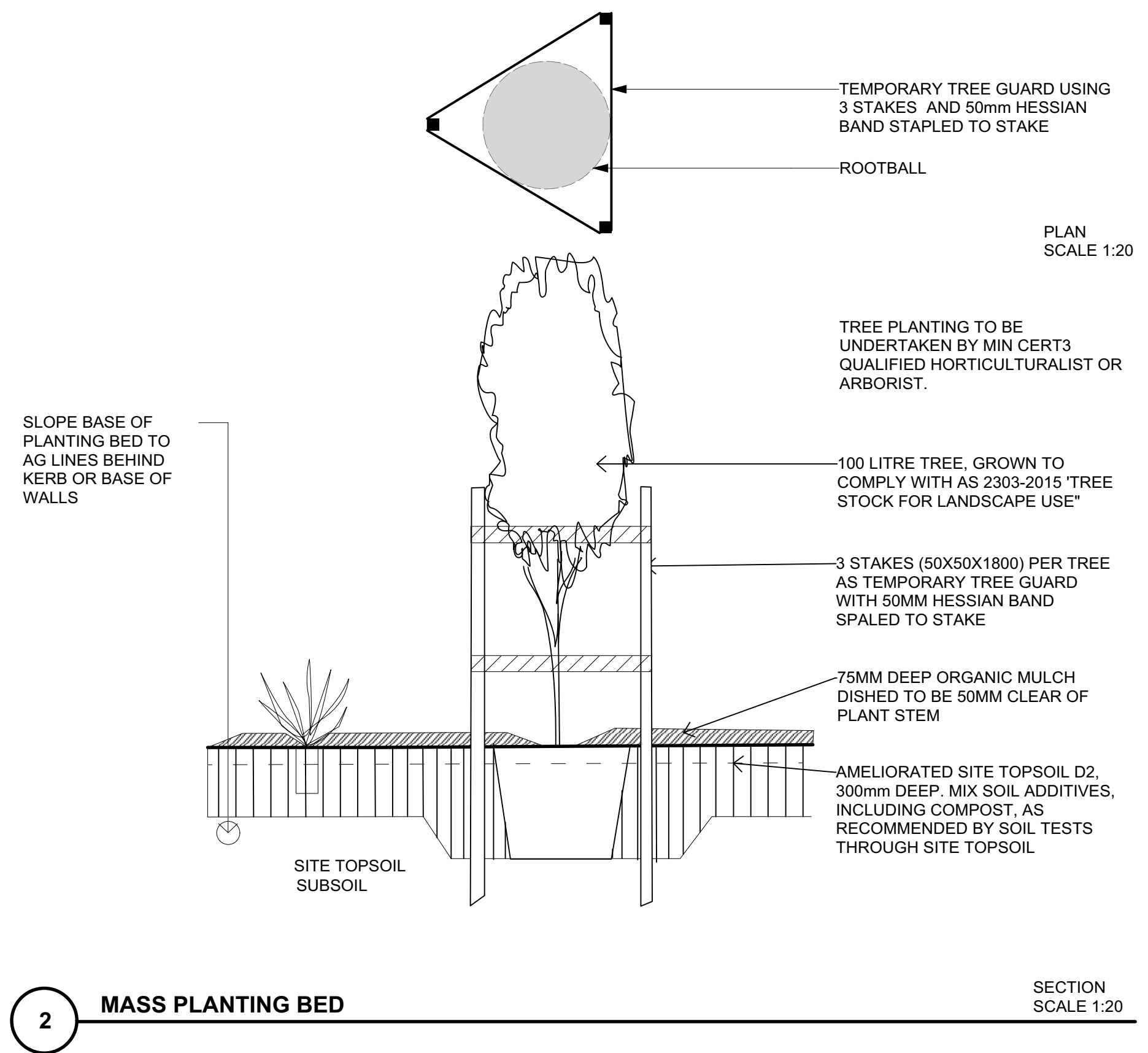
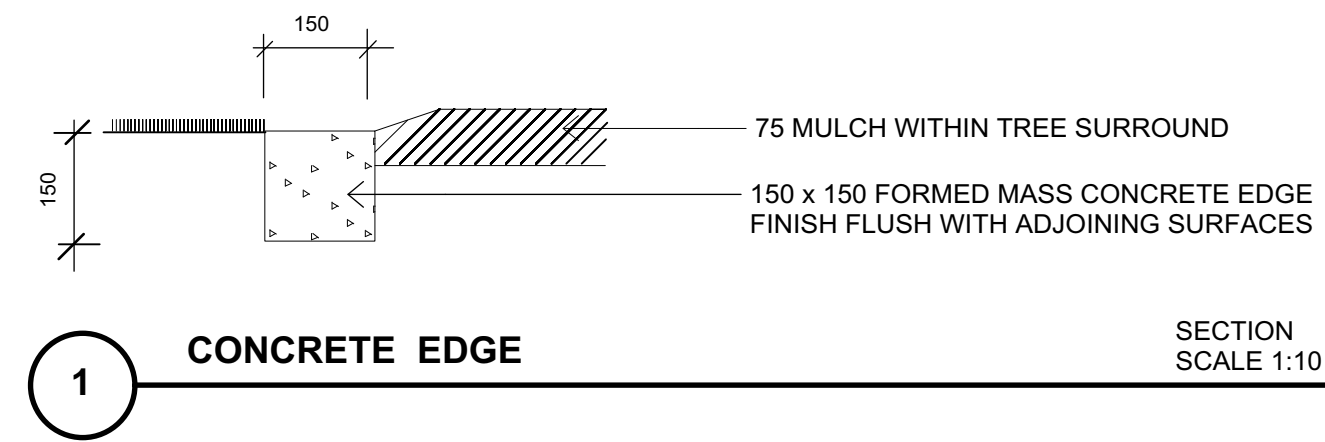
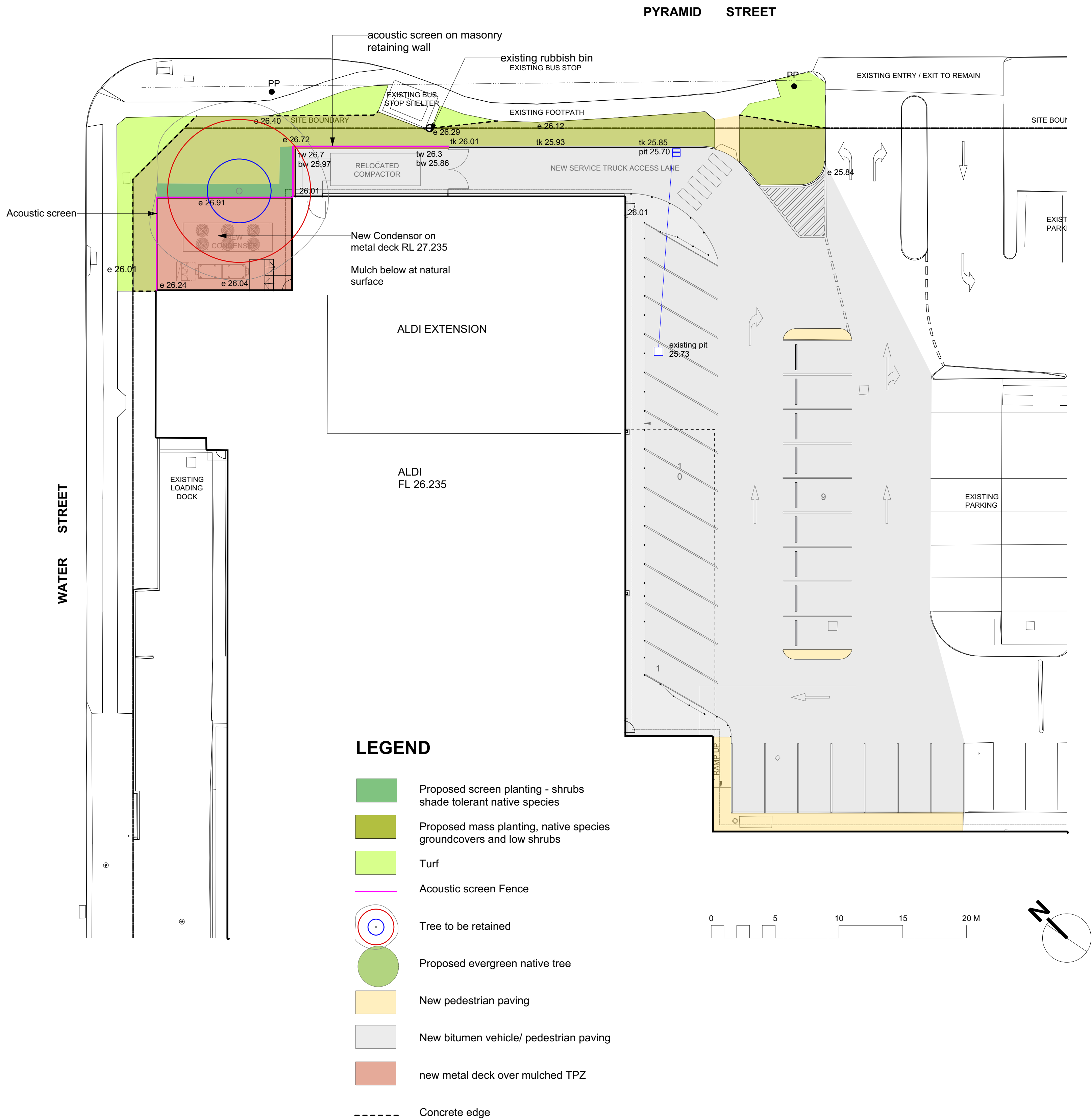
L 01

1:200 @A1

2 July 2020

status: for DA

ISSUE: B



Landscape Concept Plan

ISSUE
A 18 June 2020 Client review
B 2 July 2020 For DA

GROUP N
Architecture,
Interior,
Landscape.
L6/111-117 Devonshire Street
Sunny Hills NSW 2010
T +61 2 93963546

Lindy Lean
LANDSCAPE ARCHITECT
AAILA Registered Landscape Architect #0423
HLS Pty Ltd PO Box 313 Ashfield NSW
phone 02 9797 9366

Lennox Village Shopping complex - Aldi Expansion
Pyramid Street Emu Plains
Client: Challenger Investment Partners

Landscape Concept Plan

L 02

1:200 @A1

2 July 2020

status: for DA

ISSUE: B

Evergreen Native Trees



Callistemon citrinus

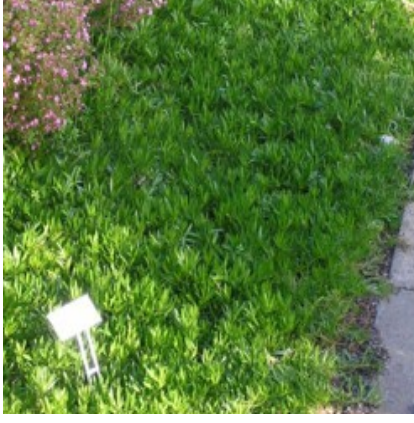
Melaleuca linarifolia

Shade Tolerant shrub



Prostanthera Minty

Low Shrubs, Grasses and Groundcovers



Myoporum parvifolium Yareena



Dianella Little Jess (Little Jess Flag Iris)



Lomandra Tanika



Rhagodia spinescens



Doryanthes excelsa (Gymea Lily)



Lomandra longifolia



Pennestetum Rubrum

Plant List						
ID	Qty	Common Name	Botanical Name	Pot Size	Mature Height	Mature Spread
Trees						
Mel lin	7	Flax-leaved Paperbark, Snow-in-summer	Melaleuca linearifolia	75 litre	5 - 10m	6 - 10m
Shrubs						
CaCi	11	Lemon-scented Bottlebrush	Callistemon citrinus	15 litre	1.5 - 3m	1.2 - 2.0m
Dor exc	5	Gymea Lily, Giant Lily	Doryanthes excelsa	5 litre	1.5 - 3m	1.2 - 2.0m
Pro rot	18	Round-leaved Mint Bush	Prostanthera rotundifolia	5 litre	1.5 - 3m	1.2 - 2.0m
Rha sin	33	Aussie Flatbush	Rhagodia spinescens	5 litre	0.6 - 0.75m	0.7 - 1.3m
Ground Covers						
Myo Yar	105	Carpet Spreading Myoporum	Myoporum parvifolium 'Yareena'	140mm	0.45 - 0.6m	0.9 - 1.2m
Grasses						
Dia Lit	17	Dwarf Blue Flax Lily	Dianella Little Jess	140mm	0.3 - 0.45m	0.3 - 0.5m
LoLo	82	Spiny-headed Mat-Rush	Lomandra longifolia	140mm	0.75 - 0.9m	0.9 - 1.2m
Lom Tan	166	Spiny-headed mat rush	Lomandra longifolia 'Tanika'	140mm	0.45 - 0.6m	0.6 - 0.9m
Pen rub	20	Purple Fountain Grass	Pennisetum 'Rubrum'	140mm	0.6 - 0.75m	0.3 - 0.6m

OUTLINE PLANTING SPECIFICATION

The Landscape Works are to be installed in accordance with Industry Best Practice by a suitably qualified and experienced horticultural professional, to the following minimum specification.

QUALIFICATIONS
All street trees and 100 litre trees or larger are to be planted by horticulturalist with minimum AQF level 3 qualification in Horticulture (Parks and Gardens).

WEED ERADICATION:
Eradicate all noxious and environmental weeds using a non-residual spray at the recommended rate, by environmentally acceptable methods. All imported materials including plants, topsoil, compost and mulch shall be free of weeds or weed seed.

SUBSOIL DRAINS
Install 100mm dia slotted ag pipe and sock as subsoil drains behind all kerbs, and where required. Connect to stormwater system. Install 100dia ag pipe and sock behind kerb and connect to stormwater pits.

TOPSOIL
Install imported topsoil to depths shown in details. Soils to be equivalent to:
Topsoil C1 - turf
Topsoil D2 - mass planting beds
Topsoil D4 - Street trees
as per "Soils for Landscape Development Specification" Simon Leake and Elke Haege.

FERTILISER
To each tree planting hole add slow release 21g biofertiliser planting tablet equal to Agsafe SuperMYCO (20:10:5 NPK).
For mass planting areas cultivate in Nutricote Standard Black (270 day 16:4:4:8.3 NPK) controlled release fertiliser. Quantity as per manufacturers recommendations.

PLANTS
Plants shall be vigorous, well established, hardened off, free from disease and insect pests, of good form consistent with species, not soft or forced, with large healthy root systems and no evidence of having been restricted or damaged. Trees to have single leaders and grown to NATSPEC specifications All plant material shall be in minimum pot sizes as shown on schedule. No plant to be installed taht has not been hardened off to local climatic conditions, or is otherwise inferior in quality.
Do not plant in extreme heat, cold, wind or rain. All plants are to be soaked thoroughly 1 hour prior to planting. Thoroughly water plants immediately after planting.

MULCH
Organic mulch shall be free from deleterious and extraneous matter, including soil, weeds, rocks, twigs and the like. Mulch shall be equivalent to Pine bark Nuggets by ANL, or Cottage Mulch by Solico, to match adjacent planting areas. Place mulch so it is not in contact with the stem of the plant.

TURF
Turf to verges as necessary after completion of earthworks and services. Obtain turf from a specialist grower of cultivated turf. Species to match existing. Turf shall be even in thickness and free from weeds. Lay turf over 100mm bed of cultivated topsoil in staggered pattern.

MASS PLANTING
Ensure surface of topsoil mixture grades to kerb. Excavate a hole for each plant 100 mm wider than plant container. Excavate a hole for each tree, backfill with topsoilcompost mixture, spread mulch and dish at plant stems.

STAKES AND TIES
Stakes to be 50 x 50 x 1800mm hardwood, straight, free from defects and pointed at one end. Drive 600mm into ground outside rootball. Fix 50mm hessian tie to stake to create tree guard using staples. On windward side of tree, or as necessary to stabilise tree, fix 50mm hessian tie to stake in a continuous loop and staple to stake.

CONCRETE EDGE
Form up and pour concrete edge where necessary between grass and planting areas. Top of edge to finish flush where it joins concrete kerb.

LANDSCAPE ESTABLISHMENT AND MAINTENANCE:
Plants: Maintain all plants in a healthy viable condition, including all watering, weeding, spraying for pests and diseases, pruning and re-mulching as necessary to achieve vigorous growth. Immediately replace any diseased or damaged plants at the Landscape Contractors cost. All plants are to be nurtured to industry best practice. All replacement plants are to be as originally specified.

Stakes: Stakes to be straightened and adjusted as necessary and removed when directed, or at the end of maintenance period.

Mulch: Maintain mulched surfaces and turf in a clean and tidy condition. Replace mulch where necessary with the same material to meet required depth.

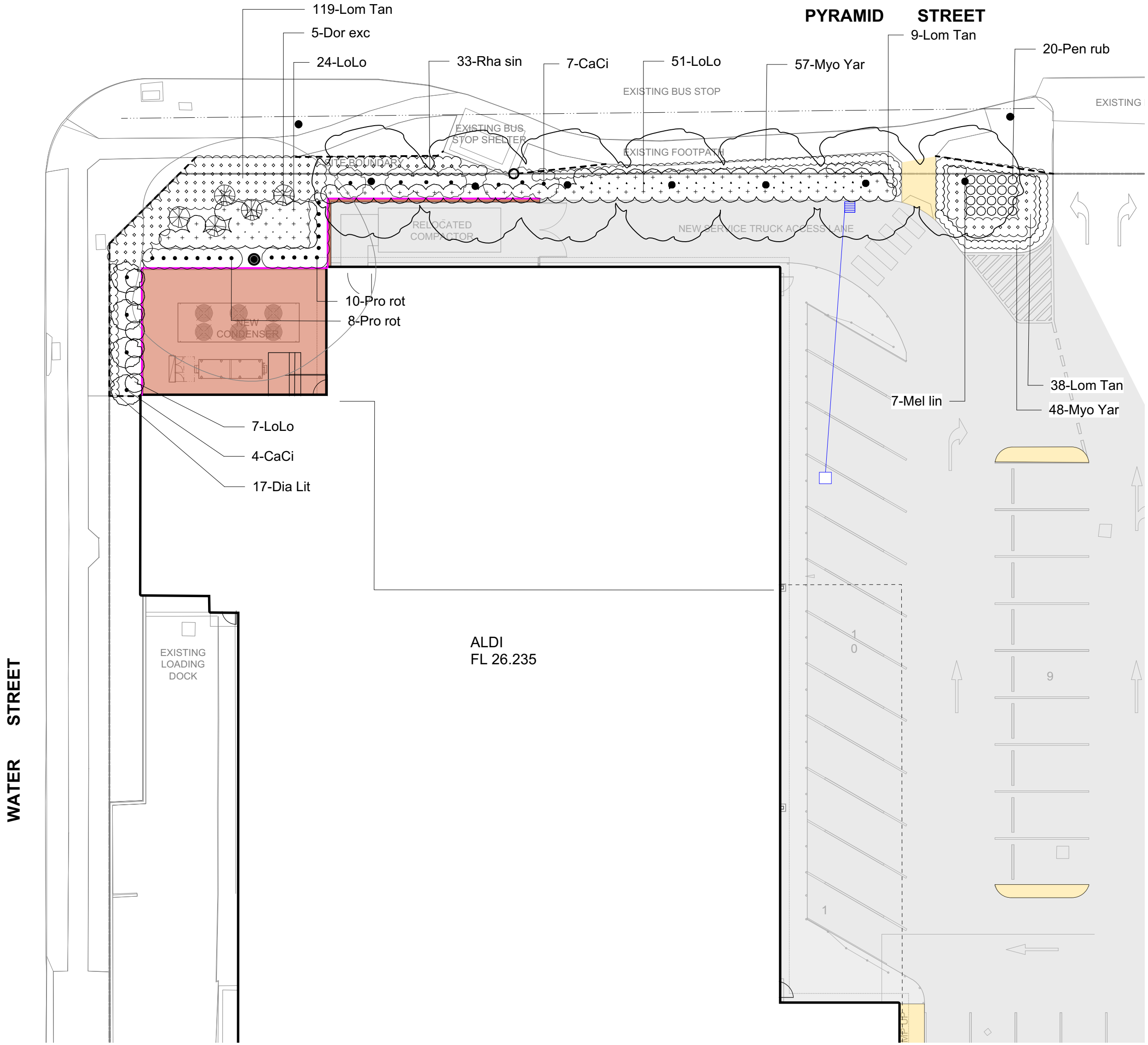
Rubbish: Remove any rubbish that may occur during the maintenance period on a weekly basis.

Weed eradication: Regularly remove weeds by hand from all landscaped areas. Where necessary, use environmentally acceptable methods, such as a non-residual spray.

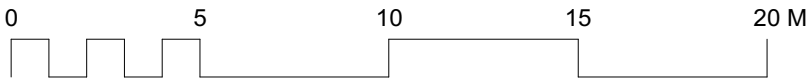
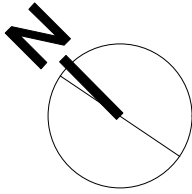
Watering: Water sufficiently to maintain continuous vigorous growth throughout the establishment period.

Soil Subsidence: Make good any erosion or soil subsidence that may occur. Ensure grass and mulched surfaces finish flush with adjacent paved surfaces.

MAINTENANCE PERIOD: 12 months from date of Practical Completion.



Landscape Planting Plan



Michael Lennox Landscape Pty Ltd
Version: 1, Version Date: 29/07/2020

ISSUE
A 18 June 2020 Client review
B 2 July 2020 For DA

GROUPN

Architecture,
Interior,
Landscape.

N

T +61 2 93963546

Lindy Lean

LANDSCAPE ARCHITECT

AAILA Registered Landscape Architect #0423
HLS Pty Ltd PO Box 313 Ashfield NSW
phone 02 9797 9366

Lennox Village Shopping complex - Aldi Expansion

Pyramid Street Emu Plains
Client: Challenger Investment Partners

Landscape Planting Plan

L 03

1:200 @A1 2 July 2020 status: for DA ISSUE: B

Appendix 3: Tree Assessment Schedule

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
10	<i>Corymbia citriodora</i> (Lemon Scented Gum)	1560	20	11	Fair	Good	Crown density 25-50%. Small (<25mmø) & large (>75mmø) deadwood in moderate volumes. Small (<25mmø) & medium (25-75mmø) epicormic growth in low volumes. Wound(s), various stages of decay. Previous branch failure(s).	Late Mature	5-15	High	Consider for Retention	15	4.2	Retain
54	<i>Corymbia maculata</i> (Spotted Gum)	750	17	6	Good	Good	Crown density 75-95%. Small (<25mmø) deadwood in low volumes.	Mature	15-40	Mode rate	Consider for Retention	9.0	3.1	Remove
55	<i>Melia azedarach</i> (White Cedar)	465	6	7	Good	Fair	Trunk occluding mesh fence. Heavily suppressed. Co-dominant inclusions, major. Wound(s), various stages of decay.	Mature	5-15	Low	Consider for Removal	5.6	2.5	Retain
56	<i>Eucalyptus nicholii</i> (Narrow Leaf Peppermint)	500	15	6	Fair	Good	Crown density 50-75%. Small (<25mmø) & large (>75mmø) deadwood in moderate volumes. Small (<25mmø) epicormic growth in moderate volumes. Mechanical damage to exposed surface roots. Wound(s), various stages of decay.	Late Mature	5-15	Mode rate	Consider for Retention	6.0	2.6	Remove
57	<i>Eucalyptus nicholii</i> (Narrow Leaf Peppermint)	600	15	9	Fair	Good	Crown density 75-95%. Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Mechanical damage to exposed surface roots. Bark inclusion(s), minor. Wound(s), various stages of decay.	Late Mature	5-15	Mode rate	Consider for Retention	7.2	2.8	Remove
58	<i>Corymbia maculata</i> (Spotted Gum)	541	15	5	Good	Good	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Mechanical damage to exposed surface roots. Pruned/lopped for powerline clearance.	Mature	15-40	Mode rate	Consider for Retention	6.5	2.7	Remove

59	<i>Ailanthus altissima</i> (Tree of Heaven)	350	7	4	Good	Good	Listed weed species. Mechanical damage to exposed surface roots. Pruned/lopped for powerline clearance. Wound(s), various stages of decay.	Mature	<5	Low	Priority for Removal	4.2	2.2	Remove
60	<i>Ailanthus altissima</i> (Tree of Heaven)	275	8	4	Good	Good	Listed weed species. Mechanical damage to exposed surface roots.	Mature	<5	Low	Priority for Removal	3.3	2.0	Remove
61	<i>Eucalyptus saligna</i> (Sydney Blue Gum)	300	7	5	Good	Good	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Small (<25mmø) epicormic growth in low volumes. Wound(s), early signs of decay. Poor form.	Mature	15-40	Low	Consider for Removal	3.6	2.1	Remove
10A	<i>Phoenix canariensis</i> (Canary Is Date Palm)	600	3	3	Good	Good	Not included in in previous Risk Assessment Report	Semi-mature	40+	Low	Consider for Removal	4	n/a	Remove

Appendix 4: Plates



Plate 1: Showing Tree 10 & 10A



Plate 2: Showing Tree 54, 55 and pruning



Plate 3: Showing Trees 58-61

Appendix 5: Tree Protection Specification

1.0 Appointment of Project Arborist

A Project Arborist shall be engaged prior the commencement of work on-site and monitor compliance with the protection measures. The Project Arborist shall inspect the tree protection measures and Compliance Certification shall be prepared by the Project Arborist for review by the Principal Certifying Authority prior to the release of the Compliance Certificate.

The Project Arborist shall have a minimum qualification equivalent (using the Australian Qualifications Framework) of NSW TAFE Certificate Level 5 or above in Arboriculture.

The site-specific requirement for mulching, irrigation, the location of tree protection fencing and temporary access, and other specific tree protection measures shall be confirmed through consultation between the Head Contractor/Project Manager and the Project Arborist prior to the commencement of works.

1.1 Compliance

Contractors and site workers shall receive a copy of these specifications a minimum of 3 working days prior to commencing work on-site. Contractors and site workers undertaking works within the Tree Protection Zone shall sign the site log confirming they have read and understand these specifications, prior to undertaking works on-site.

1.2 Tree Protection Zone

The tree to be retained shall be protected prior and during construction from activities that may result in an adverse effect on their health or structural condition. The area within the Tree Protection Zone (TPZ) shall exclude the following activities, unless otherwise stated:

- Modification of existing soil levels, excavations and trenching
- Mechanical removal of vegetation
- Movement of natural rock
- Storage of materials, plant or equipment or erection of site sheds
- Affixing of signage or hoarding to the trees
- Preparation of building materials, refueling or disposal of waste materials and chemicals
- Lighting fires
- Movement of pedestrian or vehicular traffic
- Temporary or permanent location of services, or the works required for their installation
- Any other activities that may cause damage to the tree

NOTE: If access, encroachment or incursion into the TPZ is deemed essential, prior authorisation is required by the Project Arborist.

1.3 Site Management

Materials, waste storage, and temporary services shall not be located within the TPZ.

1.4 Trunk Protection

Trunk protection shall be installed on Trees 10 and 55. Trunk protection shall be installed by wrapping padding (either carpet underlay or 10mm thick jute geotextile mat) around the trunk and first order branches to a minimum height of 2m. Timber battens (90 x 45mm) spaced at 150mm centres shall be strapped together and placed over the padding. Timber battens must not be fixed to the trees. Refer to Typical Tree Protection Details (3) (**Appendix 6**).

Branch protection shall be installed as deemed necessary by the Project Arborist.

1.5 Ground Protection

Pedestrian, vehicular and machinery access within a TPZ shall be restricted to areas of existing pavement or from areas of temporary ground protection such as ground mats or steel road plates. Refer to Typical Tree Protection Details (3) (**Appendix 6**).

1.6 Scaffolding

Where possible, scaffolding shall not be located within the TPZ. Scaffolding shall not be in contact with the tree. As necessary, this shall be achieved by erecting scaffolding around branches. Branches shall be tied back and protected as deemed necessary by the Project Arborist. Refer to Typical Tree Protection Details (5) (**Appendix 6**).

1.7 Works within the Tree Protection Zones

In some cases works within the TPZ may be authorized by the determining authority. **These works shall be supervised by the Project Arborist.** When undertaking works within the TPZ, care should be taken to avoid damage to the tree's root system, trunks and lower branches.

If roots (>25mmØ) are encountered during the demolition, excavation and construction works, these roots must be retained in an undamaged condition and advice sought from the Project Arborist. Adjustment of final levels and design shall remain flexible to enable the retention of roots (>25mmØ) where deemed necessary by the Project Arborist.

1.8 Structure & Pavement Demolition

Demolition of existing structures/pavement within the TPZ shall be supervised by the Project Arborist. Machinery is to be excluded from the TPZ unless operating from the existing slabs, pavements or areas of ground protection (refer to Section 1.7). Machinery shall work in conjunction with a spotter to guide the machinery operator and ensure that the ground surface/tree roots beneath the structure/pavement are not disturbed/damaged by demolition works. Machinery should not contact any part of a tree. Wherever possible, footings or elements below grade shall be retained to minimise disturbance to roots.

Small structures to be demolished within a TPZ shall be carefully broken up in small sections using a hand-operated pneumatic/electric breaker and waste material removed by hand/hand tools. Large structures to be demolished within the TPZ shall be undertaken within the footprint of the existing structure ('top down, pull back') and away from the trees.

When removing slab/pavement sections within TPZ, machinery shall work backwards out of the TPZ to ensure machinery remains on un-demolished sections of slab at all times. Existing sub-base materials within a TPZ shall remain in-situ and (and reused) where possible. If the existing sub-base is to be removed, these works shall be undertaken by hand/hand tools ensuring that tree roots are retained and protected.

If roots (>25mmØ) are encountered during the demolition works, these roots must be retained in an undamaged condition and advice sought from the Project Arborist. Exposed roots shall be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute geotextile fabric. The geotextile fabric shall be kept in a damp condition at all times. Where the Project Arborist determines that the tree is using underground elements (i.e footings, pipes, rocks etc.) for support, these elements shall be left in-situ.

1.9 Underground Services

The installation of underground services shall be located outside of the TPZ. Where this is not possible, they shall be installed using tree sensitive excavation methods (hand/hydrovac/airspade) with the services installed around/below roots (>25mmØ) or as required by the Project Arborist. Excavation using compact machinery (<2t) fitted with a flat bladed bucket is permissible where approved by the Project Arborist. Excavation using compact machinery should be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmØ).

Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1200mm below existing grade. Excavations for starting and receiving pits for boring equipment shall be located outside of the TPZ areas or located to avoid roots (>25mmØ) as deemed necessary by the Project Arborist.

1.10 Pavement Installation

New pavements (including sub-base materials & kerbs) within TPZ areas shall be installed above existing grade and utilise existing sub-base layers where possible. Pavement sub-base layers shall be either, thinned or finished pavement levels amended to enable the retention of roots (>25mmØ) as required by the Project Arborist.

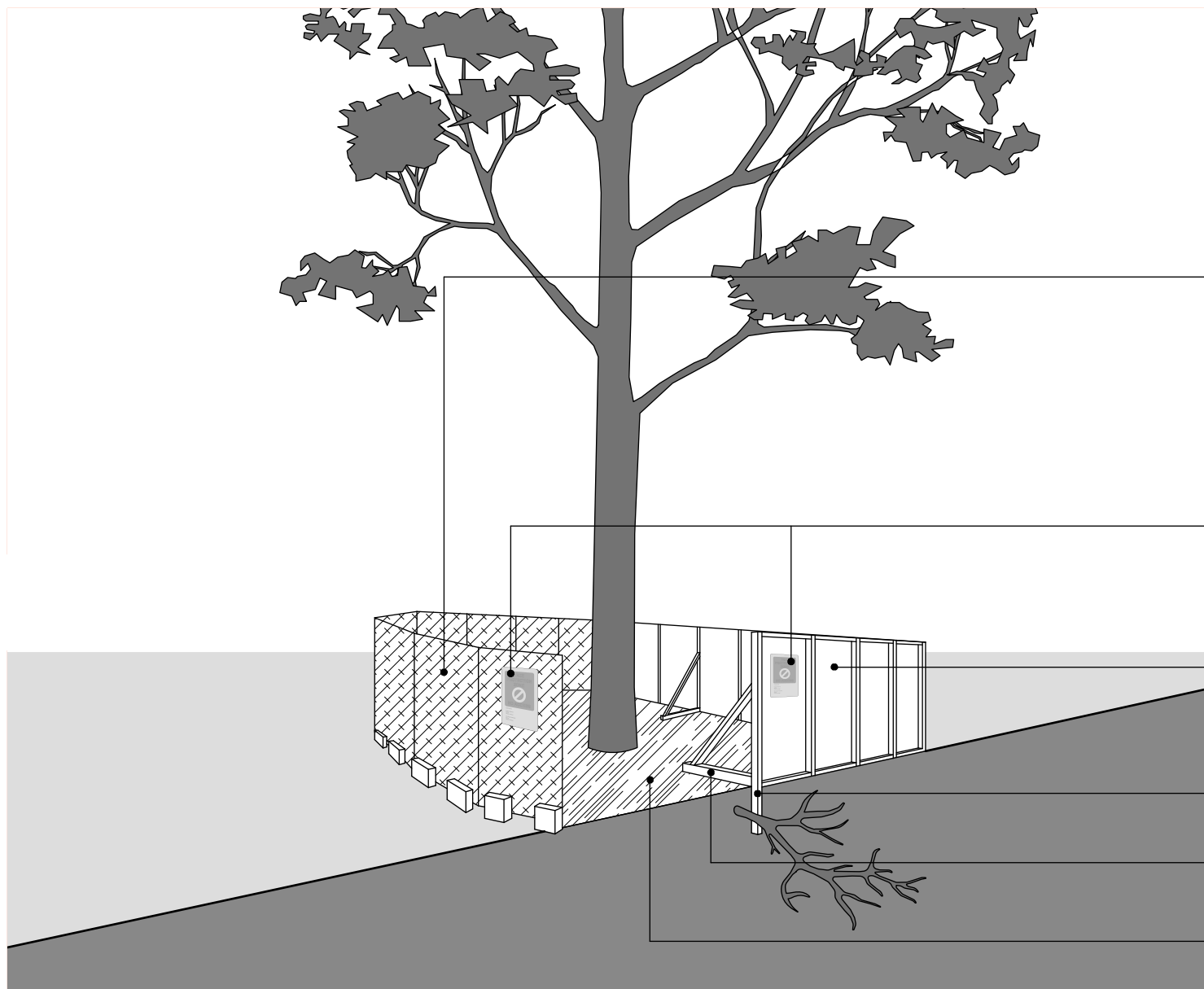
1.11 Excavations, Root Protection & Root Pruning

All excavation works (including root investigations) within TPZ areas shall supervised by the Project Arborist and utilise tree sensitive methods. These methods include hand, airspade or hydrovac excavation. Where approved by the Project Arborist, excavation using compact machinery fitted with a flat bladed bucket is permissible. Unless specified otherwise, excavation using compact machinery (<2t) shall be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmØ).

Exposed roots shall be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute mat, followed by a layer of plastic membrane. Coverings shall be weighted to secure them in place. The mat shall be kept in a damp condition at all times.

No over-excavation, battering or benching shall be undertaken beyond the footprint of any structure unless approved by the Project Arborist. Hand excavation and root pruning shall be undertaken along the excavation line prior to the commencement of mechanical excavation to prevent tearing and shattering damage to the roots from excavation equipment.

Roots (>25mmø) shall be pruned by the Project Arborist only. Roots (<25mmø) may be pruned by the Principal Contractor. Root pruning shall be undertaken with clean, sharp secateurs or a pruning saw to ensure a smooth wound face, free from tears. Damaged roots shall be pruned behind the damaged tissues with the final cut made to an undamaged part of the root.



Note:

No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.

Option 1 - Fencing

1.8m high chain wire mesh panels with shade cloth attached (if required), held in place with concrete feet.

Tree Protection Zone (TPZ) sign

Option 2 - Fencing

Plywood or wooden panel paling fence. This type of fencing material also prevents building materials or soil entering the TPZ.

Installation of supports should avoid damaging roots.

Bracing is permissible within the TPZ.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer installed across surface of TPZ.

